

# The Relationship Between Attitudes Toward Postgraduate Education, Academic Self-Efficacy and Academic Motivation of Nurses Pursuing Postgraduate Education: A Cross-Sectional Study

## Lisansüstü Eğitim Alan Hemşirelerin Lisansüstü Eğitime Yönelik Tutumları, Akademik Öz Yeterlilikleri ve Akademik Motivasyonları Arasındaki İlişki: Kesitsel Çalışma

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**ABSTRACT Objective:** The study aimed to determine the relationship between attitudes towards postgraduate education, academic self-efficacy, and academic motivation in nurses pursuing postgraduate education. **Material and Methods:** A total of 331 nurses studying in nursing postgraduate education programs constituted the sample of the study, in which a cross-sectional research design was used. The data were collected between December 2022 and January 2023 using the Personal Information Form, Postgraduate Attitude Scale, Academic Self-Efficacy Scale and Academic Motivation Scale. Descriptive statistics, correlation and linear regression analysis were used in the analysis of the data. The hypotheses were tested using Hayes' PROCESS macro v4.1. **Results:** It was found that the participants' attitudes towards postgraduate education and academic motivation were high and their academic self-efficacy was above average. The direct effect between attitude towards postgraduate education, academic self-efficacy, and academic motivation was found to be significant. Academic self-efficacy had a partial indirect effect on the relationship between attitude towards postgraduate education and academic motivation. **Conclusion:** The results show that academic motivation will increase as positive attitude towards graduate education and academic self-efficacy increase. It underlines the importance of academic self-efficacy in postgraduate nursing students, as well as the necessity for its improvement. It is recommended to increase supervisor feedback and support to improve academic self-efficacy. In addition, improving the working conditions of postgraduate nursing students, and providing autonomy and promotion opportunities for them to make professional contributions will make a positive contribution to their academic motivation.

**Keywords:** Academic self-efficacy; academic motivation; attitude; postgraduate education; nursing students

**ÖZET Amaç:** Çalışmada, lisansüstü eğitim alan hemşirelerde lisansüstü eğitime yönelik tutum, akademik öz yeterlilik ve akademik motivasyon arasındaki ilişkiyi incelemek amaçlandı. **Gereç ve Yöntemler:** Kesitsel araştırma tasarımının kullanıldığı çalışmada, hemşirelik lisansüstü eğitim programlarında öğrenim gören toplam 331 hemşire araştırmanın örneklemini oluşturdu. Veriler, Aralık 2022-Ocak 2023 tarihlerinde Kişisel Bilgi Formu, Lisansüstü Eğitime Yönelik Tutum Ölçeği, Akademik Öz Yeterlilik Ölçeği ve Akademik Motivasyon Ölçeği ile toplandı. Verilerin analizinde tanımlayıcı istatistikler, korelasyon ve lineer regresyon analizi (stepwise method) kullanıldı. Hipotezler, Hayes'in PROCESS v4.1 makrosu kullanılarak test edildi. **Bulgular:** Katılımcıların lisansüstü eğitime ilişkin tutum ve akademik motivasyonlarının yüksek ve akademik öz yeterliliklerinin ortalamanın üzerinde olduğu bulundu. Lisansüstü eğitime tutum, akademik öz yeterlilik ve akademik motivasyon arasında doğrudan etkinin anlamlı olduğu belirlendi. Akademik öz yeterliliğin lisansüstü eğitime tutum ve akademik motivasyon arasındaki ilişkide kısmi dolaylı etkisi bulundu. **Sonuç:** Lisansüstü eğitime ilişkin olumlu tutum ve akademik öz yeterlilik arttıkça akademik motivasyonun arttığını göstermektedir. Lisansüstü eğitim alan hemşirelerde akademik öz yeterliliğin önemini ve geliştirilmesi gerektiğinin altını çizmektedir. Akademik öz yeterliliğin artırılması için danışman geri bildiriminin ve desteğinin artırılması önerilmektedir. Ayrıca hemşirelik lisansüstü öğrencilerinin çalışma koşullarının iyileştirilmesi, mesleki katkı yapabilmeleri için özerklik ve yükselme olanaklarının sağlanması onların akademik motivasyonlarına olumlu katkı sağlayacaktır.

**Anahtar Kelimeler:** Akademik öz yeterlilik; akademik motivasyon; tutum; lisansüstü eğitim; hemşirelik öğrencileri

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Peer review under responsibility of Türkiye Klinikleri Journal of Nursing Sciences.

**Received:** 15 Mar 2024

**Received in revised form:** 31 May 2024

**Accepted:** 24 Jun 2024

**Available online:** 14 Aug 2024

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It is recommended that nurses continue life-long learning and receive postgraduate education to improve their knowledge and skills, as well as guiding the health care system.<sup>1</sup> Studies conducted with people who have received postgraduate education have stated that the reason for receiving postgraduate education is mainly to pursue an academic career, as well as to be competent in the field, gain respectability in society, and to get a promotion.<sup>2</sup>

Although the gradually increasing demand for postgraduate education in nursing indicates a positive attitude, it is also known that students experience various challenges throughout their education.<sup>2,3</sup> In the systematic review conducted by Dobrowolska et al., time, cost and lack of experience are identified as factors that prevent starting a doctorate program.<sup>2</sup> In a study by Volkert et al., relationship with the thesis supervisor/faculty member (having different expectations in particular) and family/social environment support are reported to be among the stress factors in doctoral education.<sup>3</sup> Despite these difficulties, it is seen that there are sources of motivation that encourage them to continue postgraduate education.

Academic motivation is one of the prerequisites of learning, as well as being one of the most important indicators that affect students' ability to participate effectively in learning activities and academic achievement.<sup>4</sup> Motivation is classified as intrinsic, extrinsic and amotivation.<sup>5,6</sup> Motivation has a variable structure and differs according to personal traits and priorities.<sup>7</sup> In the only study to be reached that examines academic motivation in postgraduate nursing students, it has been determined that the academic motivation level of master's students is moderate.<sup>8</sup> Previous studies with undergraduate students show that there is a positive relationship between academic motivation and self-efficacy.<sup>9,10</sup>

Academic self-efficacy (ASE) is the self-confidence, belief that an individual can successfully complete an academic task or achieve learning goals. The importance of ASE in terms of learning and academic performance is highly emphasized.<sup>11</sup> In a study, the self-efficacy level of nursing master's students is low, while another study indicates that the self-efficacy of master's and doctoral students is moderate.<sup>8,12</sup>

It was seen that attitude towards postgraduate education was not evaluated in nurses who were continuing their postgraduate education. In addition, no study was found that examined the relationship between attitude towards postgraduate education, ASE and academic motivation together. To the best of our knowledge, this is the first study in which these three variables were examined together in postgraduate nursing students. The results of this study will contribute to the literature by revealing the relationship between the variables, and the evaluation of the motivation, self-efficacy and educational attitudes of nurses who continue their postgraduate education as well as their working life may guide the regulations for postgraduate education.

## MATERIAL AND METHODS

### AIM

The study aimed to determine the relationship between attitudes towards postgraduate education, ASE and academic motivation in nurses pursuing postgraduate education. Accordingly, the following hypotheses were developed and tested (Figure 1).

H1. The attitude towards postgraduate education is related to (a) ASE and (b) academic motivation.

H2. ASE is related to academic motivation.

H3. ASE has a mediating role between attitude

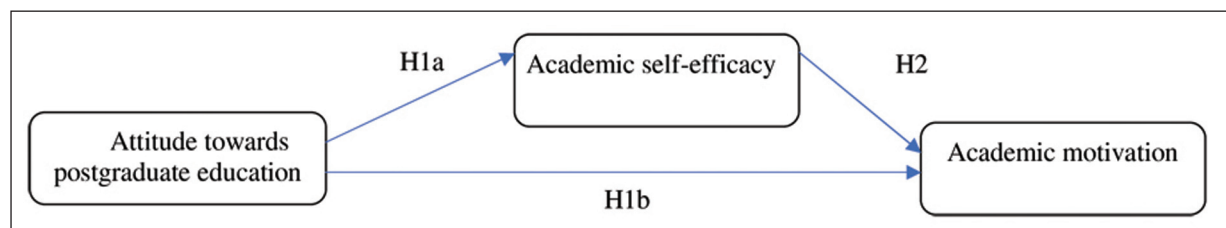


FIGURE 1: The theoretical framework of the research.

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towards postgraduate education and academic motivation.

## DESIGN

A cross-sectional research design was used.

## SETTING AND PARTICIPANTS

The population of the research was composed of master's and doctoral students studying in postgraduate nursing education programs at universities in Türkiye during the 2022-2023 academic year. The number of nurses continuing postgraduate education in Türkiye is not known. Therefore, the sampling formula with an unknown population was used to calculate the sample size ( $n = t^2pq/d^2$ ). It was determined that the sample size should be at least 384 individuals ( $n=384$ ) with 5% acceptable error and 95% confidence level. In the study, 354 people were reached using the snowball sampling method. Four data collection tools were not included in the sample since the postgraduate program was not clearly written. Among the remaining 350 data collection tools, 19 including outlier data were also excluded. The sample of the study consisted of 331 nurses pursuing postgraduate education who completely responded to the data collection tools ( $n=331$ ). In the post hoc power analysis using the G\*Power (v3.1.9) program, the effect size was taken as  $f^2=0.377$  to determine the  $AdjR^2$  for academic motivation as 0.274 and the post hoc power ( $1-\beta$ ) was obtained as 1.00 with a Type 1 error of 0.05 and 331 samples.<sup>13</sup>

## PROCEDURE

The data were collected between December 2022 and January 2023 from the nurses who volunteered to participate in the study using online Google Forms.

## DATA COLLECTION TOOLS

### Personal Information Form

The form prepared by the researchers consisted of 19 questions about the demographic (age, gender, marital status, having children, place of residence) and professional characteristics (employment status, professional experiences, position, work institution, and income level) of the nurses and postgraduate education (year of postgraduate study, type of postgraduate

education, field of postgraduate education, stage of education, main reason for undertaking postgraduate education, thoughts about leaving postgraduate study, reasons for these thoughts, satisfaction with postgraduate education and the degree to which their expectations of the education were met).

### Attitudes Towards Postgraduate Education Scale

The scale, developed by Ng et al., consists of 3 sub-dimensions and a total of 13 items, including facilitating roles, professional recognition and inhibitory factors. The scale is a 5-point Likert type (1=Strongly disagree, 5=Strongly agree), and the lowest possible score is 13 while the highest possible score is 65.<sup>14</sup> The Turkish adaptation of the scale was conducted by İltar. The Cronbach's  $\alpha$  coefficient of the original scale was 0.87, while the Turkish adaptation was found 0.84.<sup>14,15</sup> The overall score of the scale was used in this study and the overall Cronbach  $\alpha$  coefficient was found to be 0.651.

### Academic Self-Efficacy Scale

The scale, developed by Jerusalem and Schwarzer, consists of 7 items and one sub-dimension in a 4-point Likert type (1: Not at all applicable, 4: Completely applicable). The lowest possible score to be obtained from the scale is 7, while the highest possible score is 28.<sup>16</sup> The Turkish adaptation of the scale was carried out by Yılmaz et al. The Cronbach  $\alpha$  coefficient of the original scale was found 0.87, and the Cronbach  $\alpha$  coefficient of the Turkish adaptation was found 0.79.<sup>16,17</sup> In this study, the overall Cronbach's  $\alpha$  coefficient of the scale was 0.687. Uzdil and Günaydın where the scale was used, Cronbach's  $\alpha$  value was 0.66.<sup>18</sup>

### Academic Motivation Scale

The 28-item scale was developed by Vallerand et al. It consists of a total of 7 sub-dimensions including three about intrinsic motivation, three about extrinsic motivation and one about amotivation. The original scale is rated on a 7-point Likert type chart (1-Not at all applicable, 7-Completely applicable).<sup>19</sup> The lowest possible score to be obtained from the scale is 28, while the highest possible score is 196. A score of 130 and above indicate high academic motivation, while scores between 65 and 129 indicate

moderate academic motivation, and those below 65 indicate low academic motivation. The overall score of the scale was used in this study. It is stated that the four items that constitute the amotivation sub-dimension should not be included while calculating the overall score. The Turkish adaptation of the scale was conducted by Ünal Karagüven.<sup>20</sup> The overall Cronbach  $\alpha$  coefficient of the original scale Vallerand et al. and its Turkish adaptation were found 0.87. In this study, the Cronbach's  $\alpha$  coefficient of the sub-dimensions of the scale was between 0.802-0.868 and the overall score Cronbach's  $\alpha$  coefficient was 0.880.<sup>19</sup>

## ETHICS

Written permission was obtained via email from the researchers who adapted the scales into Turkish. The İstanbul University Cerrahpaşa Social and Human Research Ethics Committee approval was obtained (date: December 19, 2022, no: 2022/472). Participants were provided the information before switching to the data collection tools screen. The study complied with the principles of the Declaration of Helsinki.

## DATA ANALYSIS

The data were transferred to IBM SPSS Statistics 26.0 program and analyzed. The conformity of the data to normal distribution was evaluated with skewness and kurtosis values ( $<+1.5$ ), and it was determined that the variables showed normal distribution. Descriptive data was evaluated with descriptive analyses. The reliability of the scales was evaluated with Cronbach's alpha coefficient and the independent sample t-test was used for comparisons between the upper and lower 27% groups. Pearson correlation analysis was used to determine the correlation between the variables, and linear regression analysis was used to determine the direct effect. The mediating role of ASE was tested using Hayes's Model 4 in SPSS PROCESS v4.3 8.<sup>21</sup> The mediation effect was examined in 5000 Bootstrap samples within a 95% confidence interval. Multiple linear regression analysis (backward method) was used to determine the variables affecting the overall academic motivation score. Categorical variables were added to the model as dummy variables with reference to a category. The results were considered significant at  $p < 0.05$ .

## RESULTS

### CHARACTERISTICS OF THE PARTICIPANTS

The average age of the participants who were continuing their postgraduate education at universities in different twenty-five provinces was  $30.96 \pm 6.58$ . Most of the participants were female (85.5%), single (59.2%), and had no children (74.3%). In addition, 92.1% were employed, 43.8% had been working for 1-5 years, and 30.2% had been working as a staff nurse. It was determined that 24.2% of the participants worked in a training and research hospital affiliated with the Ministry of Health, 17.8% in a public university hospital, and 11.5% in a foundation university hospital. Most of the participants rated their income level as middle (63.1%) (Table 1).

In addition, 47.1% of the participants were continuing their doctoral education, and 51.1% were continuing their master's program with thesis. They had been continuing their postgraduate education for an average of  $2.39 \pm 1.79$  years. It was determined that the majority of the participants were registered in Mental Health and Diseases Nursing (15.4%), Internal Medicine Nursing (15.1%), Surgical Diseases Nursing (13.9%) and Nursing Management (13.6%) programs. It was found that 52.0% were at the theoretical stage, and 47.4% were at the thesis stage. When asked about the most important purpose of starting postgraduate education, 58.2% responded as becoming an academician. While 29.0% of the participants stated that they considered quitting during their education, the main reasons were working conditions (18.7%) and lack of motivation (14.2%) (Table 1). In addition, when participants were asked about their satisfaction with postgraduate education with a 5-point Likert (1: Never to 5: Always), the mean was  $3.90 \pm 0.83$ . The level of fulfillment of their expectations from the education was  $3.83 \pm 0.87$  (Table 1).

### DESCRIPTIVE FINDINGS ABOUT THE RESEARCH VARIABLES

The overall score of the participants' attitudes towards postgraduate education was  $50.31 \pm 4.39$ , while overall ASE score was  $21.03 \pm 3.18$ , and overall academic motivation score was  $132.35 \pm 17.70$  (Table 2). The mean score of intrinsic motivation was

TABLE 1: Characteristics of the participants (n=331).					
Variables	n	%		n	%
Gender			Income level		
Male	48	14.5	Low	7	2.1
Female	283	85.5	Minimum	31	9.4
Marital status			Middle	209	63.1
Single	196	59.2	High	82	24.8
Married	135	40.8	Very high	2	0.6
Having children			Type of postgraduate education		
Yes	85	25.7	Doctorate degree	156	47.1
No	246	74.3	Master's program without thesis	3	0.9
Employment status			Master's program with thesis	169	51.1
Yes	305	92.1	Distance master's program without thesis	3	0.9
No	26	7.9	Field of postgraduate education		
Professional experience			Surgical diseases nursing	46	13.9
1-5 years	145	43.8	Pediatrics nursing	31	9.4
11-15 years	41	12.4	Public health nursing	21	6.3
16-20 years	26	7.9	Principles of nursing	30	9.1
21 years and above	21	6.3	Education in nursing	25	7.6
6-10 years	70	21.1	Management in nursing	45	13.6
No nursing experience	28	8.5	Internal medicine nursing	50	15.1
Position			Gynecology and obstetrics nursing	32	9.7
Research assistant	56	16.9	Mental health and diseases nursing	51	15.4
Other	62	18.7	Educational stage		
Educational nurse	12	3.6	Course phase	174	52.6
Nurse manager	14	4.2	Thesis phase	157	47.4
Instructor	39	11.8	The most important purpose in starting postgraduate education		
Specialty nurse	28	8.5	Being an academician	193	58.3
Service nurse	100	30.2	Other	10	3.0
Service charge nurse	20	6.0	Increasing professional competence	124	37.5
Working institution			Becoming a manager	4	1.2
Public hospital	54	16.3	Considering quitting the program		
Public university hospital	29	8.8	Yes	98	29.6
Public university	59	17.8	No	62	18.7
Other	45	13.6	Reasons for considering		
Training and research hospital	80	24.2	Due to my working conditions	62	18.7
Private hospital	23	6.9	Other	10	3.0
Foundation university hospital	3	0.9	Due to the institution	3	0.9
Foundation university	38	11.5	Due to my educator	8	2.4
			Due to financial reasons	5	1.5
			Due to lack of motivation	47	14.2
			Due to the challenges in my personal life	24	7.3

68.73+9.68, extrinsic motivation was 63.62+10.55, and amotivation was 8.22+5.26. There was a weak significant correlation between attitude towards graduate education, ASE, and academic motivation, and a moderate correlation between ASE and academic motivation ( $p < 0.01$ ) (Table 2).

## FINDINGS ON HYPOTHESIS TESTING

The hypotheses aimed at determining the direct effects between attitude towards postgraduate education, ASE and academic motivation were tested by linear regression analysis. It was found that the direct effect of attitude towards postgraduate education on

**TABLE 2:** Descriptive findings and correlation matrix of the scales (n=331).

	1	2	3	4	5	6
1. Overall attitude towards postgraduate education	-					
2. Overall academic self-efficacy	0.262**	-				
3. Intrinsic motivation	0.425**	0.373**	-			
4. Extrinsic motivation	0.227**	0.375**	0.531**	-		
5. Amotivation	-0.479**	0.066	-0.214**	-0.001	-	
6. Overall academic motivation	0.367**	0.428**	0.863**	0.886**	-0.118*	
Mean (SD)	50.31 (4.39)	21.03 (3.18)	68.73 (9.68)	63.62 (10.55)	8.22 (5.26)	132.35 (17.70)
Minimum-Maximum	38-60	13-28	34-84	27-84	4-28	(89-168)

Pearson correlation; \*p<0.05; \*\*p<0.01; SD: Standard deviation.

both ASE and academic motivation was highly significant. H1a and H1b were confirmed. It was determined that attitude towards postgraduate education explained 6.6% of ASE and 13.5% of academic motivation ( $p<0.01$ ). In addition, the direct effect of ASE on academic motivation was also highly significant, and 18.3% of academic motivation was explained by ASE ( $p<0.01$ ). Therefore, H2 was also confirmed. In addition, when the mediating effect of ASE on the relationship between attitude towards postgraduate education and academic motivation was examined, the indirect effect was found to be highly significant ( $p<0.01$ ). The partial mediating role of ASE in this relationship was determined, and H3 was confirmed ( $VAF=0.3755/1.4797=0.254$ ) (Table 3).

## FINDINGS ON VARIABLES PREDICTING ACADEMIC MOTIVATION

In addition to these hypotheses, other independent variables were included and those predicting the overall academic motivation score were examined by linear regression analysis. Gender, marital status, presence of children, employment status, duration of experience as a nurse, position, institution, income status, type of postgraduate education, program, in which year of postgraduate education, overall attitude towards postgraduate education score, overall ASE score, intention to leave postgraduate education, level of satisfaction with postgraduate education and level of satisfaction with the expectations of graduate education were added as independent variables to the

**TABLE 3:** Findings on the direct and indirect relationships between variables.

Paths	$\beta$	SE	Beta	t value	p value	95% CI		R <sup>2</sup>	Model
						Lower bound	Upper bound		
<b>Direct effects</b>									
H1a. Postgraduate attitude → Academic self-efficacy	0.190	0.039	0.262	4.927	<0.001**	0.114	0.266	0.066	F=24.273, p<0.001** DW=1.506
H1b. Postgraduate attitude → Academic motivation	1.480	0.206	0.367	7.166	<0.001**	1.073	1.886	0.135	F=51.352, p<0.001** DW=0.260
H2. Academic self-efficacy → Academic motivation	2.377	0.277	0.428	8.580	<0.001**	1.832	2.922	0.183	F=73.610, p<0.001** DW=0.316
<b>Indirect effect</b>									
H3. Postgraduate attitude → Academic self-efficacy → Academic motivation	0.3755	0.0896				0.2124	0.5680	0.253	F=55.5014, p<0.001**

\*\*p<0.01; SE: Standard error; CI: Confidence intervals; R<sup>2</sup>: Determination coefficient; DW: Durbin-Watson.

model. The regression model explained 29.4% of the overall academic motivation score ( $p < 0.01$ ). With reference to those working in state hospitals, it was determined that a one-unit increase in employees at the foundation university hospital would increase the academic motivation score by 23.340 times, while a one-unit increase in those at the public university hospital would reduce the academic motivation score by -7.350 times. In addition, it was found that the academic motivation of the participants who did not have children would increase compared to those who had children, while the motivation of participants who received postgraduate education with the aim of becoming an academician would increase compared to those who did not have a specific aim. It was found that an increase in attitude towards postgraduate education and ASE score would increase academic motivation ( $p < 0.01$ ) (Table 4).

## DISCUSSION

The participants who participated in the study were found to have a highly positive attitude towards postgraduate education. The attitude towards postgraduate education was examined with nursing undergraduate students and it was determined that they had a moderate positive attitude.<sup>22</sup> In a study conducted with nurses, having a master's degree has been determined to be a significant antecedent of subjective career success, which describes the experience of achieving individually meaningful career outcomes.<sup>23</sup>

The ASE level of postgraduate students was determined to be higher than average. According to the study of Tiyuri et al., the research self-efficacy of master's and doctoral students in nursing is at a moderate level.<sup>12</sup> In a study conducted with master's students other than nursing, the self-efficacy of students continuing their education was found to be above average.<sup>24</sup> According to the postgraduate program requirements, people with high academic achievement candidate for postgraduate education. On the other hand, limited number of nursing programs require professional experience.<sup>25</sup> Since higher level of experience is associated with high level of self-efficacy, academic skills will also improve over time in research-oriented postgraduate education.<sup>26</sup> As a matter of fact, doctoral students were found to have significantly higher research self-efficacy levels than master's students.<sup>12</sup> Accordingly, the findings of the current study show that some graduate students should be encouraged in academic aspects. In previous studies, it has been found that supervisor-student relationship is positively related to ASE in postgraduate students, and the importance of peer support has also been emphasized.<sup>24</sup>

It is stated that intrinsic factors such as individual satisfaction and extrinsic factors such as increasing job opportunities can moti-

TABLE 4: Variables that predict the overall academic motivation score.

	B	Standard error	Beta	t value	p value	95% Confidence interval for B		Correlations			VIF	
						Lower bound	Upper bound	Zero-order	Partial	Part		
Constant	30.309	10.180		2.977	0.003**	10.282	50.336					
No children (Ref: Have a child)	4.670	1.876	0.115	2.469	0.013*	0.979	8.361	0.092	0.137	0.115	1.005	
Institution (Public university hospital) (Ref: State Hospital)	-7.350	2.912	-0.118	-2.524	0.012*	-13.079	-1.620	-0.122	-0.139	-0.117	1.014	
Institution (Foundation university hospital) (Ref: State Hospital)	23.340	8.661	0.125	2.695	0.007**	6.302	40.378	0.153	0.148	0.125	1.008	
Purpose of postgraduate education (becoming an academic) (Ref: Other-not specific)	3.477	1.676	0.097	2.075	0.039*	0.180	6.773	0.098	0.115	0.096	1.021	
Overall attitude towards postgraduate education	1.098	0.195	0.273	5.636	<0.001**	0.715	1.481	0.367	0.299	0.261	1.093	
Overall self-efficacy score	1.985	0.269	0.357	7.371	<0.001**	1.455	2.514	0.428	0.379	0.341	1.096	

Dependent variable: Overall academic motivation score,  $F=23.857$ ,  $p < 0.001$ , Adjusted R Square=0.294, Standard error of the Estimate=14.87391, Durbin-Watson=0.515, B=Unstandardized beta, \* $p < 0.05$ , \*\* $p < 0.01$ ; VIF: Variance inflation factor.

**APPENDIX 1: STROBE Statement-Checklist of items that should be included in reports of cross-sectional studies.**

	<b>Item No</b>	<b>Recommendation</b>	<b>Page no</b>
<b>Title and abstract</b>	1	(a) Indicate the study's design with a commonly used term in the title or the abstract (b) Provide in the abstract an informative and balanced summary of what was done and what was found	1-4 1-4
<b>Introduction</b>			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	5-6
Objectives	3	State specific objectives, including any prespecified hypotheses	6
<b>Methods</b>			
Study design	4	Present key elements of study design early in the paper	7
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	7-9
Participants	6	(a) Give the eligibility criteria, and the sources and methods of selection of participants Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	7
Variables	7	For each variable of interest, give sources of data and details of methods of assessment (measurement).	9
Data sources/measurement	8*	Describe comparability of assessment methods if there is more than one group	-
Bias	9	Describe any efforts to address potential sources of bias	7
Study size	10	Explain how the study size was arrived at	9-10
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	9-10
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding (b) Describe any methods used to examine subgroups and interactions (c) Explain how missing data were addressed (d) If applicable, describe analytical methods taking account of sampling strategy (e) Describe any sensitivity analyses	- 7 9-10
<b>Results</b>			
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed (b) Give reasons for non-participation at each stage (c) Consider use of a flow diagram	7 - -
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders (b) Indicate number of participants with missing data for each variable of interest	10-11 7
Outcome data	15*	Report numbers of outcome events or summary measures	10-12
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included (b) Report category boundaries when continuous variables were categorized (c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	13-16 9-11 -
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	-
<b>Discussion</b>			
Key results	18	Summarise key results with reference to study objectives	17
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	16-17
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	13-16
Generalisability	21	Discuss the generalisability (external validity) of the study results	13-16
<b>Other information</b>			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	-

\*Give information separately for exposed and unexposed groups.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at <http://www.plosmedicine.org>, Annals of Internal Medicine at <http://www.annals.org>, and Epidemiology at <http://www.epidem.com>). Information on the STROBE initiative is available at [www.strobe-statement.org](http://www.strobe-statement.org).



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vate nurses to participate in postgraduate education.<sup>1</sup> In this study, it was found that the academic motivation level of the postgraduate students was high. In the study conducted by Vahedian-Azimi and Moayed with master's nursing students, academic motivation was found to be at a moderate level.<sup>8</sup> Although the mean of the amotivation sub-dimension was found to be low in this study, more than one-fourth of the participants considered quitting the program at least once during the course or thesis phase, and one of the reasons for this was determined as amotivation. Considering this finding, it can be concluded that there is still an area that needs to be improved for the academic motivations of postgraduate nursing students. In our study, it was determined that the intrinsic motivation score was higher compared to the extrinsic motivation score. Most of the postgraduate students in the sample were also working as nurses, and the main purpose of receiving postgraduate education was found to be "becoming an academician", while the second was "increasing professional competence". Although this ranking may vary by country, both constitute the purpose of postgraduate nursing students worldwide.<sup>2</sup> Most of the nurses do not have the opportunity to work in the field of their postgraduate education. Although some advanced roles are defined by the Nursing Regulation, their roles and position do not differentiate in practice.<sup>27</sup> As a matter of fact, it is stated that PhD graduates working in the clinical field perceive their positions as uncertain.<sup>2</sup> Therefore, as determined in our study, this situation causes nurses working in the field to continue their postgraduate education mostly with intrinsic motivation.

It was determined that the attitude towards postgraduate education had a positive effect on ASE and academic motivation in this study. It is an expected and desired finding that postgraduate students with positively high attitude towards postgraduate have high level of ASE and academic motivation. According to Bandura, while attitude affects self-efficacy, the self-sufficiency of individuals plays an important role in the approach to goals, tasks and challenges.<sup>26</sup> It is stated that students may encounter many challenges during postgraduate education, and

that a positive attitude will increase ASE and academic motivation, allowing them to overcome the stress and negativity throughout this period.<sup>28</sup>

In this study, it was also found that the direct effect of ASE on academic motivation was significant. In addition, ASE was found to have a partial mediating role in the relationship between attitude towards postgraduate education and academic motivation. Consistent with the current findings, it was determined that the self-esteem of nurses in master's programs also had a positive effect on academic motivation.<sup>8</sup> In addition, previous studies revealed the relationship of higher ASE with better academic achievement.<sup>29</sup> Self-efficacy affects the effort and persistence of individuals.<sup>26</sup> Increasing ASE will ensure that students will be motivated to achieve a degree by completing the postgraduate program.<sup>28</sup> Working conditions is the most common reason for participants considering quitting the postgraduate program. Nurses, the majority of whom working in health care institutions, attend classes and practices on their days off, continue their extracurricular studies and research outside of working hours. As a matter of fact, heavy working conditions are one of the obstacles to continue postgraduate education.<sup>2</sup> Dreifuerst et al., in fact, determined that nearly half of doctor of nursing practice (DNP) and doctor of philosophy (PhD) graduates continued their pre-education duties after graduation.<sup>30</sup> As mentioned above, a positive attitude towards postgraduate education will motivate individuals by increasing their self-efficacy. They will progress with their instinct motivation even when extrinsic motivators are inadequate during the postgraduate education process. As a matter of fact, internal factors are the most powerful motivating driving force for postgraduate nursing students.<sup>1</sup> Determination of the partial mediating role of ASE once again underlined the importance of ASE and the necessity for its improvement. In previous studies, doctoral graduates were also determined to need mentorship in advanced research and preparedness for faculty roles.<sup>2,30</sup>

When the variables predicting postgraduate students' academic motivation were analyzed in a separate regression model, the variables included in the

model explained 29.4% of academic motivation. This result shows that there are other variables that affect approximately 70% of academic motivation. Along with attitude towards postgraduate education and ASE, it was determined that working in a foundation university hospital, not having children and starting postgraduate education with the aim of becoming an academician would have a positive effect on academic motivation. The higher effect of working in a foundation university hospital on academic motivation may be due to the fact that postgraduate education is taken into account more in promotions in these hospitals. On the contrary, as mentioned before, the fact that there is less opportunity for promotion and/or less opportunity to use professional competence for those working in public university hospitals may negatively affect academic motivation. In our study, it was determined that most of the nurses started postgraduate education with the aim of becoming an academician and those who wanted to become academicians would have more academic motivation, which explains the lower academic motivation of nurses working in hospitals. In addition, the finding that family and work obligations have an effect on the time to complete doctoral education may explain the higher academic motivation of those without children.<sup>2</sup>

## LIMITATIONS AND STRENGTHS

There are some limitations of this study. Since the variables of the research concern individual perception and attitude, all data collection tools are responded with self-reporting. The fact that data have been collected cross-sectionally at onetime point concludes the impact of positive or negative perception of the participants specific to that period. For this reason, no conclusion can be provided regarding the causal relationship between variables. In future studies, it is recommended to collect data at more than one time with longitudinal studies.

## CONCLUSION

This study shows that there is a significant and positive relationship between attitude towards postgraduate education, ASE, and academic motivation in

nurses pursuing postgraduate education. The findings show that academic motivation will increase as the positive attitude towards postgraduate education and ASE increase. In addition, the importance of ASE in academic motivation is highly emphasized. In this respect, the findings of the current study theoretically contribute to the limited number of studies in the literature conducted with postgraduate (master's and PhD) students. The study draws attention to the development of ASE and the importance of supervision of postgraduate nursing students in the development of academic motivation. The effect of working conditions on the motivation of nursing postgraduate students should be taken into consideration by nurse managers who are aware of the importance of advanced education. Considering that postgraduate nursing students' academic development will also be affected due to their heavy working conditions, arrangements should be made for regular and effective meetings and feedback between students and supervisors. In addition, peer collaboration should also be included in the postgraduate education process. It is also recommended to establish DNP programs that identify the role of postgraduate students working as nurses in practice, and where they can continue their education in a work environment.

## Acknowledgments

*The authors would like to thank all the parents who participated in this research.*

## Source of Finance

*During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.*

## Conflict of Interest

*No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.*

## Authorship Contributions

*All authors contributed equally while this study preparing.*

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