

Metacognitive Ability and Academic Self-Efficacy: Their Relations to Role Transition as Perceived by Nursing students

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Abstract

Background: Nursing students are challenged to think and impart in ways that will prepare them for practical work in a complex healthcare environment, Metacognition ability refers to an individual's knowledge of his thinking allowing them to design their thinking properly. In addition, high self-efficacy enhances students' accomplishment and personal well-being since student with high assurance in their capabilities approach difficult tasks as challenges to be mastered. **Aim:** To explore metacognitive ability and academic self-efficacy and their relation to role transition as perceived by nursing students. **Design:** Descriptive correlation design was utilized. **Setting:** The study was conducted at Faculty of nursing, Benha University. **Subjects:** A convenient sample of 4th year nursing students who enrolled in nursing administration department in the first term of academic year 2020/2021, the final number of sample size was 214. **Tools:** Three tools were used for data collection as follows; Metacognitive ability scale, Academic self-efficacy scale and Modified Perceptions of role transition questionnaire. **Results:** Two thirds of nursing students have high level of metacognitive abilities, more than half of them have high level of academic self-efficacy and more than two fifth perceived role transition moderately. **Conclusion:** There was a highly statistically significant correlation between metacognitive ability and academic self-efficacy, and a highly statistically significant positive correlation between academic self-efficacy and role-transition. **Recommendations:** Implementing learning strategies that promote nursing students' development of metacognitive abilities, studying the impact of academic self-efficacy and meta-cognitive ability on clinical decision-making ability among nursing students. And providing an orientation program for nursing students about role transition.

Keywords: Academic Self efficacy, Metacognitive ability, Nursing Students, Role-transition

Introduction

In the clinical education setting, students practice and develop psychomotor skills and attitudes, value and beliefs of professional practice. A key component of student development in the clinical setting is the advantage of the clinical instruction (Bennett et al., 2017; Titley, 2019). Martinez, (2016) views metacognition as monitoring and control of one's thought and describes metacognition as "reflective thinking or a

level of realization that exists through administrative cognitive control and self-communication about experiences". Also, metacognition refers to one's knowledge about one's own cognitive processes or anything related to them and the ability to reflect on one's own performance (National Research Council,2019).

Metacognition is seriously important in the health sciences, including from being a better learner to becoming a better clinician.

Metacognitive skills help drive nursing students to obtain the missing information, which we refer to as self-directed or self-regulated learning. Finally, being mindful or meta cognitively aware stop medication errors in clinical settings because of excess in awareness of our thought process leading to better critical thinking and monitoring of actions (**Dunning, Heath and Suls, 2017**).

Metacognition ability defined as an individual's knowledge, awareness and control of their thinking and learning strategies, metacognition emphasizes the causal link from individual experience to attitude or more specifically, from monitoring to control (**Thomasmm, 2018**).

Enhancing student metacognition factors conducive to the development of metacognitive ability. And noted fact metacognition and the development of knowledge and learning ability, and the hat metacognition affects learning performance can result in improvements in their learning (**McRobbie, 2018**). Also, the use of effective learning strategies is conducive to the development of metacognitive ability through self-monitoring factor, self-modification factor, self-awareness factor, effective learning factor, and problem-solving factor (**Georghiades, 2017**).

The essential aspects of metacognition are planning, self-regulation, self-evaluation and self-reinforcement of goal-oriented behaviors (**Kuiper and Pesut, 2014**). Planning involves identification and selection of appropriate strategies and allocation of resources. Planning includes goal-setting, activation of background knowledge and budgeting time, the ability to regulate one's learning: to plan, monitor success,

and correct errors when appropriate (**Whitebread et al., 2019**).

Academic self-efficacy is defined as an individual's personal confidence in his own capacities in order to produce a specific performance. Moreover, self-efficacy, where individuals regulate the belief and equity themselves in different educational duties (**Seydi and Gürhan, 2018**). Moreover, Academic self-efficacy defines individuals' beliefs of achievement of educational duties which affects learning and motivation, thus, it would be helpful in students' mental efforts related to learning leading to improvement of academic performance (**Schraw and Pajeras, 2019**).

Academic self-efficacy reflects student's personal beliefs in their own abilities to achieve educational duties at expected levels, it has been observed that nursing students when encountered with real situations discover that their perceptions of the actual working area differed from academic education (**Robin and Morck, 2019**).

Newly adequate nurses often feel poorly prepared for the role of staff nurse. Supportive measures are needed to reduce stress during the transition period, transition from nurse student to practicing nurse can be problematic issue during which the graduate nurse needs to learn how to mission solitarily in the rapidly changing, fast-paced healthcare environment (**Jessica and Crossman, 2015**).

Transition is a duration of learning, adjustment and socialization, when the nurse applies, consolidates and growing their existing knowledge, gaining competence (knowledge, skills and attitude) that is applicable to the nursing practice of the clinical setting in which they are expected to perform

(Abdelsalam, Basal, Ebrahim and Elnagar, 2016). An important concern of nursing practice is the difficulty new graduates experience while making the switch from graduate nurse to practicing nurse, role transition begins during the graduate educational program when students are socialized into the role. The transition does not complete until later in the first year of practice. To facilitate and support their transition, students are predictable to be orientated to their new role and to receive regular feedback from colleagues and line managers (Maten-Speksnijde et al., 2019).

Role transition is an important concept for nursing that helps nurses adjust to their new role by understanding its meaning correctly. The new graduates facing stress and strain, also, learning and absorption. It is a time of upheaval and adjustment affecting all aspects of life (Hassan, 2019). Deficiencies of support during this critical period of transition leads to needy job satisfaction, increased stress, decreased confidence, and higher rotation rates, which affect the retention of new nurses, make financial loads, and decrease safety (Haman, 2017). There are many factors affecting the role transition among intern nurse as personal factors, social factors, educational factors, student's satisfaction, and organizational factors, nursing staff shortage, expected level of support, professional responsibility and commitment (Azimian et al., 2019).

Significance of the Research

Role transition is considered to be critical period in the practical life of nursing student and many studies found that ineffective coping in this phase leads to low quality of nursing care and negative patient outcomes. Metacognition ability and self-efficacy are considered to be vital determinant of learning success.

Metacognition ability helps students to improve his way of thinking and self-efficacy proves to be important clinical competency as it helps students to produce designated levels of performance.

So, it is necessary to investigate students' metacognitive abilities and academic self-efficacy which are major determinants of students' personality that affect the process of role transition, so, addressing those variables and finding out correlations among them will help to provide a learning experience that helps in preparing our students for their role as practical nurses in real field situations.

Aim of the Research

The present research aimed to explore metacognitive ability and academic self-efficacy and their relations to role transition as perceived by nursing students.

Research questions

To fulfill the aim of the current study the following questions were formulated;

- 1- What are the levels of nursing students' metacognitive abilities as perceived by them?
- 2- What are the levels of nursing students' academic self-efficacy as perceived by them?
- 3- What are the levels of nursing student's perceptions regarding their role transition?
- 4- Are there relationships among nursing student's metacognitive ability, academic self-efficacy and role transition?

Subjects and Methods

Research design

A descriptive correlational design was used to achieve the aim of the current research.

Research setting:

The research was conducted at faculty of nursing, Benha University. It contains six scientific departments namely; Medical Surgical department, Pediatric department, Maternal and Neonatal health department, Nursing

The total number of students was 464, the final number of study subjects

$$n = \frac{N}{1 + (e)^2}$$

(N=total student number (464) & e=0.05) (Emmell and Nickl, 2013).

Tools for data collection:

Three tools were used for data collection of this research as follows;

First tool: Metacognitive Ability Scale:

It consisted of two parts as follows;

Part I: Personal data of nursing students: this part was used to collect personal data about research subject such as (age, gender, marital status, place of residence and qualifications before faculty enrolment).

Part II: Metacognitive Ability Scale:

It was developed by Koriat and Goldsmith, (1996); Son and Schwartz, (2002) and modified by the researchers to

Administration department, Psychiatry Health nursing department and Community Health Nursing department.

Research subject:

It consisted of convenient sample of 4th year nursing students who enrolled in nursing administration department in the first term of academic year 2020/2021 and who met inclusion criteria; available at the time of data collection and accept to participate in the study.

Sample size:

was 214 including both males and females that was determined according to sample size equation as follows; assess nursing students' level of metacognitive abilities. It consisted of 28 items subdivided into five subscales as following; Self-monitoring (7 items) Self-modification (7 items), Self-Awareness (6 items), Effective learning (3 items) and Problem-solving (5 items)

Scoring system:

Responses of nursing students were measured by using a 4 points Likert Scale as follows; (1 = not relevant, 2 = somewhat relevant, 3 = quite relevant and 4 = extremely relevant). The scores were summed up and students' metacognitive abilities were considered at high level if the score is more than (75%), moderate level from (50-75%) and low level if the score is less than (50%).

2nd Tool: Academic self-efficacy scale:

It is self-administered scale was developed by Schwarzer and Jerusalem, (1995) and modified by the researchers to assess the level of nursing students' academic self-efficacy. It consisted of 10 items as follows; (I can always manage to

solve difficult problems if I try hard enough, if someone opposes me and etc...).

Scoring system:

Responses of subjects were measured on a 4 points Likert Scale as follows; exactly true=4, moderately true=3, hardly true=2, not at all true=1. The scores were summed up and academic self-efficacy level was considered high if scoring is more than (75%), moderate level from (50-75%) and low level if scoring is less than (50%).

3rd Tool: Modified Perceptions of Role Transition Questionnaire:

It is self-administered questionnaire that was developed by **Doody et al., (2012)** and modified by the researchers to assess nursing students' perception of role- transition. It consists of three dimensions covering (28 items) as follows; Role preparation (6 items), Role competence (9 items) and Organization and Support (13 items).

Scoring system:

Responses of subjects were measured on a 5 points Likert Scale ranging from (1-5) strongly disagree (1), disagree (2), neutral (3), agree (4) and strongly agree (5). The total score is ranging from (28 to 140), with a score ranging from (112- 140) equals >80% indicating high level of perception, from (84 -112) equals 60-80% indicating moderate level of perception and (<84) equals <60% indicating low level of perceptions (**Barak, 2017**).

Data Collection Procedure

Administrative Approval

An official permission was issued from Dean of the Faculty of Nursing, Benha University to the head of nursing administration departments to obtain the approval for data collection to conduct the current study.

Before conducting the study, meetings were held between the researchers and nursing students for explaining the nature and aim of the study and informed that participation in the study is voluntary and they can withdraw from the study at any time with no consequences was ascertained. In addition, assuring complete confidentiality of the obtained information, so the questionnaire sheets were coded, and the study would not affect their study and the time for data collection was determined based on their views and lectures schedule to gain their approval and cooperation. The results of the study, along with the recommendations will be forwarded to the faculty administration for possible application.

Operational design

The operational design includes the preparatory phase, the pilot study, and the fieldwork, started from the beginning of August 2020 to the end of November (2020).

Preparatory phase:

The preparatory phase started from the beginning of August to the end of September 2020, covering two months and including the following; Reviewing the national and international related literature using journals, magazines, periodicals, textbooks, internet, and

theoretical knowledge of the various aspects concerning the topic of the study.

Tools Validity and Reliability:

The tools contents were developed and tested for its content validity through five expertise from Nursing Administration. The validity of the tools aimed to judge its clarity, comprehensiveness, relevance, simplicity, and accuracy. Based on their recommendations minor modifications were made and the researchers developed the final validated form of the tools. The internal consistency has been tested using Cronbach's alpha coefficient. Cronbach's alphas for metacognitive ability scale, academic self-efficacy scale and modified Perceptions of role transition questionnaire were ($\alpha=0.90, 0.89$ & 0.90 respectively) which reflect accepted internal consistency of the tools.

Pilot study:

During October 2020, before collecting data, the revised questionnaires were piloted with 10%

(21 students) from the total subjects to test the clarity of questionnaires and to evaluate the feasibility and effectiveness of the proposed tools. In addition, to estimate the time needed to fill questionnaire sheets. No modifications were done, and nursing students included in the pilot

Results

Table (1) shows that more than two third of students aged (21<22) years old with mean scores and s-deviation (21.43 ± 0.85) and the highest percent of them (88.3%, 81.3%, 86.9%, 78.5%) were female, have secondary school, single and living at rural areas, respectively.

study were included in the main study subjects.

Field work:

The data collection took about one month from beginning to the end of November (2020). Moreover, the researchers met nursing students and explained the aim and the nature of the research and the method of filling questionnaire. Data was collected at three days per week. The questionnaire sheets were distributed during break time and between lectures in class rooms or at the end of the day. The time needed for filling questionnaire sheet ranged from (15-20) minutes. The researchers checked the sheets after the nursing students completed it to ensure the absence of any missing data. The average number of completed sheets ranged from 18-19 sheets daily.

Statistical Analysis

A compatible personal computer was used to store and analyze data. The Statistical Package for Social Studies (SPSS), version 25 was used. Descriptive statistics were applied such as frequency, percentage distribution; mean and standard deviation. Correlation between variables was evaluated using Pearson's correlation coefficient (r). Significance was considered at $p<0.05$ for interpretation of results of significance tests.

Table (2) shows that total mean score and s-deviation for students' metacognitive abilities was (44.24 ± 8.87) with a percentage (79%). In addition, the highest mean-percent score and ranking was (82%) for "self - monitoring" dimension and the lowest mean percent score with low ranking was (69.1%) for "effective learning" dimension .

Figure (1) shows that two thirds of nursing students (63.6%) have high level of metacognitive abilities while only (5.1%) has low level of metacognitive abilities.

Table (3) illustrates that the total mean score and s-deviation for students' academic self-efficacy was (15.35 ± 2.73) with a percentage (17.8%).

Figure (2) shows that more than half of nursing students (53.3%) have high level of academic self-efficacy while only (8.4%) of nursing students have low level of academic self-efficacy.

Table (4) illustrates that the total mean score and s-deviation of nursing students' perception regarding their role - transition was (39.57 ± 10.12) with a percentage (25.6%). Moreover, the highest mean percent score and ranking was (38.4%) for "role preparation" dimension, while the lowest mean percent score with low ranking was (26.3%) for "role competence" dimension.

Figure (3) shows that more than two fifth of nursing students (43.9%) have moderate level of perception regarding their role transition while (13.6%) of nursing students have the lowest level of perception regarding their role transition.

Table (5) reveals that there is highly statistically significant positive correlation between total level of metacognitive ability and total level of academic self-efficacy. In addition, there is a highly statistically significant positive correlation between total level of academic self-efficacy and total level of perception of role transition. However, there is no statistically significant difference between total level of metacognitive ability and total level of perception of role transition.

Table (6) shows that there is highly statistically significant correlation between total level of metacognitive ability and students' education before faculty enrollment and statistically significant correlation with students' marital status and place of residence.

In addition, there are a highly a statistically significant correlations between total level of academic self-efficacy and students' age, education before faculty enrollment and place of residence. And statistically significant correlation with students' gender.

Regarding students' perception level toward role-transition, there are highly statistically significant correlations with nursing students' gender and marital status. In addition, there is a statistically significant correlation with students' age, type of education before faculty enrollment, and place of residence.

Table (1): Percent distribution of personal characteristics of studied nursing students (n=214)

Personal characteristics	No	%
Age		
From 20<21	28	13.1
From 21<22	89	41.6
From 22<23	74	34.6
≥23	23	10.7
Mean ±SD	21.43±0.85	
Gender		
Female	189	88.3
Male	25	11.7
Type of education before faculty enrollment		
Secondary school	174	81.3
Technical health institute	40	18.7
Marital status		
Single	186	86.9
Married	28	13.1
Place of residence		
Rural	168	78.5
Urban	46	21.5

Table (2): Total Mean- scores and S-deviation of nursing students' metacognitive abilities (n=214)

Metacognitive abilities dimensions	Min	Max	Mean-score	±SD	%	Ranking
Self-awareness	4.00	12.00	9.44	±2.38	78.7	4
Self-monitoring	1.00	14.00	11.48	±2.95	82.0	1
Self-modification	2.00	14.00	11.05	±2.81	79.0	3
Effective learning	.00	6.00	4.14	±1.52	69.1	5
Problem-solving	1.00	10.00	8.116	±1.86	81.2	2
Total	18.00	56.00	44.24	±8.87	79.0	

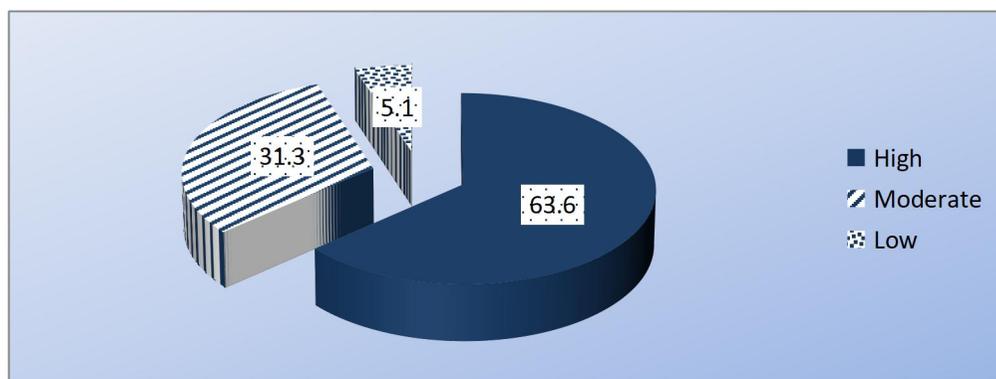
**Figure (1): Total levels of nursing students' metacognitive abilities (n=214)**

Table (3): Total Mean-score and S-deviations of nursing students' academic self-efficacy (n=214)

Total Academic Self-Efficacy	Min	Max	Mean score	±SD	%
	9.00	20.00	15.35	±2.73	17.8

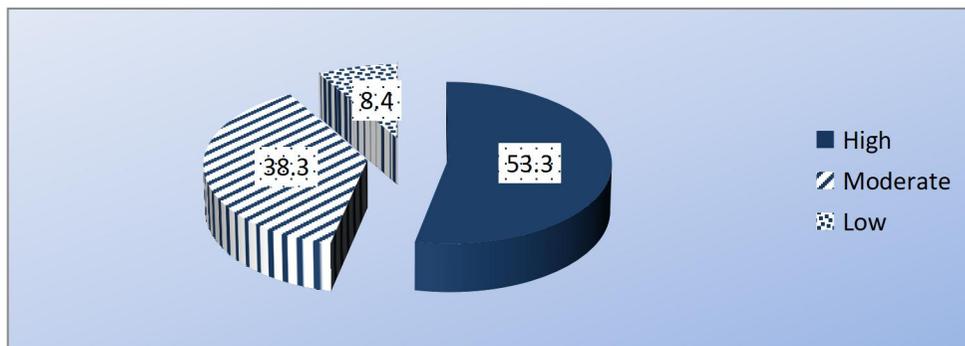


Figure (2): Total level of nursing students' academic self-efficacy (n=214)

Table (4): Total Mean-score and S-deviations of nursing students' perception of their role -transition (n=214)

Role dimensions	Transition	Min	Max	Mean score	±SD	% Score	Ranking
Role preparation		.00	11.00	8.00	±3.07	38.4	1
Role competence		4.00	18.00	13.41	±3.53	26.3	3
Organization and support		6.00	26.00	18.14	±5.54	30.5	2
Total		12.00	54.00	39.57	±10.12	25.6	

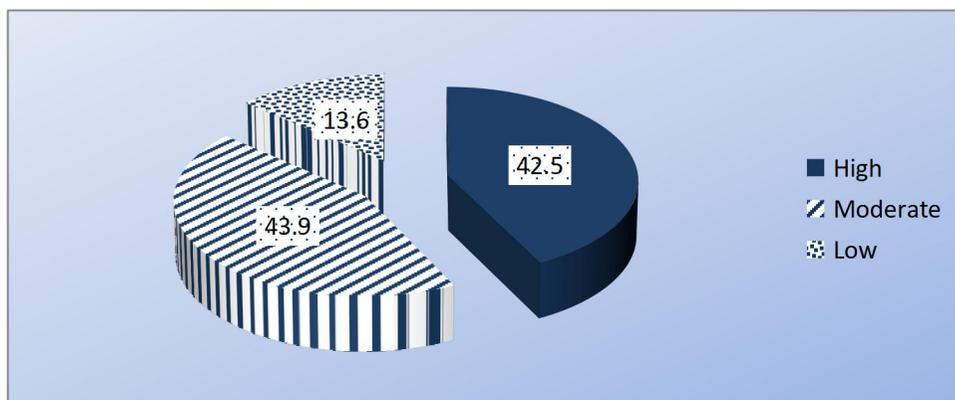


Figure (3): Total level of nursing students' perception regarding their role transition (n=214)

Table (5): Correlation matrix among study variables at study setting (n=214)

Study Variables		Total metacognitive abilities	Total academic self-efficacy	Total role transition
Total metacognitive ability	r	1	.394**	.129
	p		.000	.059
Total academic self-efficacy	r	.394**	1	.248**
	p	.000		.000
Total role transition	r	.129	.248**	1
	p	.059	.000	

** < 0.001 high statistically significant > 0.05 none statistically significant

Table (6): Correlation matrix among nursing students' personal characteristics and study variables (n=214)

Personal characteristics	Study Variables					
	Metacognitive abilities		Academic self-efficacy		Perception of role transition	
	X ²	P-value	X ²	P-value	X ²	P-value
Age	8.834	0.183	42.995	.000**	21.408	.002*
Gender	2.194	0.334	6.79	.034*	36.136	.000**
Education before faculty	51.307	0.000**	29.834	.000**	8.731	.013*
Marital status	5.27	0.072*	3.053	0.217	21.241	.000**
Place of Residence	9.411	0.009*	24.721	.000**	9.203	.010*

* < 0.05 =statistically significant ** < 0.001 =high statistically significant

Discussion

Metacognitive abilities are considered to be a major contributor to success in learning and represents a stellar tool for the measurement of academic performance. Therefore, nursing educators should place equal emphasis on investigating the development of learning skills, metacognitive thinking (higher-order thinking) skills and, most importantly the transfer of knowledge into practice (Abdelrahman, 2020).

The current study aimed to explore metacognitive ability and academic self-efficacy and identify their relation to role-

transition as perceived by nursing students. To achieve the aim of the current study four questions were formulated. The first question was "what are levels of metacognitive ability as perceived by nursing students?" The second question was " what are the levels of academic self-efficacy as perceived by nursing students?" The third question was "what are the levels of nursing student's perceptions about their role transition?" The fourth question was "are there relationships among nursing students' metacognitive abilities, academic self-efficacy and perceptions about role transition?"

When discussing the results related to answering the research questions, the light should be directed to socio-demographic data of the studied nursing students which indicated that more than two third of students aged (21<22) years old with mean scores (21.43±0.85) and the highest percent of them were female, have secondary school before enrollment in the faculty, single and living in rural area.

The first questions "what are levels of metacognitive ability as perceived by nursing students?" the results of the current research found that two thirds of nursing students have high level of metacognitive abilities according to their perspective, this result may be due to preparation of nursing student through educational preparation and courses and providing them with necessary skills and practice to facilitate use of metacognitive skills.

The result of the current research was assured by **Jin and Ji, (2021)** who conducted study about "the correlation of metacognitive ability, self-directed learning ability and critical thinking in nursing students" and found that the metacognitive ability of fourth-grade nursing students was significantly at high level. Similarly, the study was conducted by **Site, (2019)** that entitled "Investigating metacognition in new graduates transitioning to professional nursing practice" indicated that there are two thirds had high levels of metacognitive abilities among newly licensed nurses.

On the other side, this result is dissimilar with **García et al., (2016)** who conducted study on "Metacognitive Knowledge and Skills in Students with Deep Approach to Learning" and concluded that students have poor metacognitive skills.

The findings of the present study identified that the total mean score and St-deviation of metacognitive abilities is (44.24±8.87) with a percentage (79%). This result was in the same line with the results by **Ye et al., (2018)** who conducted study about "Correlation analysis and influencing factors between learning burnout and meta-cognitive ability of nursing undergraduates in university" and indicated that the total score of the metacognitive ability of nursing undergraduates was (74.93±12.08) with a percentage (81.18%).

In addition, the results of the current research revealed that the highest mean percentage score and ranking was "self-monitoring" dimension and the lowest mean percentage score with low ranking was "effective learning" dimension. While this result disagrees with **Jin and Ji, (2021)** they found that the highest mean percentage score and ranking was (0.87%) for "metacognitive planning" and the lowest mean percentage score with low ranking was (0.79%) for metacognitive evaluating dimension.

The second question was "What are the levels of academic self-efficacy as perceived by nursing students", The result of the present study indicated that more than half of nursing students have high level of academic self-efficacy, this result may be due to study subjects were on the fourth academic year and nursing students engage in vicarious experiences through four years of theoretical and practical learning experiences that may facilitate academic self-efficacy development.

This result was in the same line with the results by **Priesack and Alcock, (2015)** who conducted study about "Well-being and self-efficacy in a

sample of undergraduate nurse students" and concluded that higher levels of self-efficacy were found among nursing students. On the other side, this result disagrees with the results by **Xing et al., (2017)** who conducted study about "A survey of metacognitive ability of postgraduates in nursing" and concluded that academic self-efficacy of nursing students was quite low.

The third question was "what are the nursing student's perceptions of their transitions role levels?" The results of the current research revealed that more than two fifth of nursing students have moderate level of perception regarding their role transition. This result may be due to not all students were confident about their preparedness to perform as a staff nurse and interact with large number of health care personnel also, many of them expected the transition period to be challenging.

This study finding is in the same aspect with **Zarandy, (2017)** who conducted study about "Novel nurses perception of role transition from nursing student to practice nurse in South East of Iran" and he revealed that nursing students had perceived moderate level regarding the process of transition.

This finding is in disagreement with the results by **Jyoti, Srinivasan Kaur, (2018)** who conducted study about "Assess the career preference and perception concerning role transition from student nurses to nursing professionals among final year nursing students in Haryana" and they found that half of the students had high positive perception regarding role transition.

Lastly, the fourth question was "Relationships among metacognitive ability, academic self-efficacy and role-transition among nursing students" the

results of the current study revealed that there is a highly statistically significant correlation between nursing students' total level of metacognitive abilities and their total levels of academic self-efficacy. This result may be due to high level of metacognitive abilities allow students to foster a high level of confidence in their own abilities which increase their self-efficacy. This result was in agreement with the results by **Hermitaa and Thamrin,(2015)** who conducted study about "Metacognition toward academic self-efficacy among Indonesian private university scholarship students" and indicated that there is a significance correlation between metacognitive awareness and academic self-efficacy. Moreover, the result of the current research is supported with **Ghonsooly et al. (2014)** they conducted study about "self-efficacy and metacognition as predictors of Iranian teacher trainees' academic performance" and found that academic self-efficacy and metacognition are positively and significantly related to each other.

While, the results of the current research revealed that there is no statistically significant correlation between nursing students' total levels of metacognitive abilities and their perception toward role transition. However, this result was in contrary with the results by **Site, (2019)** who stated that having metacognitive abilities or skills, may affect the manner in which newly licensed graduate nurses transition their academic classroom knowing and clinical school experiences to situations that will be encountered in professional practice

In the same context, the results of the current research revealed that there is a highly statistically significant correlation between total academic self-efficacy and total perception of role

transition. This finding may be interpreted by the fact that self-efficacy helps the students to gain self-confidence they need to adapt to their new experience as a responsible person in real world. This result was supported by **George et al., (2017)**, they study about "Effect of the dedicated education unit on nursing student academic self-efficacy" and indicated that the bond between academic self-efficacy and job performance" it has been suggested that determining nursing students' academic self-efficacy can be used as a predictor for their job performance and may eventually have an impact on the education of nurses in helping them transition smoothly to competent professionals.

Moreover, the results of the current research showed that there are statistically significant correlations between nursing students' total levels of metacognitive abilities and their type of education before faculty enrollment, marital status, and place of residence. This result was in the opposite side with the results by **Site, (2019)** who conducted study about "Investigating metacognition in new graduates transitioning to professional nursing practice" and indicated that there wasn't not significant relation between new graduates' transitioning and region of living of subjects in the United States.

However, the result of the current research showed that there is no statistically significant correlation between nursing students' total levels of metacognitive abilities and their age and gender. This result is in the same line with the results by **Raeisi et al. (2020)** they conducted study about "Effect of demographic and academic factors on metacognition and academic self-efficacy" and concluded that metacognition scores did not vary

significantly in respect to the students' gender and age.

Moreover, this result agrees with **Garzón et al., (2020)** they conducted study about "Relationship between metacognitive skills, gender, and level of education in high school students" and they found that there are no significant differences in metacognitive skills between men and women. Also, **Doyle, (2013)** who conducted study about "Metacognitive awareness: impact of a metacognitive intervention in a pre-nursing course" and concluded that a linear relationship did not exist between metacognitive abilities and age.

Unlike the previous result, the findings by **Sart, (2014)** who conducted study about "The effects of the development of metacognition on project-based learning" and revealed that there is an increase in metacognitive abilities with age and experience. In addition to **Oguz and Ataseven, (2016)** who conducted study about "The relationship between metacognitive skills and motivation of university students" reported that significant effect of gender on metacognition among higher education students.

Regarding to nursing students' total academic self-efficacy, the result of the current research affirmed that there is a highly statistically significant correlation between nursing students' total academic self-efficacy and their age, type of education before faculty enrollment, and place of residence. This result is in the same line with the result by **Bugarski, (2018)** who conducted study about "The factors influencing the academic self-efficacy of nursing preceptors" and indicated that age has a statistically significant positive relationship with academic self-efficacy.

In addition, the results of the current research showed that there is statistically significant correlation between nursing students' total level of academic self-efficacy and students' gender. In supporting the previous findings, the implications of the study by **Farajpour et al., (2014)** which entitled "A comparative study of academic self-efficacy and self-esteem among students of Islamic Azad university of medical sciences" they indicated that there was significant difference between general self-efficacy and their sex and age of students.

On the opposite side of this result, the study done by **Al Sebaee, Abdel Aziz, Mohamed, (2017)** which revealed that there is a statistically significant negative correlation was detected between students' age and their levels of academic self-efficacy. Also, this result contradicted with **Zhang et al., (2015)** who conducted study on "Relationship between self-efficacy beliefs and achievement motivation in student nurses" and found that self-efficacy is not related to place of residence. On the contrary to the previous result, the findings by **Aryani et al.,(2015)** who conducted study on "The role of gender in research self-efficacy of nursing students" detected that there is no significant relationship was found between the interaction of gender and self-efficacy .

While, there was no statistically significant correlation between total nursing students' total self-efficacy and their marital status. This result is supported by **Andi et al., (2019)** they conducted study about "The relationship between self-efficacy and several demographic and socioeconomic variables among Iranian Medical Sciences students" and detected that there was no statistically significant

relationship between self-efficacy and variables of marital status.

Considering perception toward role transition, the findings of the current research concluded that there are highly statistically significant correlations among nursing students' perception toward role transition and their gender and marital status. This result agrees with the result by **Abd Elmgeed, (2014)** who conducted study on "Assessing factors leading to role transition impact among intern students " and revealed that male nurse student perceived their roles more than female nurse student.

In addition, the findings of the current research revealed that there are statistically significant correlations among nursing students' perception toward role transition and their age, type of education before faculty enrollment, and place of residence. This result is in agreement with the results by **Barak, (2017)** who conducted study about "Nurse students' perception regarding role-transition at Faculty of Nursing Benha University" and found that there was statistically significance relation between age and gender of nurse students and total perception level of role -transition.

Conclusion

Based on findings of the current study, we can conclude that nursing students with high level of metacognitive abilities are more academically self-efficient than others. Moreover, nursing students with high level of academic self-efficacy perceive their role-transition moderately. There was a highly statistically significant correlation between metacognitive ability and academic self-efficacy, and a highly statistically significant positive correlation between academic self-efficacy and role transition.

Recommendations

Based on findings of the current study, the study recommended the following;

-Implementing instructional strategies to promote nursing students' development of metacognitive abilities and skills.

-Applying strategies for enhancing academic self- efficacy of students.

- Providing an orientation program for nursing students about role transition to improve their perception about it.

- Further studies about;

-Examining factors affecting metacognition of undergraduate nursing students in a blended learning environment on their achievement goals.

-Study the impact of academic self-efficacy and meta-cognitive ability on clinical decision-making ability among nursing students.

-Conduct more comprehensive studies for exploring professional challenge facing new graduate nursing students.

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