



Original Article

The relationship between leader-member exchange and intention to stay in Korean nurses: Focusing on the mediating role of compassion satisfaction

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ABSTRACT

Background & Aim: Recently, there has been a growing interest in the nursing shortage. Although the number of nursing school has been increased and refreshment programs for inactive nurses have been run, the lack of nurses is still a common problem in Korea. Considering the importance of nurses' role in hospitals, it is important to investigate how to reduce turnover rates. This study aimed to investigate the mediating role of compassion satisfaction on the relationship between leader-member exchange (LMX) and intention to stay in Korea.

Methods & Materials: A cross-sectional study design was used. Data were collected from 131 nurses from three university hospitals in South Korea. A demographic data form, LMX-7 scale, compassion satisfaction of the professional quality of life scale, and the nurses' retention index were used to collect data.

Results: Our results indicate that LMX has a positive effect on compassion satisfaction and intention to stay and compassion satisfaction has a positive effect on the intention to stay. In addition, compassion satisfaction was found to mediate the impact of LMX on the intention to stay.

Conclusion: The present study is significant in that it confirms the relationship between LMX and intention to stay and the mediating role of compassion satisfaction. The nursing managers should pay attention to find ways to improve LMX and compassion satisfaction in hospitals in order to increase nurses' intention to stay.

Introduction

The lack of nurses is a problem that has continuously been pointed out in Korea. To resolve this problem, the number of students admitted to nursing faculties has increased from approximately 12,000 students in 2008 to approximately 19,000 students in 2017, leading to an annual average of 16,000 nurses educated per year in the past five years; however, the number of staffing nurses in healthcare institutions remains low. In 2017, there were 3.5 nurses for 1,000 people, which is approximately half of the OECD average at 6.5 (1). Despite the increase in the number of students admitted to nursing faculties, nurses' shortage can be found in the high turnover rates. According to Hospital Nurses Association data in Korea (2), the average turnover rate among nurses as of 2018 was 13.9%. The lack of

clinical nurses has led to financial losses in hospitals as a result of hiring new nursing staff (3), and the lack of experienced nursing staff can lead to a decrease in nursing quality, thus, requiring efforts to reduce turnover rates in nurses.

Leader-member exchange (LMX) is a concept that focuses on the interactions between leaders and members, different from the traditional perspective of leadership, which focuses on leaders' unilateral influence (4). The LMX theory focuses on interactions and is based on the assumption that each member forms a qualitatively different relationship with their leader, instead of a common perception of a leader's leadership by the same unit (5). Members with close interactions with leaders enjoy a wider scope of permissions in their work, retain their leaders' trust in unofficial relationships (6), and have a low turnover intention (7). In previous studies on nurses, nurses who had high perceived LMX levels experienced higher job satisfaction

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levels and job engagement (8,9) and had the low turnover intention (9,10). Based on these existing research results, we can infer that LMX is related to the intention to stay.

Compassion satisfaction refers to a positive set of emotions experienced by professionals in jobs that assist people as they assist those injured or in pain (11). As nursing is performed through interaction with patients, compassion satisfaction among nurses is presumed to be important from providing quality nursing (12). According to an analysis of 18 studies on compassion satisfaction among nurses, compassion satisfaction was found to influence nurses' negative emotions in the nursing delivery process. It was found to mitigate burnouts as well as increase job satisfaction (13). Among the factors that constitute the quality of life among professionals, including compassion satisfaction, compassion fatigue, and burnout (11), burnout was reported to reduce the intention to stay at a job (14). It was related to nursing turnover (13,15), whereas compassion satisfaction lowered the risks associated with burnout. A report that analyzed domestic studies on compassion satisfaction noted the potential relationship between the intention to stay and compassion satisfaction, recommending the need for relevant research (13).

The evidence is scarce, studying a direct link between LMX and compassion satisfaction. The nurses' work environment has a positive relationship with compassion satisfaction and has mitigating effects on burnout, mediated by compassion satisfaction (16). Aside from the physical environment, nurses' working environment also includes the emotional environment, comprised of factors such as nursing managers' leadership, support for nurses, and supportive relationship with physicians, considering that the leader's support induces compassion satisfaction (11).

In Korea, only 49.6% of licensed nurses work as nurses in healthcare institutions (1). Studies on the turnover among nurses generally cover turnover intention, and only two studies covered the leadership of head nurses (17). With the changing times, society

also demands different styles of leadership. Therefore, this study aims to identify the relationship between LMX and intention to stay focusing on the mediating role of compassion satisfaction. Ultimately, this study could contribute to formulating intervention methodologies to overcome the nurse shortage.

Methods

In this study, a cross-sectional design was applied. The participants included registered nurses working in three tertiary hospitals in Seoul, Korea. A simple random sampling technique was used to recruit the number of nurses needed to complete the study. The inclusion criterion was full time registered nurses at wards.

To calculate the minimum sample size, on the basis of a 3.1.9.2 program for multiple regression with an alpha level of 0.05, a power of 0.90, and a medium effect size, 131 individuals were needed. Questionnaires were administered and collected after getting approval from the ethical committee (CUIRB-2018-0028). All nurses interested in participating were given an explanation of the survey, advised of their rights, and assured of their personal data confidentiality. All participants provided written informed consent before participation in this study. We administered 145 questionnaires and collected 140 of them (96.6%). After eliminating incomplete questionnaires, we used 132 questionnaires for our final analysis. Data were conducted between July 18 and August 10 in 2018.

LMX was measured using the LMX-7 developed by Scandura and Graen (18). It was translated into Korean by Heo and Lee (8). This unidimensional scale consists of 7 questions. All items are measured using a 5-point Likert scale. The total scores range from 7–35. Higher total scores suggest a higher level of LMX. Cronbach's alpha was .86 in the original research and .89 in the Korean translation. In the current study, Cronbach's alpha was .89.

Compassion satisfaction was measured using a subscale of the professional quality

of life scale (ProQoL) (11). Only compassion satisfaction subscale was used in the current study. This subscale, originally developed in English, was translated into Korean for use in the current study. All items are measured using a 5-point Likert scale. The total scores range from 10–50, where higher total scores suggest a higher level of compassion satisfaction. Cronbach's alpha was .75 and .73 in the original and the current study, respectively.

The intention to stay was measured using the nurses' retention index (NRI) developed by Cowin (19). We received the Korean version from Cowin (19). This unidimensional scale consists of 6 questions. All items are measured using an 8-point Likert scale. The total scores range from 8–48. High scores indicate a greater intention to stay. Cronbach's alpha was .97 in the original research. In the current study, Cronbach's alpha was .92.

We used SPSS IBM 25.0 in the analysis of our data. Frequencies, percentages, mean, and standard deviation values were calculated. Pearson's correlation coefficient analysis was used to determine the correlations among variables. Cronbach's alpha reliability scores were calculated to test the internal consistency of the scales. Prior to conducting the main analyses, normality assumptions were met based on skewness ranging from -0.04 to -0.24 and kurtosis, ranging from -0.94 to 0.05. We checked independent variables for multicollinearity. The tolerance was 0.51, over 0.1, and the variance inflation factor (VIF) was 1.96, under 10, confirming that there was no problem in multicollinearity between independent variables.

Multiple regression analysis was conducted to examine the influence of LMX and compassion satisfaction on intention to stay. We tested according to the method by Baron and Kenny (20). The first step tested the association between the independent variable (LMX) and the mediator (compassion satisfaction). The second step tested the association between the independent variable (LMX) and the dependent variable (intention to stay). The

third step tested the model with both the dependent variable and mediator predicting the outcome variable. In this multiple regression model, the path between the independent and dependent variables was also tested to determine whether this was reduced to zero (total mediation) or reduced by a significant amount (partial mediation) (Figure 1). The Sobel significance test (23) was used to examine the subject variability and setting characteristics of LMX and intention to stay on compassion satisfaction.

Results

The mean age of the participants was 28.35 years (SD=5.21). The majority of the participants (96.2%, n=127) were female, and ninety-four were unmarried (71.2%). Of the participants, over half (58.3%, n=77) had a bachelor's degree. More participants worked at a medical unit (68.9%, n=91) than at a surgical unit (31.1%, n=41). Sixty-nine (52.3%) had 1–5 years of work experience as nurses. Fifty-three (40.2%) had a monthly income of 3 million–3.5 million won. Ninety (68.2%) were working in their dream department (Table 1).

The participants' mean of LMX, compassion satisfaction, and nurses' retention index scores were established as 3.22 (SD=0.74), 2.98 (SD=0.60), and 4.74 (SD=1.62), respectively. There was a significant relationship between LMX and compassion satisfaction ($r=.70, p<.001$), and the nurses' retention index ($r=.72, p<.001$). There was also a significant relationship between compassion satisfaction and nurses' retention index ($r=.78, p<.001$) (Table 2).

Table 3 shows the results of mediation role. In step 1, LMX significantly predicted compassion satisfaction ($\beta=.70, p<.001$). In step 2, the results showed that LMX significantly predicted nurses' retention index ($\beta=.72, p<.001$). In step 3, compassion satisfaction was included in the model, and there was a significant reduction in the relationship between LMX and nurses' retention index ($\beta=.35, p<.001$). The results of the Sobel test indicated that compassion satisfaction mediated the effects of LMX on

nurses' retention index ($Z=6.51, p<.001$). The role of compassion satisfaction as a mediator between LMX and nurses' retention index indicated a partial effect of

LMX related to nurses' retention index. In other words, compassion satisfaction seems to decrease the effect of LMX on nurses' retention index.

Table 1. General characteristics (N=132)

Variables	Categories	N (%) or M±SD
Age (year)	Average	28.35±5.21
	<25	27(20.5)
	25-<30	65(49.2)
	30-<35	23(17.4)
	≥35	17(12.9)
Sex	Female	127(96.2)
	Male	5(3.8)
Marital status	Married	38(28.8)
	Unmarried	94(71.2)
Educational status	Associate degree	34(25.8)
	Bachelor degree	77(58.3)
	Above master	21(15.9)
Work units	Medical	91(68.9)
	Surgical	41(31.1)
Working years as a nurse	<1	13(9.8)
	1-<5	69(52.3)
	5-<10	23(17.4)
	≥10	27(20.5)
Monthly income (10,000 won)	<250	17(12.9)
	250-<300	47(35.6)
	300-<350	53(40.2)
	≥350	15(11.3)
Wanted department	Yes	90(68.2)
	No	42(31.8)

Table 2. Degree and correlation among variables (N=132)

Variables	M±SD	Leader-member exchange	Compassion satisfaction
		r(p)	
Leader-member exchange	3.22±0.74	1	
Compassion satisfaction	2.98±0.60	.70(<.001)	1
Nurses' retention index	4.74±1.62	.72(<.001)	.78(<.001)

Table 3. Results of Mediation Role (N=132)

Step		B	SE	β	t	Adj. R ²	p
Step 1	LMX → CS	0.82	0.07	.70	11.20	.49	<.001
Step 2	LMX → NRI	1.36	0.11	.72	11.94	.52	<.001
Step 3	LMX, CS → NRI						
	1) LMX → NRI	0.65	0.13	.35	4.88	.67	<.001
	2) CS → NRI	0.87	0.11	.54	7.59		

Sobel test: $Z=6.51, p<.001$

Adj.R²=Adjusted R-squared; LMX=Leader-member exchange; CS=Compassion satisfaction; NRI=Nurse's retention index

Discussion

Nurse shortage cannot be regarded as a problem exclusive to the healthcare sector as it also impacts public health. Amidst a chronic nurse shortage, this study was attempted to find methods to improve nurse turnover. It was found that LMX has a positive effect on compassion satisfaction. LMX is a concept that encompasses the work domain and human connections and loyalty to each other; despite relatively poor work skills, the presence of a bond between the head nurse and the nurses can lead to high levels of exchange (22). Nurses with high perceived LMX can comfortably share their opinions with head nurses, believe that they have the support of the head nurses, and can perform their job functions in an accepting environment (5). Furthermore, they experience stronger problem-solving tendencies and can maintain their composure throughout their work, which also seems to influence compassion satisfaction, defined as positive emotions experienced throughout the process of caring for patients. In an existing study of nurses in the ICU, head nurses' communication competence and cooperative attitudes were found to be associated with the compassion satisfaction among nurses (23), thereby supporting the results of this study.

This study confirmed LMX to be a relevant factor to compassion satisfaction is meaningful in terms of the quality of life among nurses. Considering most of the respondents were in the '20s and had working experiences less than five years in our study, they might need a milestone to survive in the unfamiliar hospital environment. The positive interaction with head nurses might affect nurses' compassion satisfaction, which could increase the quality of life among Korean nurses. In the future, we believe that additional research on nurse turnover rate less than five years is required to identify the relationships of the variables that were not covered in this study and to confirm their effects.

In this study, LMX is associated to stay. This means that LMX can be a factor that

can decrease nurse turnover. Existing studies have reported that nurses with high perceived LMX are engaged in their work tasks, have a strong sense of belonging in terms of work, and have a low turnover intention, opting to remain in their organizations (8,9). Furthermore, when head nurses take interest and care for the staff nurses with sincerity, the staff nurses then do not attempt to find new jobs and experience higher intention to stay at their present hospital (24), which is likely why LMX was found to be a factor relating to intention to stay in this study. LMX items ask the head nurse to know what the respondents are going through and what they want, recognize their potential, solve a problem and have an effective working relationship. These supportive relationships might contribute to increase the intention to stay in the hospitals among nurses. Although a large proportion of nurses resign due to difficulties associated with marriage, childbirth, and 3-shift nursing work, 32.8% were found to resign as a result of job maladaptation and being transferred to other hospitals, according to a report by the Hospital Nurses Association on the turnover rationale for Korean nurses (2). As these issues can be mitigated if the head nurses actively help resolve job-related issues among nurses and develop emotional bonds with them, we can expect that strategies to raise LMX can lower nurse turnover. Therefore, it is important to identify LMX-related factors and develop interventions for improving LMX based on the findings.

Our study's mediating model reveals that compassion satisfaction partially mediates the relationship between LMX and intention of stay. These results indicate that given the same levels of LMX, the level of compassion satisfaction can change the intention of retention, which in turn suggests that improving compassion satisfaction can lower turnover. Existing studies have also indicated that high levels of compassion satisfaction reduced emotional and physical burnout and allowed for continuous work (11), leading to reduced turnovers (13). In a concept analysis study of compassion

satisfaction, predisposing factors for compassion satisfaction were found to be the nurses' sense of calling, resilience, the development of coping mechanisms, and a supportive environment (25). Another study on the nurses at Korean care homes also indicated that managers' efforts to take an interest in employee welfare, such as working hours and wages, and to induce cooperation, were related to compassion satisfaction (26). This study also found that LMX is a relevant factor in compassion satisfaction. As we described above, LMX items ask the extent of the relationship between the head nurse and respondents. According to previous studies, nurses who have higher interaction with a leader in the unit showed higher job satisfaction levels and job engagement and had a wider scope of permission in their work (6,8,9). This positive interaction might contribute to increase compassion satisfaction among nurses. In the future, we believe that it is important to find factors associated with compassion satisfaction, develop programs for such factors, and confirm the effects of such factors on the nurses' compassion satisfaction, intention to stay, and turnover reduction.

Limitations

As mentioned in the manuscript, this study was conducted at three tertiary hospitals in Korea. Thus, it is recommended to replicate the study in different areas to increase the study results' generalization. Further, we performed a cross-sectional study, which cannot better understand causality between variables. Thus, a longitudinal study is suggested for future research.

Conclusion

The present study is significant because it confirms the relationship of LMX on the intention to stay and the mediating role of compassion satisfaction. This suggests the importance of leaders' roles in nursing organizations' management and presents the need to consider the quality of relationship

formation with head nurses when assigning staff nurses. Therefore, this study confirms that the interaction of head nurses with staff nurses is important and can increase the intention to stay among Korean nurses. Within this, the role of mediating compassion satisfaction is significant, ultimately influencing their intention to stay.

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