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Role of social and psychological capital in successful nursing career progression: a structural equation modeling approach

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Abstract

Objectives: Factors that influence career success play an important role in nurse’s professional development and clinical nursing management quality. However, limited studies have explored such factors from the perspective of social and psychological capital (PsyCap). This study explores the relationship between Leader–Member Exchange (LMX) and PsyCap and career success among Chinese clinical nurses.

Methods: A cross-sectional design with convenience sampling was employed. We recruited 1,221 nurses from two hospitals of Hebei Province, China. The average age of the participants was 30.94 years (SD = 6.28; range, 19–56 years), and 95.6 % were female. The participants were surveyed using the Leader–Member Exchange Questionnaire, Psychological Capital Questionnaire, and Career Success Questionnaire. We used Student’s t-test, one-way analysis of variance, Pearson’s correlation analysis, and structural equation modeling to analyze the data.

Results: Career success was significantly correlated with LMX and PsyCap and its four dimensions: self-efficacy, hope, resilience, and optimism. LMX was significantly and positively correlated with PsyCap and its four dimensions. Furthermore, LMX positively predicted PsyCap, and PsyCap positively predicted career success. Moreover, PsyCap mediated the relationship between LMX and career success.

Conclusions: LMX (as social capital) and PsyCap influence the career success of Chinese clinical nurses.

Keywords: China; nurses; career success; social capital; psychological capital; structural equation modeling

Introduction

Clinical nurses have considerable responsibilities and experience high-level work intensity, risk, and pressure [1, 2]. With nurses sustaining frequent violent injuries from patients and patients’ relatives, the increasingly tense nurse–patient relationship has markedly impacted medical services; consequently, more new nurses are quitting healthcare [3]. By the end of 2018, the number of nurses per 1,000 people in China was only 2.94 – far below the World Health Organization’s recommended rate of 4.45 [4, 5]. Inevitably, China is experiencing a shortage of nurses and an increasing nurse turnover rate, resulting in the wastage of educational and social resources [6]. Globally, the nurse turnover rate is between 15 and 44 % [3, 7]; in China, 40.61 % of emergency nurses have reported a high turnover intention [8]. The instability of China’s nursing workforce has undoubtedly become a problem [9]. China’s Vice Premier, Mrs. Sun Chunlan emphasizes the importance of integrating humanistic care and professional expertise and societal support into the nursing profession [10]. Thus, promoting the career success of clinical nurses in China is imperative to reduce turnover, facilitate the understanding of individual values, and render nursing an attractive profession [8].

“Career success” refers to the gradual accumulation of positive psychological response during the process of career development by achieving work-related goals [11, 12]. Judge et al. [12] proposes that career success should be divided into two aspects: “career satisfaction”, which we define as the internal evaluation of nurses regarding their current working status, and “career competition”, as equivalent to the objective achievement (e.g. rights and status) of nurses in their work. Based on previous research on the career success, we will apply Judge’s concept of career success in this study [13–15]. Most studies on career success primarily focus on enterprise management. However, scholars in the field are becoming increasingly interested in nursing, as...
career success can improve service quality and stabilize nursing teams [11]. Therefore, factors influencing the career success of Chinese clinical nurses and their influence mechanisms would constitute an area worth further exploring. Social capital and PsyCap is the core professional competency required to secure employment and achieve career success [16]. Thus, this study aims to explore the mechanism of social capital and PsyCap in the career success of clinical nurses in an attempt to identify the factors that influence successful nursing career progression in China. Through this study, we seek to offer insights into the best practices for increasing the stability of the nursing workforce and reducing the turnover rate of clinical nurses in China.

Background

Leader–member exchange and career success

“Social capital” refers to the social relationships that enhance career development. Such relationships are common in China and hold immense significance to Chinese people. Thus, Chinese enterprises demonstrate a unique “relationship” culture [17], which notably also exists in the nursing workforce. The unique “relationship”, which can also be referred to as Chinese personal connections, is an indigenous Chinese sociocultural construct and a network of informal relationship and exchange of favors. Among social relationships in the workplace, the connection with one’s superiors holds significant prominence and importance. This concept has been extensively studied, with a particular focus on the phenomenon known as LMX [18, 19].

LMX emphasizes the differences in the relationship between superiors and subordinates [16]. Head nurses hold different attitudes toward different nurses. They form a more intimate relationship with certain nurses, or “insiders” equivalently (the rest is therefore called “outsiders”). According to the social exchange theory [20], all exchange relationships can be divided into economic and social exchanges. Accordingly, there are two principal mutual behaviors between leader and member: economic exchange within and social exchange outside the employment relationship [19]. Low-quality LMX is limited to the exchange of economic interests in labor contracts or work regulations. Meanwhile, high-quality LMX includes economic and social exchanges with long-term benefits in mind, including emotional, informational, tangible, and other forms of support between leaders and members [19]. In a nursing team, “insider” nurses have more information and resources – this can improve a nurse’s work and job satisfaction [21, 22], resulting in an increase in their reputation and influence. This makes “insider” nurses easier to attain promotions and better remuneration at the workplace [23].

Empirical studies on LMX in enterprise management reports that LMX significantly influences the professional behavior of individuals and enterprises [14, 21, 24]; this trend has also been confirmed in China [22, 25, 26]. Previous research investigates the relationship between LMX and objective indicators of career success, which is suggestive of LMX as an important predictor for subjective career success [24]. Peng et al. [14] discovers that LMX is positively associated with both subjective and objective career success among subordinates. Other empirical studies in nursing report that high-quality LMX can improve nurses’ PsyCap, organizational citizenship behavior, job attitude, job involvement, and innovative work behavior [21, 22]. In particular, high-quality LMX can reduce nurses’ turnover intention [23]. Furthermore, previous research finds significant correlations between leader–member exchange and job satisfaction [22, 27, 28]. Han and Jekel [27] find that leader–member exchange is positively related to nurses’ job satisfaction. Donohue-Porter et al. [28], in their study of 206 nurses in a 600-bed hospital, examine the impact of LMX, a leadership theory that focuses on relationships, and find significant correlations with job satisfaction and organizational commitment. Pan et al. [22] find that LMX has a significant positive influence on job crafting and job satisfaction among nurses from hospitals. In summary, high-quality LMX boosts nurses’ career success.

However, little research has been conducted on the relationship between LMX and career success among Chinese nursing teams. This study hypothesizes that in the context of China’s unique “relationship” culture, the underlying relationship between clinical and head nurses is closely related to nurses’ career success.

Psychological capital and career success

Personal development and success require positive psychological qualities [15]. Therefore, PsyCap – a positive psychological state exhibited during growth and development – has become a decisive internal force for career satisfaction, competition [29], and, ultimately, career success. PsyCap comprises four qualities: self-efficacy, hope, resilience, and optimism [30]. Accordingly, applications of the PsyCap theory [30, 31] have revealed that individuals with extraordinary PsyCap are confident, optimistic, and tenacious. They venture to innovate and can maximize their knowledge and skills irrespective of their individual circumstances – from adversity to prosperity, greater achievements, and
eventually self- as well as career achievement. For nurses, PsyCap entails self-confidence and action in the face of challenging work, optimism toward the present and future, and perseverance and timely adjustment of strategies to meet goals. Thus, it enables nursing professional to improve his or her perception of negative events, ease negative emotions at the workplace, transform individual potential into real ability, attain self-achievement, and allow organizations to gain a competitive advantage [32].

Empirical studies show that PsyCap has a positive impact on both subjective and objective career success [33]. Järlström et al. [34] examines the associations between three forms of career capital – human, social capital and PsyCap – and career success. The results stress the importance of PsyCap as a valuable career resource for knowledge workers. Furthermore, the results indicate a positive relationship between PsyCap and career success [15]. In this light, this study argues that clinical nurses’ PsyCap is closely related to their career success.

Mediating role of psychological capital

As this study examines the impact of LMX and PsyCap on nurses’ career success, we attempt to identify the relationship between LMX, PsyCap and career success. Self-determination theory distinguishes between internal and external motivations and emphasizes that the former has a more influential role in professional skills, especially problem-solving [35]. Moreover, individuals with strong internal motivations demonstrate higher level of self-determination [36]. We position PsyCap as an internal motivation developed through individual growth. Notably, external motivations only impact behavior once they are internalized [35]. Social capital is acquired from the external environment, while LMX represents the external context of individuals within the workplace. Based on this framework, we propose that clinical nurses’ LMX is closely linked to their PsyCap.

This study explores the relationship between LMX, PsyCap, and career success of nurses. We hypothesize that among Chinese nurses, the LMX quality between the head nurse and other nurses is internalized in nurses’ PsyCap, which influences their career success by enhancing job satisfaction and professional competitiveness. However, when nurses’ LMX quality is low, head nurses are considered crucial in the workplace. Their attitudes and emotions – closeness or alienation – toward a nurse can be perceived by other nurses as environmental information, which triggers team attitudes and emotions toward this nurse [37]. This yields a series of positive or negative experiences for nursing professional. In addition, nurses’ career satisfaction and competition are also affected.

Previous studies show that PsyCap plays a mediating role in the relationship between LMX and professional behavior of individuals and enterprises [25, 26]. He et al. [25] collected data from 536 construction workers in China through a field survey, and find that LMX directly impacted PsyCap and indirectly affected construction workers’ safety behavior through PsyCap. Another study [38] suggests that high-quality LMX is significantly related to high PsyCap, and PsyCap partially mediates the influence of LMX on employees’ creativity. In particular, Liao et al. [26] concludes that good LMX increases PsyCap, which increases both job satisfaction and life satisfaction accordingly. PsyCap serves as a full mediator among employees in the financial and electronics manufacturing industries in Taiwan [26]. Therefore, in this study, we argue that clinical nurses’ LMX affects their career success through their PsyCap.

The current study

This study aims to elucidate the relationship between LMX and PsyCap and career success among Chinese clinical nurses. We constructed a structural equation model (SEM) of “social capital-PsyCap-career success” from a social and PsyCap perspective that is internalized gradually. In this model, LMX is an observable independent variable, whereas PsyCap is a latent mediating variable, and career success is a latent dependent variable. The research hypotheses are as follows:

Hypothesis 1. Nurses’ LMX, as social capital, positively predicts career success.

Hypothesis 2. Nurses’ PsyCap positively predicts career success.

Hypothesis 3. Nurses’ LMX positively predicts PsyCap.

Hypothesis 4. Nurses’ PsyCap mediates the relationship between LMX and career success.

Materials and methods

This study presents a cross-sectional survey using convenience sampling to construct an SEM of “social capital-PsyCap-career success” by investigating Chinese clinical nurses and analyzing the factors and mechanisms of nursing teams’ career success.
Participants

In order to achieve good reliability and validity of the scale, the sample size was calculated as 10 times the number of items on the scale [39]. The questionnaire used in this study contains 48 items; therefore, the formula for calculating the sample size was \( n = (6 + 7 + 24 + 11) \times 10 = 480 \). Thus, at least 480 participants were required for this study.

Using convenience sampling, 1,345 clinical nurses from two tertiary hospitals were approached, and 1,324 clinical nurses volunteered to participate in our survey. The average age of the sample was 30.89 years (SD = 6.19; range = 19–56 years), and 95.17% were women. The inclusion criteria were as follows: (1) The nurse participant is required to have obtained a nursing qualification certificate from the People’s Republic of China; (2) The nurse participant should be engaged in clinical nursing work in the ward; and (3) is informed consent to participate in this study. The exclusion criterion was nurse’s leave of absence (e.g., maternity, illness, or study leave).

Procedure

The study was conducted between May and September 2018 in two tertiary hospitals in Hebei Province, China. The researchers explained the purpose of the survey to the hospital administrators to obtain their approval before data collection. After the relevant ethics committee approved the study, field surveys were conducted using printed questionnaires with the help of both hospitals’ nursing departments. Both hospitals were assigned an investigator respectively, who received unified training. The investigators were responsible for conducting the field surveys. They informed the participants about the voluntary nature of the study and that they could withdraw at any time for any reason. Participants were assured that their responses were confidential and would be used only for academic purposes. After obtaining informed consent from the participants, the questionnaires were distributed and collected immediately after completion.

Participants’ general information

General information on age, sex, education level, years of service in the current organization, team size, and position were obtained from the participants.

LMX leader–member exchange

LMX was measured using the seven-item Leader–Member Exchange Questionnaire (LMX-7) [19]. All items are rated on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), and the total scores are calculated by averaging individual item scores; higher scores indicate a higher level of LMX. An example item is “I think team leaders see me as a potential employee.” The LMX-7 has previously been validated in Chinese samples [25, 40]. In this study, Cronbach’s alpha was 0.92.

Psychological capital

PsyCap was assessed using the Psychological Capital Questionnaire (PCQ-24) [30], which comprises 24 items across four dimensions: self-efficacy (example item: “I believe I can analyze long-term problems and find solutions”); hope (example item: “Currently, I am achieving the work goals I have set for myself”); resilience (example item: “At work, I try to solve the problems I encounter no matter what”); and optimism (example item: “I always see the bright side of things in my work”). Each dimension comprises six items. All items are rated on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), and the total score is calculated by averaging the score of all items; higher scores reflect higher PsyCap. The PCQ-24 has shown good reliability and validity in previous studies [32, 41]. Cronbach’s alpha was 0.95 for the overall instrument; for the four dimensions (self-efficacy, hope, resilience, and optimism), Cronbach’s alphas were 0.833, 0.855, 0.801, and 0.808, respectively.

Career success

The Career Success Scale was used to assess work achievements and positive psychological feelings accumulated at work [12]. It contains 11 items across two dimensions: career satisfaction (five items; example item: “How satisfied are you with all your current career achievements?”) and career competition (six items; example item: “I am seen by my work organization as a valuable resource”). All items are rated on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The higher scores of the two questionnaires indicate a higher level of career success. This scale has been widely used in Chinese studies and has demonstrated high reliability and validity [13, 42]. In this study, Cronbach’s alpha was 0.952; for the dimensions of career satisfaction and career competition, Cronbach’s alphas were 0.917 and 0.909, respectively.

Data analysis

Statistical analyses were performed using SPSS 26.0 and Mplus 8.2. Before analysis, the data were examined for outliers, missing values, and normality. A total of 103 entries were considered invalid and removed from the analysis. This study used the expectation-maximization algorithm to fill in the missing data. To determine whether the data were normally distributed, we analyzed kurtosis and skewness coefficients and plotted a histogram [43].

Descriptive statistics and correlations were calculated using SPSS 23.0. The categorical variables were represented by frequencies (percentages), and the continuous variables were represented as means and standard deviations. Student’s t-test was used to compare the two groups, and a one-way analysis of variance was performed for multiple groups. Pearson’s correlation analysis was used to assess correlations.

Mplus 8.2 was used to analyze the SEM between LMX, PsyCap, and career success. Bootstrap confidence intervals (CIs) were used to determine whether the mediation effects were significant, based on 1,000 random samples [44]. An effect is considered significant if the CIs do not include a zero [45, 46]. All study variables were standardized before the SEM analyses. Significance (two-tailed) was set at \( p < 0.05 \).

Before testing the hypotheses, the Harman single-factor test method was used to test for common method bias (CMB). Confirmatory factor analysis showed that the single-factor model did not have a good model fit: \( \chi^2 = 7,945.058, df = 665, \) root mean square error of approximation (RMSEA) = 0.095, comparative fit index (CFI) = 0.782, Tucker-Lewis index (TLI) = 0.769, standardized root mean square (SRMR) = 0.067. The three-factor model had a good fit: \( \chi^2 = 3,755.655, df = 662, \) RMSEA = 0.062, CFI = 0.907, TLI = 0.901, SRMR = 0.034. The goodness-of-fit improved significantly, indicating that the measurement of different variables did not belong to the same factor (i.e., the study was not affected by CMB [47]).
Ethical considerations

The study protocol was approved by the Medical Ethics Committee of Hebei Medical University and was executed according to the ethical standards of the 1964 Declaration of Helsinki and its later amendments. All participants provided written informed consent.

Results

Participants' characteristics and distribution of career success

Table 1 presents nurses’ demographic and work-related characteristics and differences in career success. Significant differences in success were found in team size and position. Career success was the highest in small teams and declined as the size increased. Head nurses exhibited higher level of career success compared with clinical nurses.

Descriptive analysis and correlations

Means, standard deviations, and Pearson's correlations coefficients for all variables are presented in Table 2. Career success was significantly and positively correlated with LMX and PsyCap and its four dimensions. Career satisfaction and career competition were also positively correlated with LMX and PsyCap and its four dimensions. Further, LMX was significantly and positively correlated with PsyCap and its four dimensions. In summary, this study provides evidence for further hypothesis model tests. There was a positive correlation between career satisfaction and career competition, indicating that the two could be combined as a result of career success.

SEM of career success

The results of the correlation analysis compelled further study of the relationship between career success, LMX, and PsyCap. We used SEM to construct a mediation model and verify the hypothesis. The results of the SEM were as follows: χ²=51.186, df=12, χ²/df=4.266, GFI=0.988 (>0.9), RMSEA=0.052 (<0.08), SRMR=0.018 (<0.05), CFI=0.994 (>0.9), normed fit index=0.992 (>0.9), non-normed fit index=0.989 (>0.9), and TLI=0.990 (>0.9). The indicators met the requirements and the model fit well. The large chi-square degrees-of-freedom ratio was due to the large sample size [48]. For a large sample size, the chi-square degrees-of-freedom ratio is generally not used to judge the model fit [49].

For the mediation model test [45, 46], the procedure was divided into two steps. The first step involved testing the influence of nurses’ LMX on career success (see Figure 1): nurses’ LMX positively predicted their career

Table 1: Univariate analysis of general information and career success (n=1,221).

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>n, %</th>
<th>Career success (mean ± SD)</th>
<th>Career satisfaction (mean ± SD)</th>
<th>Career competition (mean ± SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>54 (4.42)</td>
<td>3.85 ± 0.60</td>
<td>3.86 ± 0.64</td>
<td>3.85 ± 0.59</td>
</tr>
<tr>
<td>Female</td>
<td>1,167 (95.58)</td>
<td>3.76 ± 0.66</td>
<td>3.76 ± 0.70</td>
<td>3.76 ± 0.66</td>
</tr>
<tr>
<td>t</td>
<td>0.98</td>
<td>0.98</td>
<td>0.93</td>
<td></td>
</tr>
<tr>
<td>Education level</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Junior college or below</td>
<td>230 (18.84)</td>
<td>3.81 ± 0.65</td>
<td>3.81 ± 0.69</td>
<td>3.81 ± 0.64</td>
</tr>
<tr>
<td>Bachelor's</td>
<td>974 (79.77)</td>
<td>3.76 ± 0.66</td>
<td>3.76 ± 0.70</td>
<td>3.76 ± 0.66</td>
</tr>
<tr>
<td>Master’s, or above</td>
<td>17 (1.39)</td>
<td>3.90 ± 0.75</td>
<td>3.88 ± 0.75</td>
<td>3.92 ± 0.80</td>
</tr>
<tr>
<td>F</td>
<td>0.96</td>
<td>0.71</td>
<td>1.10</td>
<td></td>
</tr>
<tr>
<td>Years of service in the current organization</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 1 year</td>
<td>54 (4.42)</td>
<td>3.75 ± 0.62</td>
<td>3.73 ± 0.64</td>
<td>3.76 ± 0.65</td>
</tr>
<tr>
<td>1–3 years</td>
<td>270 (22.11)</td>
<td>3.82 ± 0.63</td>
<td>3.82 ± 0.67</td>
<td>3.82 ± 0.63</td>
</tr>
<tr>
<td>3–5 years</td>
<td>221 (18.10)</td>
<td>3.69 ± 0.71</td>
<td>3.69 ± 0.76</td>
<td>3.68 ± 0.71</td>
</tr>
<tr>
<td>5–10 years</td>
<td>329 (26.95)</td>
<td>3.74 ± 0.67</td>
<td>3.77 ± 0.71</td>
<td>3.72 ± 0.68</td>
</tr>
<tr>
<td>More than 10 years</td>
<td>347 (28.42)</td>
<td>3.81 ± 0.63</td>
<td>3.79 ± 0.67</td>
<td>3.82 ± 0.63</td>
</tr>
<tr>
<td>F</td>
<td>1.71</td>
<td>1.15</td>
<td>2.37</td>
<td></td>
</tr>
<tr>
<td>Team size</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤10 people</td>
<td>71 (5.81)</td>
<td>3.94 ± 0.65</td>
<td>3.961 ± 0.693</td>
<td>3.93 ± 0.64</td>
</tr>
<tr>
<td>&gt;10–15 people</td>
<td>444 (36.36)</td>
<td>3.85 ± 0.66</td>
<td>3.850 ± 0.689</td>
<td>3.84 ± 0.66</td>
</tr>
<tr>
<td>≥15 people</td>
<td>706 (57.82)</td>
<td>3.70 ± 0.65</td>
<td>3.698 ± 0.693</td>
<td>3.70 ± 0.66</td>
</tr>
<tr>
<td>F</td>
<td>9.60c</td>
<td>9.51c</td>
<td>8.69c</td>
<td></td>
</tr>
<tr>
<td>Position</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Head nurse</td>
<td>110 (9.01)</td>
<td>3.92 ± 0.69</td>
<td>3.90 ± 0.72</td>
<td>3.94 ± 0.70</td>
</tr>
<tr>
<td>Ordinary nurse</td>
<td>1,111 (90.99)</td>
<td>3.75 ± 0.65</td>
<td>3.76 ± 0.69</td>
<td>3.79 ± 0.66</td>
</tr>
<tr>
<td>t</td>
<td>2.58a</td>
<td>2.14a</td>
<td>2.84a</td>
<td></td>
</tr>
</tbody>
</table>

*p<0.05, *p<0.01, **p<0.001. Significant numerical values displayed in bold.
Table 2: Descriptive statistics and correlations (n=1,221).

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean ± SD</th>
<th>Correlations, r</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>1 LMX</td>
<td>3.88 ± 0.72</td>
<td>-</td>
</tr>
<tr>
<td>2 PsyCap</td>
<td>3.80 ± 0.60</td>
<td>0.616⁵</td>
</tr>
<tr>
<td>2-1 Self-efficacy</td>
<td>3.80 ± 0.64</td>
<td>0.571⁶</td>
</tr>
<tr>
<td>2-2 Hope</td>
<td>3.77 ± 0.64</td>
<td>0.578⁶</td>
</tr>
<tr>
<td>2-3 Resilience</td>
<td>3.80 ± 0.66</td>
<td>0.546⁵</td>
</tr>
<tr>
<td>2-4 Optimism</td>
<td>3.86 ± 0.66</td>
<td>0.561⁵</td>
</tr>
<tr>
<td>3 Career success</td>
<td>3.77 ± 0.66</td>
<td>0.538⁵</td>
</tr>
<tr>
<td>3-1 Career satisfaction</td>
<td>3.77 ± 0.70</td>
<td>0.514⁵</td>
</tr>
<tr>
<td>3-2 Career competition</td>
<td>3.77 ± 0.66</td>
<td>0.530⁶</td>
</tr>
</tbody>
</table>

ªp<0.01.

![Figure 1](image1.png)

Figure 1: Structural equation model results for the influence of leader–member exchange on career success.

success (β=0.554, p<0.001). Thus, Hypothesis 1 was supported. The second step used bias-corrected nonparametric percentile bootstrap estimators to test the influence of nurses’ LMX on career success after adding the mediator variable (see Figure 2). After adding the mediator variable, PsyCap, nurses’ LMX positively predicted their PsyCap (β=0.628, p<0.001, 95 % CI [0.578, 0.677]; Table 3), and PsyCap positively predicted career success (β=0.920, p<0.001, 95 % CI [0.870, 0.962]; Table 3). Thus, Hypotheses 2 and 3 were also supported. Table 3 shows that neither the CI of LMX nor PsyCap on career success included a zero, indicating a significant mediating effect of PsyCap [45, 46]. A bootstrap test with 1,000 random samples was used to further test the mediating effect of PsyCap. The results revealed that the mediating effect was 0.578 (p<0.001). The 95% CI was [0.501, 0.640] (Table 4), excluding zero, indicating that the mediating effect was significant. Thus, Hypothesis 4 and the SEM results were supported.

![Figure 2](image2.png)

Figure 2: Structural equation model results of the mediation model.
Table 3: Analysis results of the path coefficients for the structural equation model.

<table>
<thead>
<tr>
<th>Model pathways</th>
<th>Bootstrap distribution</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Estimate(^{a})</td>
<td>SE</td>
</tr>
<tr>
<td>LMX → PsyCap</td>
<td>0.503</td>
<td>0.026</td>
</tr>
<tr>
<td>LMX → Career success</td>
<td>−0.021</td>
<td>0.024</td>
</tr>
<tr>
<td>PsyCap → Career success</td>
<td>1.007</td>
<td>0.034</td>
</tr>
<tr>
<td>PsyCap → Self-efficacy</td>
<td>1.000</td>
<td>–</td>
</tr>
<tr>
<td>PsyCap → Hope</td>
<td>1.019</td>
<td>0.019</td>
</tr>
<tr>
<td>PsyCap → Resilience</td>
<td>0.708</td>
<td>0.019</td>
</tr>
<tr>
<td>PsyCap → Optimism</td>
<td>0.438</td>
<td>0.020</td>
</tr>
<tr>
<td>Career success → Career competition</td>
<td>1.000</td>
<td>–</td>
</tr>
<tr>
<td>Career success → Career satisfaction</td>
<td>1.022</td>
<td>0.020</td>
</tr>
</tbody>
</table>

All analyses were controlled for team size and position. \(^{a}\)Unstandardized regression coefficients. \(^{b}\)Standardized regression coefficients. Lower and upper CIs are bias-corrected 95% CI.

Table 4: Direct and indirect effects of LMX on career success.

<table>
<thead>
<tr>
<th>Path</th>
<th>Effect</th>
<th>Share of the total effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct effect LMX → career success</td>
<td>−0.024</td>
<td>−0.043</td>
</tr>
<tr>
<td>Indirect effect LMX → PsyCap → career success</td>
<td>0.628 × 0.920=0.578</td>
<td>&gt;1</td>
</tr>
<tr>
<td>Total effect</td>
<td>0.554</td>
<td></td>
</tr>
</tbody>
</table>

LMX, leader–member exchange; PsyCap, psychological capital. The direct effect of clinical nurses’ LMX on their career success was not significant, and the indirect effect was significant. The size of the mediating effect indicates that it is a complete effect.

Discussion

We constructed an SEM of “social capital-PsyCap-career success” to investigate Chinese nursing teams and analyzing the factors and mechanisms of nursing teams’ career success. The results suggested that nurses’ PsyCap mediates the relationship between LMX and career success.

LMX, PsyCap, and career success of Chinese clinical nurses were all in the moderate-to-high range, which is consistent with previous findings [22, 32]. Among the PsyCap dimensions, optimism had the highest score, followed by self-efficacy, resilience, and hope. For career success, career satisfaction, and career competitiveness, the scores remained the same.

The career success of Chinese nurses varies significantly among different team sizes and positions, and the performance of career satisfaction and career competitiveness was consistent. A team with smaller scale corresponded with higher career success, likely due to the fact that smaller teams tend to demonstrate clearer team hierarchy and division of labor, closer social relations, well-functioning social support systems, and tacit interactions among team members [50]. These nurture nurses’ sense of belonging and career development. Head nurses demonstrated significantly higher levels of career success than clinical nurses. This can be attributed to several factors: head nurses enjoy better career development prospects, clearer career plans, and more successful experiences. They receive more social and hospital support, and have access to more social resources and training opportunities [13]. Notably, as the core management members of each department in the hospital, head nurses exhibit more comprehensive quality [51].

Clinical nurses’ LMX significantly and positively affected career success, which is consistent with the results of existing studies [22, 26]. The head nurse has the authority to allocate organizational resources. “Insiders” with high-quality LMX have access to more organizational resources and opportunities to communicate emotionally with the head nurse. Therefore, they are likely to become more enthusiastic about their work [50], which can contribute to career success. On the contrary, “outsiders” with low-quality LMX find it difficult to be appreciated by the head nurse and are rarely entrusted with important tasks; this may inhibit their career success and increase their turnover [21]. Clinical nurses’ PsyCap positively predicted career success, which is also in line with the previous findings [15]. On one hand, the four positive qualities of PsyCap play a significant role in influencing the success of clinical nurses. These positive qualities enable them establish a favorable work image and reputation.
This favorable work image and reputation, as a result, can open up more job opportunities and provide avenues for career development, ultimately enhancing the likelihood of achieving career success. On the other hand, clinical nurses face various challenges and difficulties, including long working hours, high level of work pressure, and emotional interactions with patients. However, possessing a confident and optimistic attitude can help them maintain a positive work motivation. Additionally, qualities such as resilience and hopefulness enable them to stay focused on their goals, handle work-related challenges effectively, and provide high-quality care to patients. This, in turn, contributes to their career success [31, 32].

LMX affected career success through PsyCap – PsyCap mediated the relationship between LMX and career success, supporting the SEM of “social capital-PsyCap-career success” that is internalized gradually. This finding is consistent with those of Liao et al. [26]. Firstly, in a high-quality LMX relationship, the head nurse establishes a positive working relationship with the nurses. This includes providing positive feedback and support, as well as creating opportunities for nurses to showcase their confidence and hope. Additionally, it allows nurses to develop their knowledge, skills, and experience, which serves as a solid foundation for career success. Secondly, appreciation and affirmation from head nurses could facilitate subordinate nurses’ positive work-related outcomes; however, this is not the only form of support necessary for career success. Compared with LMX, PsyCap is more important. Cloud [52] suggests that internalization can yield good social relationships and build strong connections. To achieve success, one can internalize the power gained from outside situations and exchanges. Accordingly, nurses can translate such positive energy into action through career planning [15].

Strengths and limitations of the work

This study had several limitations. First, we used cross-sectional data, and while the SEM results supported our hypotheses, causal relationships between the variables should be examined further, possibly through longitudinal studies. Second, the professional success of nurses is the result of a combination of factors. While we selected LMX and PsyCap, other relevant variables, such as personality and psychological traits, were ignored [36]. Future studies should consider the potential impact of these factors. Third, we employed convenience sampling in only two hospitals; however, a greater nationwide sample is necessary to ensure representativeness.

Conclusions

We analyzed the influence mechanism of LMX and PsyCap on the career success of Chinese clinical nurses from the perspective of social and PsyCap, and constructed an SEM of “social capital-PsyCap-career success” that is internalized gradually.

The impact of LMX on nurses’ career success should be considered in Chinese nursing management. Hospitals should consider the influence of head nurses on subordinate nurses, which allows head nurses to understand the impact of LMX on nurses’ career success, establish mutual trust with nurses, provide necessary resources and support to nurses, understand their personal needs and goals, and effectively utilize this social capital to reduce nursing staff turnover. At the same time, nursing managers should pay more attention to the impact of PsyCap on nurses’ career success and cultivate the positive PsyCap of nurses [53]. On one hand, fostering good interaction and a trusting relationship between head and subordinate nurses, while providing more resources and opportunities, can enhance nurses’ PsyCap. This, in turn, motivates them to take a proactive approach to carrying out their work tasks and ultimately leading to career success. On the other hand, a series of positive psychology lectures can be conducted to encourage nurses to build their self-confidence, improve their ability to deal with setbacks actively, cultivate their PsyCap, and motivate them to turn this positive energy into career success in a way that increases the stability of clinical nursing teams in China [13].

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Informed consent: Informed consent was obtained from all individuals included in this study.

Author contributions: All authors have accepted responsibility for the entire content of this manuscript and approved its submission.

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Data availability: The metadata and generated datasets of this study will be made available upon reasonable request from the authors.

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