The Moderating Effect of Grit on Nursing Education Satisfaction and Readiness for Practice Among Nursing Graduates During COVID-19: A Cross-Sectional Study

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Abstract: This study addresses the challenges faced by nursing students in Korea during their transition from education to practice, particularly the impact of psychological factors, including grit. The COVID-19 pandemic has further complicated this transition, affecting both education satisfaction and readiness for practice. Grit, defined as perseverance and passion for long-term goals, may moderate the relationship between these factors. This study examined the role of grit in enhancing nursing students' readiness for practice in the context of the pandemic. A cross-sectional, descriptive design with secondary data analysis was employed. Participants included 147 nursing graduates from colleges across South Korea (89.8% women; mean age = 23.76, SD = 1.50), randomly selected using the bootstrapping method. Existing data were collected via an online survey using the Nursing Student Satisfaction Scale, the Short Grit Scale, and the Korean version of the Readiness for Practice Survey.

Among the subdomains of readiness, "learning experience" was scored the highest, while "professional responsibility" was scored the lowest. Although overall satisfaction with nursing education was high, scores were relatively lower in areas related to professional social interaction. Satisfaction with nursing education and grit were both positively associated with readiness for practice. Furthermore, grit significantly moderated this relationship. These findings suggest that nursing programs should incorporate structured crisis-response curricula—including virtual simulations, adaptive learning, and contingency plans—to enhance resilience in future emergencies. Faculty should be trained in crisis pedagogy, and clinical partnerships must be maintained. Additionally, targeted strategies to cultivate grit and professional identity, such as resilience training, goal setting, mentorship, and reflective practice, should be integrated throughout the curriculum. By addressing both affective traits and structural components, nursing education can better prepare students for confident and competent clinical practice amid uncertainty.

Keywords: COVID-19, Nursing education, Personality, Professional competence, Psychological resilience, Students

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Introduction

COVID-19 was a global public health crisis that affected all aspects of life, including social, economic, and political domains,[1] and significantly impacted education, including nursing education.[2] Face-to-face lectures and clinical practicums were restricted during the pandemic to protect the health of students and faculty,[3] creating uncertainties in the learning processes and outcomes for nursing students. These abrupt changes disrupted traditional learning pathways and limited clinical exposure, potentially hindering students' development of essential nursing competencies and reducing their readiness for real-world clinical practice. To address these gaps, the American Association of Colleges of Nursing (AACN) proposed a new competency-based education model in the Essentials: Core Competencies for Professional Nursing Education, which emphasizes knowledge integration, clinical judgment, interprofessional collaboration, and technological proficiency as core components of professional nursing education.[4] This shift reflects a growing recognition that nursing graduates must be equipped not only with technical skills but also with adaptability, communication skills, and the ability to make complex clinical decisions in dynamic healthcare settings. Moreover, nurse leaders emphasized the need for shared responsibilities between clinical settings and academic institutions to prepare the future nursing workforce.[4] The rationale for exploring how grit influences the connection between nursing education satisfaction and readiness for practice among nursing graduates stems from the unique challenges faced by students who completed their nursing education during the COVID-19 pandemic.

Prior research has established that nursing education satisfaction plays a crucial role in shaping graduates' readiness for clinical practice.[5] However, there is limited understanding of the factors that may strengthen or weaken this relationship. Given that nursing students who graduated during the pandemic encountered reduced hands-on training opportunities and the limitations of online learning, we hypothesized that individual personality traits, particularly grit, could influence how effectively educational satisfaction translates into readiness for practice.

Grit is a psychological trait that involves persistent effort and consistent passion for long-term goals, supporting individuals in overcoming obstacles and maintaining motivation under pressure.[6] Empirical evidence suggests that grit moderates the relationship between educational satisfaction and readiness for practice. Students with higher grit levels are better equipped to translate educational experiences into clinical competence, even when external challenges, such as limited clinical exposure during the pandemic, disrupt traditional learning pathways.[7] While these variables are relevant in general educational contexts, the COVID-19 pandemic presented a uniquely high-stakes environment where conventional teaching and learning strategies were significantly altered. This disruption presents a distinct context in which to explore how intrinsic traits, such as grit, may compensate for deficiencies in the educational environment and influence practice readiness. By focusing on this crisis-driven context, the study aimed to highlight how personal psychological resources interact with educational experiences under extreme constraints—findings that may be especially valuable for informing responses to future crises in nursing education.

Review of Literature

Readiness for practice refers to the attitudes and attributes that new nurses need to successfully adapt to the workplace.[8] In nursing, this is the extent to which nursing graduates possess the attitudes and competencies required for safe and effective practice, impacting critical aspects such as patient safety, teamwork, and professionalism.[9] Nursing students are deemed ready for practice when they bridge the gap between theory and practice and meet stipulated professional requirements.[10]

However, nursing students in their final year often perceive themselves as lacking in clinical knowledge and skills and face challenges in applying their education to clinical settings after graduation.[11] These challenges frequently lead to job dissatisfaction and high turnover rates. For instance, a survey by the Korean Nurses Association[12] revealed that the turnover rate of novice nurses within their first year increased sharply to 52.4% in 2023 from 35.2% in 2016, with job maladaptation cited as the primary reason (36.2%). These challenges can be addressed by improving nursing students' readiness for practice, thereby enhancing their adaptability to clinical environments. Several factors influence readiness for practice. On a personal level, students with positive relationships with peers, strong leadership skills, maturity, and professional ambition exhibit higher readiness for practice. According to a systematic review by Lee et al.,[14] personal characteristics, such as demographic factors (e.g., age, gender), prior healthcare experience, and emotional intelligence, significantly influence nursing students' readiness for practice. Older students and those with clinical exposure demonstrate higher preparedness levels. On an institutional level, factors such as curriculum characteristics, educational goals, faculty commitment, and students' educational needs are closely associated with readiness for practice.[14,15]

Student satisfaction is a critical indicator of the quality of higher education.[16] It reflects students' subjective evaluations of their academic, administrative, and facility-related experiences, impacting not only their trust in and perception of the institution but also their academic performance.[16] Recent studies in nursing education have identified key factors of satisfaction, including curriculum, teaching, professional social interaction, and learning environments.[17] Satisfied nursing students are more likely to acquire new knowledge, improve clinical skills, build professional profiles, and develop a positive outlook toward their future careers.[18-20] Conversely, low satisfaction has been linked to academic burnout, failure, and psychological issues such as anxiety or depression.[20] Despite its significance, limited research exists on the satisfaction of nursing students in South Korea, particularly in the context of the quality of nursing education.

Grit has been consistently linked to academic and professional success, as it enables individuals to sustain long-term effort and remain committed to goals despite experiencing setbacks, frustration, or monotony.[6] In nursing education, grit has been shown to predict academic success, self-directed learning competency, problem-solving abilities, academic resilience, clinical performance, and readiness for practice.[21,22] These findings underscore the importance of assessing nursing students' grit, as it enables them to overcome challenges and enhance their readiness for practice. Theoretically, grit can be understood as a psychological resource that allows nursing students to persist in the face of adversity and maintain sustained effort toward long-term goals. This characteristic enables students to effectively translate their satisfaction with educational experiences into actual readiness for clinical practice, even when faced with stress or unforeseen challenges.[23] In this way, grit moderates the relationship between nursing education satisfaction and readiness for practice by strengthening students' ability to apply their knowledge and skills in demanding real-world settings.[7] Students exhibiting higher levels of grit are more likely to demonstrate successful adaptation and maintain high performance, regardless of fluctuations in their satisfaction with the educational environment.[23]

As previously mentioned, grit is a psychological trait that enables nursing students to cope with academic and clinical challenges and sustain effort toward long-term goals.[22] Students with higher levels of grit may maintain greater readiness for practice even when their satisfaction with nursing education is low. Despite its theoretical relevance, limited research has explored the moderating role of grit in the relationship between nursing education satisfaction and readiness for practice. By addressing this gap,

the present study contributes to a deeper understanding of how psychological traits interact with educational experiences to influence clinical preparedness among nursing graduates.

Study Aim and Hypothesis

This study sought to explore how grit influences the relationship between nursing education satisfaction and readiness for nursing practice among graduates who completed their education during the COVID-19 pandemic. This study hypothesized that both satisfaction with nursing education and grit would be positively associated with readiness for nursing practice among COVID-19 nursing graduates, and that grit acts as a moderating factor in the relationship between nursing education satisfaction and practice readiness.

Methods

Design: This study utilized a descriptive cross-sectional design, with its reporting following the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) guidelines. This study is a secondary analysis of primary data collected by the authors as part of a broader investigation titled "Factors Related to Practice Readiness among Nursing College Graduates."

Sample and Setting: The target population was nursing college graduates in South Korea in 2023. The inclusion criteria for participants were individuals who graduated from nursing colleges in February 2023 and obtained their nursing licenses. Those who had started working in clinical practice were excluded from the study because institutional training could influence their readiness for practice.

Using G*Power 3.1, a sample size of 147 was determined for a moderated multiple regression analysis with an effect size of 0.09, a significance level of 0.05, and a power of 0.95. The effect size was established in accordance with the study by Zhang et al.[24] A total of 147 cases were randomly extracted from the original sample of 206 participants using the bootstrapping method available in SPSS software.

Ethical Considerations: Since this study utilized secondary data from the researcher's previous work, ethical approval was waived by the Institutional Review Board of Woosuk University (IRB No. WS-2023-43). The original data were collected anonymously without any personally identifiable information. All data were stored in encrypted, password-protected files on a secured institutional server and were accessible only to the principal investigator. The data were used exclusively for research purposes, and all procedures complied with relevant ethical guidelines.

Instruments: *The Sociodemographic Characteristics Questionnaire:* The general characteristics included sex, age, geographic location of the university, final grade point average (GPA) at graduation, and satisfaction with the nursing major, which was assessed by the question, "How satisfied are you with your major?" The participants were asked to respond using one of two options: not satisfied, or satisfied.

The Nursing Student Satisfaction Scale (NSSS): The NSSS developed by Chen et al.[17] was used to measure nursing education satisfaction. The NSSS consists of 30 items encompassing three subdomains—curriculum and teaching (14 items; e.g., "The nursing curriculum enhanced my ability to solve problems when caring for patients"), professional social interaction (9 items; e.g., *"The nursing faculty respected me"*), environment (6 items; e.g., "The equipment in the nursing lab was up to date")—along with one item assessing overall satisfaction (e.g., "My overall satisfaction with the Department of Nursing at my school is..."). Responses were measured on a 6-point Likert scale (1 = "Not satisfied at all" to 6 = "Very satisfied"). Scores for the total scale and its subdomains were computed as mean values, ranging from 1 to 6, with higher scores indicating greater levels of satisfaction with nursing education. The instrument was translated and culturally

adapted to Korean through a systematic process, including translation, back-translation, and expert review. The original reliability[17](Cronbach's alpha) was 0.96 in our unpublished study; in this study, it was 0.97.

The Short Grit Scale (GRIT-S): Grit was assessed using the GRIT-S developed by Duckworth et al.[25] and adapted to Korean by Lee and Son.[26] Lee and Son[26] ensured the validity of the instrument translation process by implementing translation, back-translation, and equivalence assessment procedures. They initially confirmed its reliability in high school students. Subsequent studies involving adolescents, university students, and nurses further validated the instrument's reliability and validity. Based on these findings, the instrument was deemed appropriate for use with nursing students and was selected for this study. The scale consists of two components: perseverance of effort (4 items) and consistency of interest (4 reverse-scored items, e.g., "New ideas and projects sometimes distract me from previous ones"). All eight items are rated on a 5-point Likert scale, ranging from 1 ("Not like me at all") to 5 ("Very much like me"). Scores for the total scale and its subdomains were computed as mean values, ranging from 1 to 5, with higher scores indicating greater levels of grit. The possible values ranged from 1 to 5. The original reliability[25] was Cronbach's alpha = 0.73-0.83, and in this study, it was 0.79.

The Korean version of the Casey-Fink Readiness for Practice Survey(K-RPS): Readiness for nursing practice was measured using the K-RPS, developed by Casey et al.[27] and validated by Lee et al.[9] The K-RPS includes four subdomains: clinical problem solving, professional responsibilities, learning experience, and professional preparation. The K-RPS consists of 20 items (e.g., "I am comfortable taking action to solve problems") rated on a 4-point Likert scale ranging from "Strongly disagree (1)" to "Strongly agree (4)." Both total and subdomain scores were calculated as mean scores, with possible values ranging from 1 to 4. This approach allowed for direct comparison across subdomains, with higher scores reflecting greater levels of readiness for nursing practice. Cronbach's alpha was reported as 0.69 in the original study,[2] and was 0.88 in the current sample.

Data Collection: The original data were collected from April 1 to May 30, 2023, through an online survey. A preliminary version of the survey was tested on ten fourth-year nursing students at University B to ensure clarity and comprehensibility. Recruitment involved posting a "Research Participant Recruitment" notice on the senior-year online bulletin boards of seven nursing colleges nationwide. Participants who met the inclusion criteria and consented to participate completed the survey and received a small online gift as compensation.

Data Analysis: Data were analyzed using SPSS 28.0 and PROCESS macro version 4.2. The analysis steps were as follows: the frequency, percentage, mean, and standard deviation were calculated to describe the participant characteristics. Before conducting a detailed analysis, the researchers ensured that all assumptions for each analytical method were met, including normality and homogeneity of variance for the independent t-test and one-way ANOVA, as well as the normality and homoscedasticity of residuals, autocorrelation, and multicollinearity for multiple regression analysis. Independent t-tests and ANOVA were used to assess the differences in readiness for practice across the groups. Pearson's correlation coefficient was used to examine the relationships between the variables. Hayes' PROCESS Macro-Model 1 was applied to assess the moderating effect of grit on the relationship between nursing education satisfaction and readiness for practice.[28] The variables were mean-centered, and the moderation effects were examined at mean and ±1 standard deviation levels. Bootstrapping (10,000 iterations) with a 95% confidence interval was employed to test the indirect effects.

Results

General characteristics

Among the participants, 132 (89.8%) were women, with a mean age of 23.76±1.50 years. The highest proportion of participants attended schools located in the Jyeonggi region, accounting for 46 individuals (31.3%). Regarding academic performance at graduation, 69 participants (46.9%) had a GPA between 3.5 and 3.9. Additionally, 83 participants (56.5%) reported being satisfied with their major **(Table 1).**

Table 1. Differences in nursing education satisfaction, grit, readiness for practice by characteristics (N = 147)

Characteristics	Categories	n (%)	Nursing education satisfaction			Grit			Readiness for practice		
			Mean	SD	t or F (*p*)	Mean	SD	t or F (*p*)	Mean	SD	t or F (*p*)
Sex	Men	15 (10.2)	4.25	0.97	−0.856	3.45	0.67	0.905	2.75	0.47	−0.861
	Women	132 (89.8)	4.42	0.80	(0.393)	3.30	0.66	(0.367)	2.83	0.36	(0.390)
Age (years)*	≤ 23	95 (64.6)	4.36	0.78	−0.764	3.31	0.65	−0.247	2.83	0.37	0.342
	24-30	52 (35.4)	4.46	0.88	(0.446)	3.34	0.68	(0.805)	2.81	0.39	(0.733)
University region	Seoul	17 (11.6)	4.37	1.01	2.214	3.29	0.63	1.614	2.67	0.53	1.424
	Gyeonggi	46 (31.3)	4.29	0.81	(0.070)	3.18	0.62	(0.174)	2.80	0.30	(0.229)
	Chungcheong	22 (15.0)	4.82	0.74		3.48	0.68		2.94	0.41	
	Jeolla	39 (26.5)	4.25	0.69		3.24	0.65		2.82	0.36	
	Gyeongsang/ Gangwon	23 (15.6)	4.43	0.90		3.52	0.69		2.85	0.35	
Final GPA	3.0-3.4	38 (25.9)	4.30	0.92	0.487	3.21	0.73	0.711	2.77	0.37	0.888
	3.5-3.9	69 (46.9)	4.45	0.83	(0.615)	3.36	0.59	(0.493)	2.86	0.40	(0.413)
	≥ 4.0	40 (27.2)	4.40	0.68		3.35	0.70		2.80	0.33	
Major satisfaction	Satisfied	83 (56.5)	4.76	0.72	7.480	3.42	0.67	2.160	2.92	0.37	4.130
	Not satisfied	64 (43.5)	3.89	0.68	(< 0.001)	3.18	0.63	(0.032)	2.68	0.33	(< 0.001)

Note * Age M±SD = 23.76±1.5; GPA = Grade point average

Description of major variables

Descriptive statistics for nursing education satisfaction, grit, and readiness for practice—including their subdomains—are presented in **Table 2.**

The analysis of the differences in nursing education satisfaction, grit, and readiness for nursing practice based on general characteristics revealed no significant differences by sex, age, geographic location of the university, or academic performance. However, significant differences were observed according to satisfaction with the nursing major. Nursing education satisfaction, grit, and readiness for nursing practice showed statistically significant variations based on major satisfaction **(Table 1).**

Table 2. Descriptive statistics of main variables (N = 147)

	Possible range	Actual range	Mean	SD
Nursing education satisfaction	1-6	2.10-6.00	4.34	0.80
Curriculum and teaching	1-6	2.29-6.00	4.45	0.81
Professional social interaction	1-6	1.44-6.00	4.15	0.91
Learning environment	1-6	1.67-6.00	4.28	0.95
Grit	1-5	1.75-5.00	3.29	0.66
Perseverance of effort	1-5	1.75-5.00	3.55	0.70
Consistency of interest	1-5	1.25-5.00	3.02	0.81
Readiness for practice	1-4	1.80-4.00	2.81	0.35
Clinical problem solving	1-4	1.80-4.00	2.92	0.39
Professional responsibilities	1-4	1.00-4.00	2.43	0.49
Learning experience	1-4	1.50-4.00	2.92	0.52
Professional preparation	1-4	1.00-4.00	2.82	0.64

Moderating role of grit

Before testing the role of grit as a moderator variable in the relationship between nursing education satisfaction and readiness for nursing practice, the relationships among these three variables were analyzed. As shown in **Table 3**, there were statistically significant positive correlations among these three variables.

The result from analyzing the moderating role of grit, using multiple regression analysis, showed that the Durbin-Watson statistic was 1.93, indicating no autocorrelation in the residuals of the regression model. The tolerance values for the variables ranged from 0.66 to 0.92, all of which were above 0.1, and the variance inflation factor (VIF) ranged from 1.08 to 1.55, all of which were below 10, suggesting no issues with multicollinearity. To examine the moderating effect of grit in the relationship between nursing education satisfaction and readiness for nursing practice, the variable of "major satisfaction," which had a significant difference on readiness for practice, was controlled as a covariate. The analysis was conducted using Model 1 of the PROCESS macro proposed by Hayes.[28]

Table 3. Correlations between main variables (N = 147)

	Nursing education satisfaction	Grit	Readiness for practice
	r		
Nursing education satisfaction	1		
Grit	0.273**	1	
Readiness for practice	0.560**	0.394**	1

Note. ** $p < 0.001$

As shown in **Table 4**, both nursing education satisfaction and grit had a direct positive impact on readiness for nursing practice ($\beta = 0.184$, $p < 0.001$, and $\beta = 0.139$, $p < 0.001$, respectively). Furthermore, grit moderated the relationship between nursing education satisfaction and readiness for nursing practice ($\beta = 0.095$, $p = 0.009$). **Figure 1** presents a graph illustrating the relationship between nursing education satisfaction and nursing practice readiness across groups with high and low levels of grit. Predicted values are plotted at the mean ±1 SD of grit. This suggests that for individuals with high grit, the impact of nursing education satisfaction on readiness for nursing practice is greater compared to those with low grit.

Table 4. Moderating effect analysis of grit in the relationship between nursing education satisfaction and readiness for practice

Variables	β	SE	t	p	95% CI	
					LLCI	ULCI
Nursing education satisfaction	0.184	0.037	5.014	< 0.001	0.111	0.256
Grit	0.139	0.038	3.671	< 0.001	0.064	0.213
Nursing education satisfaction*Grit	0.095	0.032	2.687	0.009	0.024	0.158
	$R = 0.59$, $R^2 = 0.35$, $F = 30.21$, $p < 0.001$					

Note. Adjusted "major satisfaction" variable; SE = Standard error; CI = Confidence interval; LLCI = Lower limit CI; ULCI = Upper limit CI

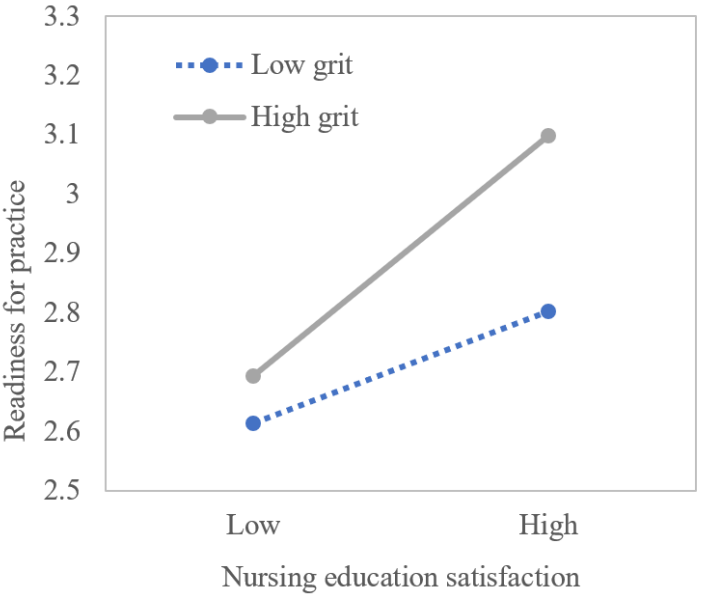

Figure 1. Moderating effect of grit on the relationship between nursing education satisfaction and readiness for nursing practice. All study variables were standardized. High/low level of nursing education satisfaction = M±1SD; High/low level of grit = M±1SD.

Discussion

This study aimed to examine and analyze nursing education satisfaction, grit, and preparedness for practice among nursing college graduates who experienced COVID-19. Additionally, it sought to determine the moderating effect of grit in the relationship between nursing education satisfaction and preparedness for practice.

Satisfaction with nursing education had an average score of 4.34 on a 1-6 scale, indicating that the participants were generally satisfied with their nursing education. However, when compared to the average score of 4.95 from a study by Chen and Lo[17] conducted across the United States, the score was somewhat lower. These findings may be attributed to cross-national variations in educational environments and quality, or the disruptions and adaptations in nursing education that the COVID-19 pandemic has brought about. Among the sub-factors, the learning environment had the highest score, suggesting that the learning environment is an essential factor in nursing students' satisfaction. The professional social interaction sub-factor had the lowest score, which may indicate a lack of interaction in the educational process or the need for qualitative improvements. This finding aligns with Tolyat et al.,[29] who asserted that nursing students experienced difficulties with clinical interactions and interactions with professors during the coronavirus outbreak. These results emphasized that nursing education should focus on improving the quality of interactions under shifting conditions, beyond merely theoretical learning.

The average grit score was 3.29 out of a 1-5 range. This finding was consistent with previous research, which has shown that nursing students in their third and fourth years tend to have higher grit scores.[30] Regarding the subscales of grit, the perseverance of effort (PE) subscale scored 3.55, whereas the consistency of interest (CI) subscale scored 3.02. A similar pattern was observed in a study of nurses, where the PE subscale scored 4.2 and the CI subscale scored 3.6.[31]

This suggests that nursing students scored lower in CI than in PE. Grit-related personality traits, such as perseverance and consistency, are commonly associated with positive outcomes, including adaptation and success, across various domains. Perseverance is closely linked to conscientiousness, a personality trait that promotes adherence to social norms, goal-directed behavior, and persistence.[32] Conversely, Duckworth argued that consistency in interest was more crucial for success.[6] However, Duckworth's concept of interest is criticized for not reflecting the subjective tendencies or fun that emerge from a situation. It has been suggested that the concept of "passion" should be reconsidered to include both intensity and persistence.[33] Therefore, further conceptualization and refined measurement of the subscales of grit are necessary in future research.

Readiness for practice scored an average of 2.81 on a 1-4 scale, which was above average but still suggested room for improvement. Among the sub-factors, learning experiences scored the highest, whereas professional responsibility scored the lowest. The low score in professional responsibility aligned with findings from Kim et al.,[34] which reported that nurses struggle with low ethical competencies and difficulties in ethical decision-making. These findings indicate that although nursing students demonstrate a certain level of clinical competence, their preparation in non-technical areas, such as ethical judgment, professional responsibility, and leadership, remains insufficient. To address this gap, nursing education should place greater emphasis on cultivating these essential professional competencies.

Regarding general characteristics, nursing students' readiness for practice differed based on their satisfaction with their major. Major satisfaction reflects an individual's subjective enjoyment and positive outlook towards their chosen field compared to their expectations for their career.[35] High major satisfaction has been linked to a clearer career direction, and students with higher satisfaction are more likely to make proactive efforts for their career.[35] To enhance nursing students' satisfaction with their major, it is essential to understand their motivations for selecting the major and provide guidance on various career paths after graduation.

Nursing education satisfaction was found to influence nursing practice readiness. According to previous research exploring the factors through which nursing education affects practice readiness,[7] integration of theory and practice, the clinical practice environment, and simulation-based education and environments were identified as influencing factors. To improve nursing education satisfaction, it is essential to integrate theoretical classes, practical lessons, and clinical practice sessions. Specifically, educators should adapt their teaching to reflect the rapidly changing clinical environments while focusing on the integration of theory and practice. Faculty could utilize faculty clinical training programs hosted by academic associations or clinical settings, which would allow for up-to-date education and direct observation in clinical practice. Furthermore, considering the limitations of clinical practice due to COVID-19 and the need for protection of patient rights, simulation-based education, which has recently gained attention, could serve as an effective alternative. However, it is essential to note that traditional simulation-based learning typically involves face-to-face interaction and team collaboration, which were restricted during the COVID-19 pandemic. In this context, virtual simulation platforms emerged as alternatives, allowing students to engage in clinical scenarios remotely.[36] Despite their benefits, virtual simulations also present challenges such as limited realism, reduced hands-on practice, and technological constraints. These limitations should be taken into account when evaluating the overall effectiveness of simulation-based education during crisis situations.

Grit was identified as a direct influencing factor on nursing practice readiness, particularly in the context of COVID-19 pandemic disruptions. Specifically, grit

acted as a moderating variable in the relationship between nursing education satisfaction and practice readiness, with higher grit levels associated with a stronger impact of nursing education satisfaction on practice readiness. It is important to note that this moderating effect may be more pronounced during crisis situations like the pandemic, where nursing students faced unprecedented challenges including increased stress, limited clinical opportunities, and rapid transitions to online learning. The extraordinary persistence required during COVID-19 may have amplified the role of grit compared to normal educational circumstances. Future research should investigate whether this moderating effect of grit remains consistent in non-crisis educational contexts or if it is uniquely influential during periods of disruption. This distinction is critical for developing targeted interventions that support nursing students' grit in various educational environments. This finding is consistent with previous studies,[21,37] which suggested that grit mediates or moderates relationships with self-directed learning competency, problem-solving skills, academic resilience, self-efficacy, clinical performance, and academic achievement. The moderating effect of grit can be theoretically explained through self-determination theory, which emphasizes the role of intrinsic motivation and personal resilience in the learning process. While education satisfaction may foster motivation, students with high grit are more likely to translate that satisfaction into actual practice readiness, especially under challenging conditions like the COVID-19 pandemic. It suggests that personal traits, particularly psychological resources such as grit, play a significant role in enhancing the effectiveness of nursing education. Grit, as a non-cognitive trait, serves as a driving force that enables individuals to persist in difficult tasks over an extended period.[6] It is important to believe that every student has the capability to succeed through perseverance and passion.[38] To develop or enhance grit, a change in mindset and growth are necessary, including self-belief, goal-setting, improved social connections, and the ability to regulate one's behavior, emotions, and thoughts.[6,22,30,39] When this mindset growth occurs, individuals begin to perceive challenges as opportunities for growth rather than obstacles to overcome. This results in constructive thinking and continuous action instead of being conquered by difficulties.[6,22,30,38] Additionally, educators need to understand students' grit, which should be considered in their teaching approach and responses to students.[40] For instance, knowing the level of a student's grit and encouraging its improvement can help students achieve their goals. Therefore, educational approaches that foster a grit culture, such as developing grit-enhancement programs, providing individualized feedback, and strengthening emotional support, are necessary.

Limitations

This study has several limitations. First, as a cross-sectional study conducted among nursing graduates, it is challenging to establish causal relationships and clearly identify the changes in nursing education satisfaction and practice readiness resulting from the coronavirus outbreak. Future studies should explore the long-term interactions between grit, nursing education satisfaction, and practice readiness using a longitudinal research design. Second, because this study was based on data collected from a specific university, generalizability may be limited. Third, the relatively small sample size may limit the statistical power to detect or generalize the moderating effect of grit. Lastly, this study measured nursing education satisfaction and readiness for practice as perceived by the participants, reflecting their subjective views. To obtain a more accurate evaluation, objective assessment methods should be added in future research to explore the relationship between these factors. In addition, this study focused solely on grit as a psychological factor influencing readiness for practice, without accounting for other potentially relevant variables such as resilience, stress, or

self-regulation. Since the COVID-19 pandemic was a crisis situation involving high levels of psychological strain, future studies should consider these confounding psychological variables to better understand their combined influence on nursing students' readiness for practice.

Conclusions and Implications for Nursing Education

This study highlights the significant roles of nursing education satisfaction and grit in enhancing graduates' readiness for nursing practice, particularly in the context of the disruptions caused by the COVID-19 pandemic. The finding that grit moderates the relationship between education satisfaction and practice readiness underscores the importance of fostering psychological resilience and perseverance among nursing students. Additionally, the lower satisfaction related to professional social interaction and the lowest readiness scores in professional responsibility suggest areas where nursing curricula may require further enhancement.

Based on the findings of this study, to prepare for future pandemics or crisis scenarios, nursing education programs should develop structured crisis-response curricula that include virtual simulation modules, adaptive learning platforms, and contingency plans for rapid shifts to remote or hybrid instruction. Faculty members should receive training in crisis pedagogy and virtual mentorship, and institutions should establish protocols to maintain the quality of clinical practicums through collaboration with healthcare institutions. Nursing education should incorporate targeted strategies that aim to foster grit and promote the development of professional identity throughout the nursing curriculum. Such strategies may include goal-setting workshops, resilience training, longitudinal mentoring programs, simulation-based learning, and reflective practice sessions that reinforce perseverance and long-term commitment to professional growth.

By addressing both affective traits such as grit and structural components of nursing education, educators can better prepare students to transition confidently and competently into clinical practice, even in the face of uncertainty and change.

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อิทธิพลของตัวแปรกำกับความวิริยะพากเพียรต่อความพึงพอใจทางการศึกษาทางการพยาบาลและความพร้อมในการปฏิบัติงานของบัณฑิตพยาบาลในช่วงโควิด-19 : การศึกษาแบบภาคตัดขวาง

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บทคัดย่อ : การศึกษานี้กล่าวถึงความท้าทายที่นักศึกษาพยาบาลเกาหลีใต้เผชิญระหว่างการเปลี่ยนผ่านจากการเรียนการสอนสู่การปฏิบัติงานจริงโดยเฉพาะผลกระทบของปัจจัยทางจิตวิทยา เช่น ความวิริยะพากเพียร (grit) โดยเฉพาะในช่วงการแพร่ระบาดของไวรัสโควิด-19 ทั่วโลก ทำให้การเปลี่ยนผ่านดังกล่าวมีความซับซ้อนยิ่งขึ้นโดยส่งผลกระทบต่อความพึงพอใจในการศึกษาและความพร้อมในการปฏิบัติงาน ความวิริยะพากเพียรหมายถึง ความอุตสาหะและความมุ่งมั่นต่อเป้าหมายระยะยาว ซึ่งอาจทำหน้าที่เป็นตัวแปรกำกับของความสัมพันธ์ระหว่างปัจจัยดังกล่าว การวิจัยนี้ศึกษาอิทธิพลของตัวแปรกำกับ (ความวิริยะพากเพียร) ต่อความพร้อมของนักศึกษาพยาบาลในการปฏิบัติงานในสถานการณ์การแพร่ระบาด โดยใช้การศึกษาเชิงพรรณนาแบบภาคตัดขวางร่วมกับการวิเคราะห์ข้อมูลทุติยภูมิ กลุ่มตัวอย่าง คือ พยาบาลที่สำเร็จการศึกษาจากวิทยาลัยต่าง ๆ ในประเทศเกาหลีใต้ จำนวน 147 คน (เป็นเพศหญิง ร้อยละ 89.8 อายุเฉลี่ย = 23.76 ปี ส่วนเบี่ยงเบนมาตรฐาน = 1.50) ทำการคัดเลือกแบบสุ่มด้วยวิธีการบูตสแตรป เก็บรวบรวมข้อมูลผ่านการสำรวจออนไลน์โดยใช้แบบประเมินความพึงพอใจของนักศึกษาพยาบาล แบบประเมินความวิริยะพากเพียรฉบับสั้น และแบบสำรวจความพร้อมในการปฏิบัติงานฉบับภาษาเกาหลี

ผลการศึกษา พบว่า องค์ประกอบย่อยของความพร้อมคือ “ประสบการณ์การเรียนรู้” มีคะแนนสูงที่สุด ในขณะที่ “ความรับผิดชอบเชิงวิชาชีพ” มีคะแนนต่ำที่สุด แม้ว่าคะแนนความพึงพอใจต่อการศึกษาพยาบาลโดยรวมจะอยู่ในระดับสูง แต่คะแนนด้านการปฏิสัมพันธ์ทางสังคมเชิงวิชาชีพมีคะแนนต่ำกว่าด้านอื่น ๆ ความพึงพอใจต่อการศึกษาพยาบาลและความวิริยะพากเพียรมีความสัมพันธ์ในทางบวกกับความพร้อมในการปฏิบัติงาน นอกจากนี้ ความวิริยะพากเพียรยังทำหน้าที่เป็นตัวแปรกำกับของความสัมพันธ์ระหว่างความพึงพอใจทางการศึกษาพยาบาลและความพร้อมในการปฏิบัติงานอย่างมีนัยสำคัญ

ผลการศึกษาครั้งนี้ชี้ให้เห็นว่าโปรแกรมการเรียนการสอนทางการพยาบาลควรผนวกหลักสูตรที่เกี่ยวข้องกับการรับมือในสถานการณ์วิกฤต รวมถึงการจำลองสถานการณ์เสมือนจริง การปรับการเรียนรู้และแผนรับมือภาวะฉุกเฉิน เพื่อเสริมสร้างความสามารถในการปรับตัวอย่างยืดหยุ่นเพื่อรับมือกับภาวะฉุกเฉินในอนาคต อาจารย์ควรได้รับการฝึกอบรมด้านการสอนในสถานการณ์วิกฤตและความร่วมมือกับแหล่งฝึกปฏิบัติ นอกจากนี้ กลยุทธ์มุ่งเป้าเพื่อปลูกฝังความวิริยะพากเพียรและอัตลักษณ์เชิงวิชาชีพ เช่น การฝึกทักษะการปรับตัวหรือความยืดหยุ่น การตั้งเป้าหมาย การให้คำปรึกษา และการปฏิบัติเชิงสะท้อนกลับควรได้รับการผนวกเข้าไปตลอดทั้งหลักสูตร ในการออกแบบการเรียนการสอนสำหรับพยาบาลควรคำนึงถึงคุณลักษณะด้านอารมณ์และองค์ประกอบเชิงโครงสร้าง ซึ่งจะเป็นการเตรียมความพร้อมให้แก่นักศึกษาเกิดความมั่นใจและมีทักษะความสามารถในการปฏิบัติทางคลินิกท่ามกลางความไม่แน่นอนได้ดียิ่งขึ้น

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คำสำคัญ : โควิด-19 การศึกษาพยาบาล บุคลิกภาพ สมรรถนะทางวิชาชีพ ความยืดหยุ่นทางจิตใจ นักศึกษา

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