Iran J Public Health, Vol. 53, No.9, Sep 2024, pp.2160-2162

Letter to the Editor

Structural Equation Modeling of Clinical Adaptation in Newly Registered Nurses

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(Received 17 May 2024; accepted 23 May 2024)

Dear Editor-in-Chief

The average turnover rate of nurses is 15.4%, with newly registered nurses experiencing a higher turnover rate of 21.8%. Reasons for turnover include transfers to other hospitals (17.3%) and difficulties adapting to tasks (17.1%) (1). These data highlight the importance of preventing turnover and strengthening the field adaptation of newly registered ones rather than solely focusing on increasing the number of nurses. The results of Park's doctoral research (2) on the development of structural model to identify factors affecting the clinical adaptation for new nurses were very surprising. I'm writing to share these results quickly.

The test population comprises nurses with 2 to 12 months of clinical experience working in upper-level general hospitals located South Korea. This study selects a sample of 250 subjects. One of the tools utilized in this study is the Korean version of the Practice Environment Scale of Nursing Work Index, whose reliability and feasibility were verified by Cho et al (3), turnover intention developed by Lawler and later modified by Park (4), self-efficacy is measured using a tool developed by Sherer et al adapted by Yang (5). Then, stress coping is a measure based on the "Way of Stress Coping Checklist" developed by Lazarus and Folkman (6) and modified by Park (7).

Data was collected from October 20 to October 27, 2019. This study obtained approval from the research ethics consideration committee of the researcher's university (IRB NO. CNUH-2019-268).

The confirmatory factor analysis of the measurement model in this study found that the comparative fit index (CFI) and a Tucker-Lewis index (TLI) exceeded 0.9. The root mean square error of approximation (RMSEA) was 0.083, slightly exceeding 0.08. Thus, the model was modified using the modification index (MI). In the modified model, the MI between the measurement errors of X3, X4, and the measurement variables of the exogenous variable was 5.829. The covariance of error terms 13 and 14 was established to build a modified model. Consequently, the confirmatory factor analysis of the modified model has a CFI of 0.955 and a TLI of 0.927, exceeding 0.90, and the RMSEA stood at 0.080, confirming the goodness of fit. In addition, using the difference between the two models, a significance test was conducted, and the degree of freedom (df)

was 6.545(p = .011), confirming that the two models are different. Furthermore, the Q statistic fell by 0.099 while the CFI and TLI rose by 0.004 and 0.002, respectively. The RMSEA also decreased by 0.003, proving that the modified model is more suitable. Moreover, the confirmatory factor and reliability analyses of the modified model found that the standardized coefficient was between 0.588 and 0.960, above 0.50 (P< .001), demonstrating the suitability of the modified model.

In addition, Cronbach's α coefficients of all measurement variables were above 0.70 (23), indicating sufficient reliability. The AVE stood at 0.838–0.952, above 0.50, and the CR was 0.891–0.960, exceeding 0.70, confirming convergent validity. In addition, the latent $\sqrt{AVE}$ variable exceeded the correlation coefficient, proving discriminant validity. The goodness-of-fit of the hypothetical model, χ^2=100.497 (df = 43, P< .001), and the Q statistic was 2.337, less than 3.0. The CFI = 0.956 and the TLI = 0.931, exceeding 0.90. The RMSEA = 0.077, being less than 0.08. Finally, the Standardized Root mean Square Residual (SRMR) = 0.029, which is less than 0.08. Thus, the overall model goodness-of-fit reached a recommended level, and the hypothetical model was determined as the final model without further modification. The results of the structural equation test of the hypothetical model, found that 9 out of 12 paths in the hypothetical model were statistically valid, making the other three paths invalid. The SMC and path that explain the measurement variables of the endogenous variables are listed in Fig.1.

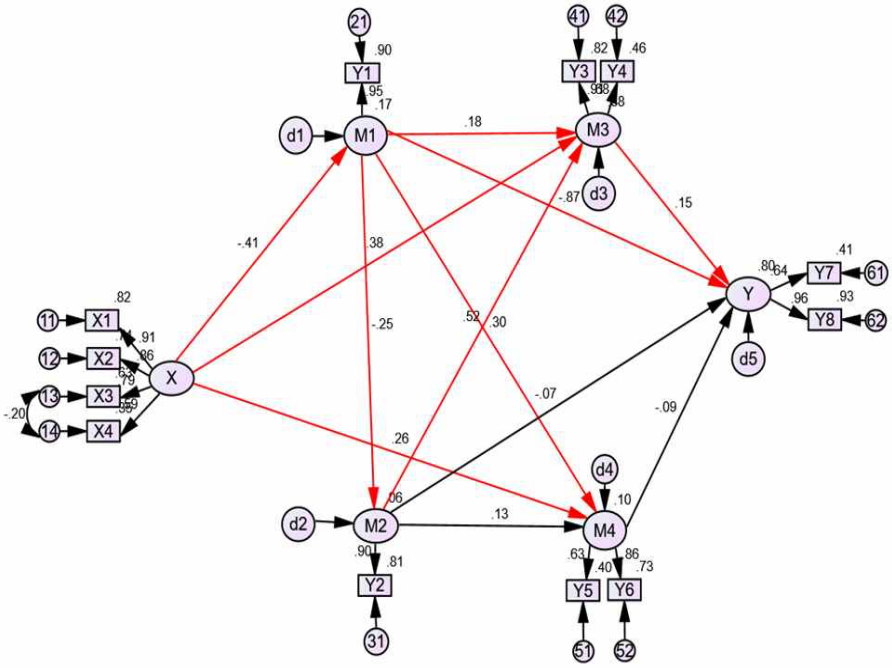

Fig. 1: Path of the final model

X: Nursing Work Environment; M1: Turnover Intention; M2: Self-Efficacy; M3: Active Coping; M4: Passive Coping; Y: Clinical Field Adaptation; x1: Operational engagement; x2: Quality care; x3: Ability of nursing manager; x4: Human & material resources; y1: Turnover Intention; y2: Self-efficacy; y3: Problem-focused coping; y4: Seeking social support; y5: Emotion-focused; coping; y6: Wishful thinking; y7: Adaptation of work;
y8: Assurance of work

The study findings underscore the significance of turnover intention and active coping as essential factors in the field adaptation of newly registered nurses. Hence, human resources management programs and policies tailored to nurses' tenure are needed to address the turnover intention of newly registered nurses. In addition, the coping styles of individual nurses need to be identified, and an on-site interest support program suitable to specific coping types needs to be conducted.

Conflict of Interest

The authors declare that there is no conflict of interests.

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