Original Article

Effects of Mediating Model-Based Nursing Intervention on Nurse Retention and Employee Engagement in Organizational Culture

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ABSTRACT

Objective: To evaluate the impact of a mediating model-based nursing intervention on employee engagement, organizational culture, and nurse retention.

Study Design: Quasi-experimental study

Place and Duration of Study: This study was conducted at the CDA Hospitals in Islamabad and Pakistan Institute of Medical Sciences from 1st June 2024 to 30th November 2024.

Methods: 110 nurses were selected. The 12-week intervention began with a pre-assessment, followed by data collection after completion of the intervention.

Results: The significant improvements across all three domains. Employee engagement increased with mean of 24.24 ± 3.907, organizational culture improved with mean of 24.84 ± 2.293, and nurse retention rose with mean of 18.80 ± 2.789. Negative Z-test values (employee engagement: -9.135; organizational culture: -9.123; nurse retention: -9.258) indicated statistically significant ($p<0.05$) differences between pre- and post-intervention scores.

Conclusion: The mediating model-based nursing intervention effectively enhanced employee engagement, strengthened organizational culture, and improved nurse retention. These findings highlight the potential of structured interventions to create a more supportive and sustainable work environment for nurses.

Key Words: Employee Engagement, Organizational Culture, Nurse Retention, Model-Based Nursing Intervention

INTRODUCTION

The healthcare industry is complex and dynamic, making effective management critical for cultivating positive organizational culture, enhancing employee engagement, and retaining skilled staff.[1] High turnover rates, staffing shortages, and migration of healthcare professionals pose serious challenges, particularly in developing countries like Pakistan.[2] Between 2019 and 2021, more than 1.1 million skilled workers left Pakistan, including over 40,000 physicians, while the number of registered nurses remains alarmingly low (116,659 for a population exceeding 225 million).[3] This shortage highlights the urgent need for strategies that strengthen workforce stability and prevent the loss of vital expertise.

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Nursing is a demanding profession marked by high burnout and turnover. Globally, developed nations mitigate workforce gaps by recruiting from underdeveloped countries, further straining Pakistan's healthcare system.[4] Employee retention, defined as an organization's ability to maintain a stable workforce, is closely tied to job satisfaction, supportive work environments, and professional development opportunities.[5] Research indicates that low retention rates negatively impact organizational culture, management practices, and ultimately patient care.[6]

Employee engagement, the emotional commitment of workers to their organization, is equally crucial. In nursing, engagement directly influences job satisfaction, performance, and patient outcomes.[7] Positive organizational culture, supportive leadership, and opportunities for growth are central to sustaining engagement.[8] Model-based nursing interventions provide a structured approach to addressing these challenges by reducing burnout, fostering teamwork, incorporating mentorship, and creating a sense of community.[9] Such interventions not only improve retention but also enhance organizational efficiency and patient care quality.[10]

Despite their proven benefits internationally, model-based interventions remain underutilized in Pakistan, where traditional retention strategies focus mainly on

financial incentives.[11] This gap underscores the need to evaluate the effectiveness of structured, model-based approaches in improving engagement, culture, and retention within the Pakistani healthcare context.[12]

Therefore the present study was conducted to assess the effect of mediating model-based nursing interventions on employee engagement, organizational culture, and nurse retention.

METHODS

The effect of a model-based nursing intervention on organizational culture, employee engagement, and nurse retention were evaluated using a quasi-experimental pre and post study design. The Pakistan Institute of Medical Sciences and CDA Hospital Islamabad, two governmental hospitals in the city, served as the study's sites. Nurses, head nurses, and supervisors from both institutions were studied. From the research settings, 110 people were recruited as a non-probability purposive sample. Nurse supervisors, head nurses, and male and female nurses with ages ranging from 25-50 were enlisted. The study excluded nurses who worked in private hospitals, had less than a year of experience, or lacked a bachelor's degree in nursing. First, approval was given by the Research Ethical Committee (REC) of the University of Lahore (Letter No. 169/24) dated 8/3/2024. The nursing superintendents of the hospitals in question were then asked for their consent. Data from the individuals was gathered using a structured questionnaire. Overall, seven questions about employee engagement (EE1–EE7), six questions about organizational culture (OC1–OC6), and five questions about employee retention (ER1–ER5) were posed. Before any data was collected from the study participants, their signed informed consent was obtained. The goal of this investigation was also conveyed to them. All of the participants were introduced. The pre-assessment was completed in May of 2024. Following the pre-assessment, a 12-week educational program utilizing model-based nursing intervention was offered. This educational program was developed with the help of different books, internet material and professional leaders experts. The educational intervention consisted of 4 sessions where each session consisted of 50-60 minutes. The participants were divided in to 5 groups (each group consisted of 20-25 participants). Each session had specific objectives regarding organizational culture role in nurses' engagement and employee retention. This was done through different learning and teaching methods like brain storming, lecture, discussion and handout, Use illustrated media e.g. video, pictures and lab top. To conduct this educational program, the participants were approached in groups on the day of their availability at their respective departments. The educational interventions plan started from June, 2024 till August 2024, where each study participant received

all the education sessions one by one each month during their duties. The data was used and analyzed through SPSS-21. Since the data on the effects of organizational culture, employee engagement, and nurse retention were not normally distributed, the non-parametric Wilcoxon sign rank test was employed.

RESULTS

The demographic information of the participants, such as age, gender, work status, education, religion, and work experience, provides a comprehensive picture of their backgrounds. Among the participants, 40.9% were in the 36–40 age range, 33.6% were between and 31 and 35 years and 16.4% were 25-30 years. Only a lesser percentage of people over 40 (9.1%) were over 40 years. Additionally, the largest job group was staff nursing with 53 individuals, or 48.2%, a lesser number (15 participants, 13.6%) were supervisors, whereas 38.2% (42 persons) were head nurses. The majority of participants 71 people, or 64.5% of the sample identified as Muslims. Of the 39 participants, the remaining 35.5% identified as Christians. The educational backgrounds of the participants also varied; 58 people, or 52.7% of the total, had earned a Bachelor of Science in Nursing (BSN) after completing post-registered nursing. With 48 individuals, or 43.6% of the total, the second-largest group held a generic BSN.

Table No.1: Demographic information of the participants (n=110)

Demographic characteristics	No.	%
Age (years)		
25-30	18	16.4
31-35	37	33.6
36-40	45	40.9
> 40	10	9.1
Gender		
Males	37	33.6
Females	73	66.4
Job Status		
Staff Nurse	53	48.2
Head Nurse	42	38.2
Supervisor	15	13.6
Religion		
Muslim	71	64.5
Christian	39	35.5
Education		
Post RN BSN	58	52.7
Generic BSN	48	43.6
MSN/MPH/MSPH	4	3.6
Job Experience (years)		
<5	7	6.4
6-10	21	19.1
11-15	54	49.1
>15	28	25.5

Four individuals, or 3.6% of the total, had a more advanced degree, such as a Master of Science in Public

Health (MSPH) or Master of Science in Nursing (MSN). There were 37, or 33.6%, male participants and 73, or 66.4%, female participants. Moreover, the largest group, with 54 individuals, or 49.1% of the sample, had 11–15 years of experience. Those with over 15 years of experience came next (28, or 25.5%). While a smaller portion of the sample had 6–10 years (19.1%), just 6.4% (7 participants) had 5 years or less of experience (Table 1).

Figure 1 displays the levels of employee engagement for a group of 110 workers both before and after an intervention. It appears that the intervention had a positive impact on overall engagement based on changes in engagement categories before and after the assessment. First, 62 employees, or 56.4% of the workforce, were categorized as having "Moderate Disengagement", 37 employees, or 33.6% displayed "Neutral Engagement", eleven employees, or 10% were found as "Moderate Engagement". Importantly, none of the employees were classified as "High Disengagement" or "Fully Engaged" before the intervention. After the intervention, there was a notable rise in the overall level of engagement. No employees were left in the "Moderate Disengagement" group. While the percentage of employees with "Neutral Engagement" fell to 19% (21 employees), the bulk of employees (72 employees, or 65.5%) shifted into the "Moderate Engagement" group. Additionally, 15.5% of employees, or 17.5% of the workforce, achieved the "Fully Engaged" level, indicating a high degree of commitment and job satisfaction.

Table 2: Engagement, culture and retention test values before and after intervention. (N=110)

Value	Pre-intervention	Post-intervention	Mean Rank	Z test	P-value
Employee Engagement	15.43±3.889	24.24±3.907	55.50	-9.135b	0.000
Organizational Culture	15.06±3.645	24.84±2.293	55.50	-9.123b	0.000
Nurse Retention	13.07±3.250	18.80±2.789	55.50	-9.258b	0.000

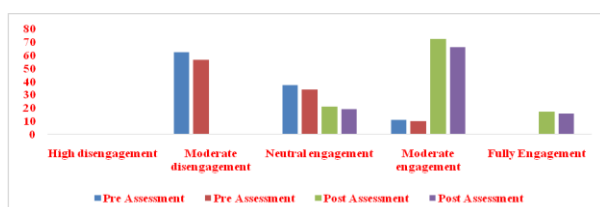Wilcoxon Signed rank test with p<.05 value as significant

Figure No. 1: Employee engagement score before and after the intervention (n=110)
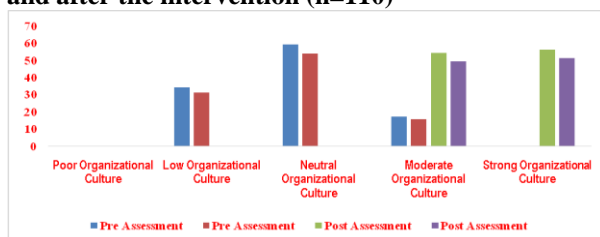

Figure No. 2: Organizational culture score before and after the intervention (n=110)
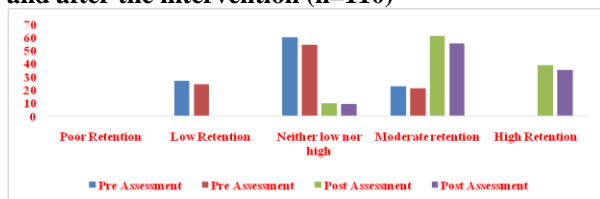

Figure No. 3: Nurse retention score before and after the intervention (n=110)

Significant improvements in the way organizational culture was viewed were evident in Figure 2, which compares the organizational culture scores of 110 participants before and after an intervention. Prior to the intervention, the majority participants gave the organizational culture a "Low" or "Neutral" rating.

With 30.9% of participants (34 persons) expressing a "Low Organizational Culture" and the majority, 53.6% (59 employees), reporting a "Neutral Organizational Culture," over half of the employees thought the culture was neither very supportive nor positive. Additionally, those who received a "Moderate Organizational Culture" grade from 17 employees, or 15.5% of the participants, the fact that no employee gave the organizational culture a "strong" or "poor" rating during pre-assessment. After the intervention, a discernible shift toward more favorable perceptions of the organizational culture was noted. It appears that the intervention was successful in addressing these mid-to-lower attitudes because no employees were left in the "Low" or "Neutral" groups. Rather, 49.1% of participants (54 employees) indicated a "Moderate Organizational Culture". Furthermore, 56 employees, or 50.9% of the workforce, rated the organizational culture as having a "Strong Organizational Culture," which means they had a positive view of its ideals, support system, and atmosphere.

Figure 3 shows that the majority of nurses first determined that their retention status was "Low Retention" or "Neither Low nor High." Specifically, "Low Retention," was indicated by 27 nurses, or 24.5% of the participants. The retention status of 60 nurses, or 54.5% of the sample, was classified as "Neither Low nor High". Additionally, compared to those who reported low retention, 23 nurses, or 21% of the total, rated their retention as "Moderate Retention," which is a more favorable evaluation. Importantly, before the intervention, none of the nurses were categorized as having "High Retention" or "Poor Retention". After the intervention, there was a discernible shift in the

retention ratings. None of the participants remained in the "Low Retention" group, demonstrating how effectively the intervention addressed any issues that might have caused dissatisfaction. The percentage of nurses who rated their retention status as "Neither Low nor High" also fell sharply to just 9.1% (10 nurses). On the other hand, 61 nurses (55.5%) reported "Moderate Retention," meaning that majority of them felt more comfortable in their employment. Remarkably, 35.5% of nurses (39 participants) were classified as "High Retention" following the intervention, suggesting a significant improvement in their perception of commitment and job satisfaction.

Table 2 displays test results for employee engagement, corporate culture, and nurse retention before and after a 110-person intervention. Notable statistical gains are shown by all three criteria. The mean ratings were originally a little low, with staff engagement at 15.43±3.889), organizational culture at 15.06±3.645 and nurse retention at 13.07±3.250. Following the intervention, there were noticeable increases in all three locations. Employee engagement rose to a mean of 24.24±3.907, while organizational culture improved to a mean of 24.84±2.293. Nurse retention also showed a significant improvement, with a mean score of 18.80±2.789. The matching p-values, which were all 0.000 and far lower than the conventional significance threshold of 0.05, validated the statistical significance of these alterations.

DISCUSSION

This study demonstrated that mediating model-based nursing interventions significantly improved employee engagement, organizational culture, and nurse retention. Engagement rose consistently from the start to the conclusion of the intervention, confirming that structured programs addressing both personal and workplace resources can effectively enhance nurses' commitment.[16] Similar improvements in engagement and commitment have been reported in Jordanian and Chinese hospital settings, where interventions led to higher post-test engagement compared to control groups.[17] However, not all studies found consistent results, with some reporting limited or no improvements in engagement over time.[18]

The present findings also highlight a marked improvement in organizational culture, with more than half of the nurses shifting to the "strong culture" category post-intervention. This aligns with earlier evidence that workplace resources, leadership, and individual strengths directly influence employee well-being and engagement.[19,20] Other studies similarly reported that interventions improved nurses' perceptions of their work environment, job satisfaction, and quality of care.[21] Moreover, supportive organizational culture has been linked to leadership style, particularly situational leadership, which can strengthen employee performance.[22,23]

Nurse retention also improved substantially following the intervention, with 35.5% of nurses moving into the "high retention" category. These results are consistent with international studies showing that retention strategies whether through rural training, turnover reduction programs, or inter-professional team interventions can lower turnover and increase satisfaction.[24-26] The Job Demands-Resources (JDR) model further supports these outcomes by emphasizing the importance of balancing demands with adequate resources to sustain motivation and engagement.[27] While most studies support the positive impact of structured interventions, some findings remain inconsistent. For example, research in Turkey suggested that organizational socialization models may only partially address new nurses' adaptation needs.[28]

Such variations highlight the complexity of workforce engagement and suggest that intervention effectiveness may depend on contextual factors such as program design, duration, and organizational support. Overall, the current study reinforces that model-based nursing interventions provide a practical and effective strategy for enhancing engagement, strengthening organizational culture, and improving retention. By addressing burnout, fostering teamwork, and promoting supportive leadership, these interventions contribute to a more sustainable and efficient healthcare system.

Recommendations

➢ Healthcare organizations use comparable structured interventions in light of these findings in order to increase employee engagement, retain nurses, and create a positive workplace culture.

➢ Regular evaluations of Organizational culture and employee engagement levels should be carried out to find possible areas for development and modify treatments as necessary.

➢ By fostering employee growth and job satisfaction, institutions can further increase engagement and retention by offering mentorship and continuous professional development initiatives.

➢ Additionally, establishing open lines of communication and feedback can allow nurses to voice their issues and help create a more favorable work environment.

➢ Last but not least, sustaining the beneficial benefits seen in this study and fostering long-term workforce stability can be achieved by continuing a continuous improvement approach with regular assessments of intervention outcomes.

CONCLUSION

All significant metrics, such as organizational culture, nurse retention, and staff engagement, significantly improved as a result of the intervention. Following the intervention, there were notable gains in nurse retention as well as organizational culture and staff engagement. The significantly negative values for all three metrics (employee engagement: -9.135, organizational culture: -9.123, nurse retention: -9.258). The intervention was highly effective in increasing staff engagement, retaining nurses, and fostering a more positive work environment.

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