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A Study on the Factors Influencing the Knowledge Hiding of Nurses in Chinese Public Hospitals: A Test of Mediating Effects Based on Psychological Ownership of Knowledge

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Abstract: Aim: It was designed to assess the current state of knowledge hiding behavior of nurses in Chinese public hospitals, to conduct an intensive study of the factors influencing nurses' knowledge hiding behavior and to construct a mediating effect model. Subjects and Methods: Quantitative cross-sectional descriptive design was used. A self-administered general information questionnaire was applied, and well-established scales included the Knowledge Hiding Scale, the Psychological Ownership of Knowledge Scale, the Job Insecurity Scale, and the Positive Emotional Climate in Teams Scale. Data was collected virtually by using the online Questionnaire Star. A non-probability, purposive sampling technique was used for a survey of 719 clinical nurses in Chinese public hospitals. Results: The total knowledge hiding score of 719 clinical nurses was (15.76±9.412). Clinical nurses' knowledge hiding behavior was positively correlated with psychological ownership of knowledge and job insecurity (r=0.574, P<0.01; r=0.309, P<0.01) and negatively correlated with positive emotional climate of the team (r=-0.194, P<0.01). Bootstrap test results showed that the 95% CI of the indirect effect of psychological ownership of knowledge between job insecurity and knowledge hiding was 0.075 to 0.186, with a significant mediating effect, which accounted for 55.31% of the total effect. Conclusion: Team emotional climate and job insecurity are influential factors in nurses' knowledge hiding behavior, where job insecurity has an indirect positive effect on knowledge hiding through psychological ownership of knowledge. Healthcare organizations can reduce the knowledge hiding behavior of clinical nurses and achieve knowledge sharing within the organization by breaking the psychological ownership of clinical nurses' knowledge and creating a multidimensional and safe work environment.

Keywords: Chinese Nurses, Knowledge Hiding, Influencing Factors, Mediating Effects

1. Introduction

Knowledge hiding had a long history in organizations, but it was not until 2012 that it was really taken to a theoretical level, defined as "the deliberate concealment and disguise of knowledge by knowledge holders in response to requests for knowledge from colleagues [1]. A survey showed that 76% of employees hide knowledge from their colleagues [2].

Employees believe that the organization does not own their intellectual property and cannot force them to pass on their knowledge to other members, and employees tend to hide knowledge rather than share it [3]. If the reasons for knowledge hiding among employees are not understood from their standpoint, corporate knowledge management practices often end up in failure. Knowledge hiding can damage the working relationship among colleagues, lead to mistrust among colleagues, reduce individual and organizational

performance, and very easily bring huge losses to the organizational team and even the unit enterprise.

Since the concept of knowledge hiding was proposed, scholars have conducted a lot of researches in terms of the concept, characteristics and mechanism formation of knowledge hiding [4]. However, the previous studies mainly focused on the knowledge hiding behaviors of enterprise employees and university teachers, and there were few studies on knowledge hiding behaviors in the healthcare field, i.e., the existing studies were mostly theoretical studies on the knowledge hiding behaviors of enterprise employees, and there was a lack of empirical research results that were in line with the reality of nursing staff in healthcare institutions.

With the development of medical science and technology and the deepening of health system reform, the competition in the medical market has become increasingly fierce, and the connotation of nursing work has been enriched and developed, and its knowledge and skill content has increased, making it a knowledge-intensive profession. Moreover, nursing work is a team work model that requires teamwork to effectively improve nursing efficiency and the quality of medical care services. The advantage of nursing work outcomes depends on effective knowledge management and organizational learning, and a successful knowledge management system relies on the individual behavior of nursing staff, especially the knowledge sharing behavior among nursing staff. If the knowledge sharing behavior is restricted in the organization, a knowledge gap will be created, which may directly lead to nursing work outcomes that are lower than organizational expectations, or even endanger physical and mental health.

The basic idea of social cognitive theory is that behavior is influenced by knowledge hidden behavioral affect (job insecurity) in turn by external environmental factors (knowledge attributes, organizational and interpersonal contexts), etc. Therefore, this study focuses the research object on nursing staff in public hospitals, contrasts and analyzes the level of knowledge hiding behaviors of nursing groups, and tries to investigate the factors and mechanisms influencing knowledge hiding behaviors of nursing staff in terms of their socio-demographic information, knowledge attributes (psychological ownership of knowledge), knowledge hiding behavioral emotions (job insecurity), and external contextual perceptions (positive emotional climate of the team).

2. Research Hypothesis

2.1. The Relationship Between Psychological Ownership of Knowledge and Knowledge Hiding

Knowledge is power, and nurses who have personal psychological ownership of knowledge in the organization tend to view knowledge as part of themselves, and psychological ownership of knowledge influences nurses' decisions on knowledge hiding behaviors. When faced with knowledge requests from knowledge seekers, nurses with stronger feelings of knowledge psychological ownership are more inclined to defend their knowledge territories and perform knowledge hiding to prevent knowledge leakage.

2.2. The Relationship Between Job Insecurity and Knowledge Hiding Behavior

Nurses engage in knowledge hiding because they fear that knowledge sharing will undermine their status, their exclusive right to knowledge gains, etc., and behind all this is actually job insecurity. Therefore, we believe that job insecurity will influence nurses' knowledge hiding behavior, and the stronger the job insecurity of nurses, the more they tend to hide knowledge.

2.3. The Relationship Between Positive Emotional Climate and Knowledge Hiding Behavior in Teams

Research has shown that positive organizational climate perception is an important inhibitor of knowledge hiding behavior; therefore, we can assume that positive team emotional climate inhibits the generation of knowledge hiding behavior [5].

3. Materials and Methods

3.1. Sampling and Sample Size

Participants came from four public hospitals in China. The inclusion criteria were (a) obtaining a nursing license; (b) working in clinical nursing (including clinical nursing and nursing management positions); and (c) informed consent and voluntary participation in this study by the survey participants. The exclusion criteria were (a) leave of absence during the survey; (b) study away for further training.

3.2. Instrumentation

3.2.1. General Information Questionnaire

Prepared by the researcher himself, including socio-demographic information such as age, gender, education, title, marital status, and years of work.

3.2.2. Knowledge Hiding Scale

Developed by Connelly et al [1], it contains three dimensions of excusing hiding, pretending hiding, and reasonable hiding, with a total of 12 entries, using a Likert 5-point scale. The Cronbach's α values for the three dimensional scales are 0.723, 0.817, and 0.848, respectively, and the total Cronbach 's alpha coefficient was 0.976 [6], and the Cronbach's alpha coefficient measured in the pretest of this study was 0.931.

3.2.3. Psychological Ownership of Knowledge Scale

This study used the psychological ownership of employee knowledge scale developed by Peng [7] based on the improvement of the psychological ownership questionnaire developed by Van Dyne and Pierce [8], which has a Cronbach's alpha value of 0.876. The pre-test of this study measured Cronbach's alpha coefficient of 0.961. 's alpha coefficient was 0.961.

3.2.4. Job Insecurity Scale

This study used the Job Insecurity Scale developed by Sanman Hu [9], which includes two dimensions of qualitative job insecurity and quantitative job insecurity, with a total of nine entries. The scale uses the Likert 7-point scale, with higher scores indicating higher levels of job insecurity. The Cronbach's alpha coefficient of the scale is 0.939 [10]. The Cronbach's alpha coefficient of this scale in this study was 0.942.

3.2.5. Team Emotional Climate Scale

This study used the Team Emotional Climate Scale developed by Xiaoyu Liu [11]. The scale consists of two second-order factors (team positive emotional climate and team negative emotional climate), in which higher scores of positive emotional climate indicate better team emotional climate and higher scores of negative emotional climate indicate worse team emotional climate. In this study, the positive mood dimension of the team was selected to be measured, with a total of 8 items, using the Likert 5-point scale. The Cronbach's alpha coefficient of the scale was 0.82 [12]. The Cronbach's alpha coefficient measured in the pretest of this study was 0.961.

3.3. Statistical Methods

In this study, SPSS 26.0 was used to complete the descriptive statistical analysis of the samples and variables as well as the reliability test of the scale; the quantitative data were expressed as ($\bar{x} \pm s$), the counting data were expressed as n (%), t-test was used for comparison between two groups, one-way ANOVA was used for comparison between multiple groups, and Pearson correlation analysis was used for correlations; SPSS PROCESS 3.4 Macro program was adopted for the analysis of mediating effects, and differences were considered statistically significant at $P < 0.05$.

4. Results

4.1. Descriptive Statistics and Pearson Correlation Analysis of Each Scale

Table 1. Comparison of knowledge hiding scores among 719 nurses with different demographic characteristics.

		n	%	Score	t/F	P
Gender	Male	26	4.8	15.85±6.786	0.049	0.961
	Female	693	95.2	15.75±9.500		
Age	≤25	128	17.80	16.43 ±9.796		
	26∼30	220	30.60	15.77±9.540		
	31∼35	241	33.52	15.12±8.976	0.543	0.711
	36∼45	71	9.87	16.38 ±9.198		
	≥46	59	8.21	16.08±10.204		
Marriage	Married	511	31.2	15.99±10.258		
	Unmarried	183	64.6	15.09±7.037	0.613	0.542
	Divorced	25	3.4	15.84±5.836		
Education	Secondary School	2	1.2	19.00±9.899		
	Junior college	196	40.2	16.42±11.507		
	Undergraduate	512	58.3	15.36 ±8.408	2.500	0.058
	Master and above	9	0.3	23.00±10.642		
Title	Nurse	144	31.4	15.58 ±8.617		
	Nurse practitioner	350	48.7	16.12±10.227		
	Supervisor Nurse	166	12.1	14.96±7.889	0.705	0.589
	Deputy Chief Nurse	55	7.5	16.60±10.514		
	Director Nurse Practitioner	4	0.3	12.00 ±0.000		
Position	Nurse	589	81.92	15.99±9.692		
	Nursing team leader (including teaching secretary, etc.)	74	10.29	14.46 ±8.623		
	Head Nurse	54	7.51	15.09±7.180	0.788	0.501
	Department head nurse and above	2	0.28	12.00 ±.0.000		
Years of work in this unit	<1	47	6.54	16.87±8.179		
	1~3	127	17.66	15.23±8.102		
	4~6	82	11.40	15.71 ±9.626	0.314	0.869
	7~10	163	22.67	15.54 ±9.304		
	>10	300	41.72	15.94±10.119		
Number of people in the department	≤10	8	1.11	16.13 ±5.987		
	11~15	68	9.46	14.50±6.127		
	16~20	151	21.00	15.73±10.497	1.274	0.279
	21~30	131	18.22	14.58 ±7.865		
	≥30	361	50.21	16.42 ±9.975		

Table 2. Descriptive statistics and Pearson correlation analysis for each variable.

Scale	Score	Knowledge hiding	Psychological ownership of knowledge	Job insecurity	Positive emotional climate of the team
Knowledge hiding	15.76±9.412	1.000	.574*	.309*	-.194*
Psychological ownership of knowledge	4.43±2.676	.574*	1.000	.323*	-.184*
Job insecurity	28.97±12.878	.309*	.323*	1.000	-.309*
Positive emotional climate of the team	34.08±6.119	-.194*	-.184*	-.309*	1.000

* $P<0.01$

4.2. The Effects of Psychological Ownership of Knowledge, Job Insecurity, and Team Emotional Climate on Nurses' Knowledge Hiding Behavior

Multiple regression analysis was used to explore whether psychological ownership of knowledge, job insecurity, and team emotional climate could predict nurses' knowledge hiding. In the first step, psychological ownership of knowledge was included in the equation, and the results showed that psychological ownership of knowledge positively predicted nurses' knowledge

hiding (β=2.018, $P<0.01$) and explained 32.9% of the variance in nurses' knowledge hiding behavior ($P<0.01$); in the second step, job insecurity was included in the equation, and the results showed that job insecurity positively predicted nurses' knowledge hiding (β=0.101, $P< 0.01$), explaining 1.7% of the variance in nurses' knowledge hiding behavior ($P < 0.01$); the third step included team emotional climate in the equation, and the results showed that the predictive effect of team emotional climate on nurses' knowledge hiding behavior did not reach a significant level. (Table 3)

Table 3. Multiple regression analysis of psychological ownership of knowledge, job insecurity, and team emotional climate on nurses' knowledge hiding.

Predictor variables	First step (β)	Second step (β)	Third step (β)
Psychological ownership of knowledge	2.018**	1.861**	1.841**
Job insecurity		0.101**	0.089**
Positive emotional climate of the team			-0.092**
R2	0.329	0.346	0.349
F	351.754**	189.527**	127.979**
△R2	0.329	0.017	0.003
△F	351.754**	18.644**	3.539*

* $P<0.1$, ** $P<0.01$

4.3. Mediating Effect of Psychological Ownership of Knowledge Between Job Insecurity and Knowledge Hiding Among Nurses

The SPSS-PROCESS macro plug-in was used to conduct a mediation test to directly verify the mediating effect of knowledge psychological ownership in the relationship between job insecurity and knowledge hiding because there

were no variables that were statistically different from knowledge hiding in the general data. Bootstrap test results showed (Table 4) that the indirect effect of knowledge psychological ownership in the relationship between job insecurity and knowledge hiding had a 95% CI was 0.075 to 0.186, with a significant mediating effect, and the mediating effect accounted for 55.31% of the total effect.

Table 4. Mediation model test of job insecurity.

	Effect Value	Boot Standard Error	95%CI	Relative Effect Value	P
Total effect	0.226	0.026	0.175～0.277		<0.01
Direct effect	0.101	0.023	0.055～0.147	44.69%	<0.01
Indirect effect	0.125	0.029	0.075~0.186	55.31%	<0.01

5. Discussion

People are always actively trying to acquire, maintain, and protect their limited and valuable resources, and any potential or actual loss of resources is a threat to the individual. Hobfoll defines resources as certain characteristics, conditions, energies, and other things that make individuals feel valuable, or ways of acquiring them [15]. Knowledge is an important intellectual resource, the acquisition and application of which contributes to the understanding and practice of people. Knowledge hiding is an active negative interpersonal

interaction behavior that protects one's resources. The influencing factors of knowledge hiding involved in previous studies are mainly reflected in three levels: individual factors, organizational factors, and knowledge attribute factors [16]. Individual psychological ownership of knowledge is a psychological sense of personal ownership of knowledge, and there is an influence of individual psychological ownership of knowledge on knowledge hiding [17]. At the organizational level, the perception of job insecurity triggers negative emotions such as pain, frustration, and anger, and the emotional climate is highly perceived in teams, so job insecurity and emotions are bound to have far-reaching effects

on team activities, such as influencing their work attitudes and changing their behavior [18]. Therefore, this study postulates that job insecurity and team emotional climate will have an impact on nurses' knowledge hiding behaviors.

Knowledge psychological ownership as a common perception of knowledge by individuals in organizations, how to help organizations break employees' psychological ownership of knowledge can not only reduce knowledge hiding behaviors but also promote the generation of new knowledge in communication collision. Job insecurity is not only a perceptual psychological judgment arising from the fear of losing a job or an important job characteristic, but also a psychological emotion arising from the fear of losing a job. Unlike other professions, the job insecurity of clinical nurses also includes concerns about their own safety. Therefore, it is recommended that the creation of a safe working environment for clinical nurses should take into account the physical and psychological safety of individuals in conjunction with their professional characteristics. Secondly, nursing works in a team work mode and requires teamwork to effectively improve the efficiency of nursing and the quality of medical and nursing services. Thus, it can be seen that a positive emotional atmosphere in the team can not only reduce the knowledge hiding behavior of clinical nurses, but also be an effective measure to promote the long-term development of the hospital.

6. Conclusion

The results of this study showed that the total score of knowledge hiding behavior entries of clinical nurses was (15.76 ± 9.412), which was lower than the score of the survey of 211 nursing staff on knowledge hiding behavior by Jiating Song [13] et al. This may be because there were more nursing team managers and researchers in their study, while there were fewer nursing staff with higher education and higher titles in this study. The results of the univariate analysis showed that none of the sociodemographic factors such as age, gender, education, title, marital status, and years of work had a statistically significant effect on the knowledge hiding behavior of clinical nurses (P>0.05). The results of correlation analysis showed that clinical nurses' knowledge hiding behavior was positively correlated with psychological ownership of knowledge and job insecurity (r=0.574, P<0.01; r=0.309, P<0.01) and negatively correlated with team positive emotional climate (r=-0.194, P<0.01), which showed that psychological ownership of knowledge and job insecurity had positive predictive effect, and team positive emotional climate has a negative predictive effect on clinical nurses' knowledge hiding behavior, suggesting that the stronger clinical nurses' sense of ownership of knowledge, the stronger their sense of professional insecurity, and the weaker team positive emotional climate, the more likely they are to adopt knowledge hiding behavior.

This study found that both psychological ownership of knowledge and job insecurity had predictive effects on clinical nurses' knowledge hiding behaviors. The intermediate effect test showed that clinical nurses' job insecurity both directly influenced knowledge hiding behavior and indirectly influenced it through psychological ownership of knowledge, and the proportion of the intermediate effect to the total effect was 55.31%, which was significant. In other words, the higher the level of job insecurity, the higher the level of psychological ownership of knowledge, and thus the greater the effect on clinical nurses' knowledge concealment behaviors. Job insecurity refers to individuals' feeling that their resources are threatened [14], and clinical nurses with high job insecurity are more sensitive to the gain or loss of knowledge in the face of knowledge requests. Therefore, in the presence of job insecurity, they will enhance their perception and control of their knowledge and thus tend to choose to hide it in order to alleviate the physical and psychological stress caused by job insecurity. Psychological ownership of knowledge is an individual's perception of the importance of the knowledge resources they possess, and when clinical nurses are in a higher state of job insecurity, they are more likely to seize the perception, control and possession of their own knowledge.

References

[1] CONNELLYCE, ZWEIGD, WEBSTERJ, etal. Knowledge hiding in organizations [J]. Journal of Organizational Behavior, 2012, 33 (1): 64-88.

[2] Pan Wei. Research on knowledge hiding of knowledge-based team members [D]. Harbin Institute of Technology.

[3] Zhang Xiaofeng, Xi Youmin. Research on the influence mechanism of ethical leadership on employee knowledge hiding [J]. Soft Science, 2016, 30 (10): 96-99.

[4] He P, Jiang C, Xu Z, et al. Knowledge hiding: current research status and future research directions [J]. Frontiers in psychology, 2021, 12: 748237.

[5] Ma Bei. Research on the mechanism of over-qualification feeling on employees' knowledge hiding behavior [D]. Huazhong University of Science and Technology, 2019.

[6] Wang Chengjun, Xie Wanwin. The influence of organizational motivational climate on employees' knowledge hiding behavior [J]. Science and Technology Progress and Countermeasures, 2021 (21): 101-107.

[7]   Peng H. Why and when do people hide knowledge. Journal of Knowledge Management, 2013, 17 (3): 398-415.

[8]   Van Dyne L, Pierce J L. Psychological Owner-ship and Feelings of Possession: Three Field Studies Predicting Employee Attitudes and Organizational Citizenship Behavior [J]. Journal of Organizational Behavior, 2004, 25 (4): 439-459.

[9]   Hu, Sanman, Zhong, Bin. An empirical analysis of employees' job insecurity in enterprises [J]. Psychology, 2010, 30 (2): 79-85.

[10]   Zhang YH, Pang D, Chen D, et al. The mediating effect of internal motivation between nurses' job insecurity and job performance [J]. Journal of Nursing Management, 2020, 20 (9): 609-613.

[11]   Liu, X. Y., Härtel, C. E. J., et al. The Workgroup emotional climate scale: Theoretical development, empiricalvalidation, and relationship with workgroup effectiveness [J]. Group Organization Management, 2014, 39 (6): 626–663.

[12]   Li SH, Yang LP, Zhang SF, et al. A study on the impact of internal and external emotional communication of nurses on their mental health level [J]. Chinese Journal of Practical Nursing, 2017, 33 (24): 1899-1903.

[13]   Song JATING, Luo HUIFANG, Chen Q, et al. Correlation analysis of nursing staff's knowledge hiding behavior and innovation ability [J]. Journal of Nursing, 2021, 36 (13): 43-47.

[14]   Qian Ying. The influence of employees' job insecurity on knowledge hiding behavior and its management strategies [D]. Huazhong Normal University, 2020.

[15]   Hobfoll S E. Conservation of Resources: A New Attempt at Conceptualizing Stress. American Psychologist, 1989, 44 (3): 513-524.

[16]   Li, Hua-Li. Research on the mechanism of the role of knowledge ownership perception on knowledge hiding by knowledge-based employees [D]. Northwestern University, 2018.

[17]   Pan W, Zhang QP. Research on the mechanism of the effect of perceived knowledge ownership on knowledge hiding - an analysis based on the perspective of knowledge power [J]. Research and Development Management, 2016, 28 (03): 25-35+46.

[18]   Shi F, Wang ZQ, Yuan SJ. Paradoxical experience of superior-subordinate exchange relationship and knowledge hiding: Based on paradoxical amplification theory [J]. China Human Resource Development, 2021, 38 (11): 94-105.