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 students with high assurance in their capabilities approach difficult tasks as challenges to be mastered. **Aim**: To explore levels of nursing students' metacognitive abilities and academic self-efficacy and their relation to role-transition as perceived by them. **Design:** Descriptive correlation design was utilized. **Setting**: The study was conducted at Faculty of nursing, Benha University. **Subjects**: simple random 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:** Less than two thirds of nursing students had high level of metacognitive abilities, more than half of them had high level of academic self-efficacy and less than half of nursing students had moderate level of perception regarding their role transition. **Conclusion**: There was a highly statistically significant correlation between levels of metacognitive abilities and academic self-efficacy, and a highly statistically significant positive correlation between levels of academic self-efficacy and perception of role-transition. However, there was no statistically significant difference between total level of metacognitive abilities and total level of perception of role- transition. **Recommendations**: Implementing learning strategies that promote nursing students' development of metacognitive abilities. Also, faculties should provide an orientation program for preparing nursing students regarding role - transition.

Introduction

In the clinical education setting, students practice and develop psychomotor skills, attitudes, values and beliefs of professional practice. A key component of student development in the clinical setting is mastering of the clinical instructions **(Bennett et al., 2017; Titley, 2019). Martinez, (2016)** viewed metacognition as monitoring and controlling one's thought and described 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 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 can minimize clinical errors in clinical settings because of excess in awareness of our thought process leads to better critical thinking and monitoring of actions **(Dunning, Heath and Suls, 2017).**

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

Enhancing student's metacognition is conducive to the development of metacognitive ability. And it was noted fact that the development of knowledge and learning ability affects learning performance and can result in improvements in their learning **(McRobbie, 2018).** Also, the use of effective learning strategies is conducive to the development of metacognitive abilities 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, to monitor success, and to 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 means the ability of individuals to regulate beliefs and face challenges by 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 learning tasks at expected levels. It has been observed that nursing students when encountered with real situations, they discovered that their perceptions of the actual working area differed from academic education **(Robin and Morck, 2019)**.

Newly graduated 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 complete tasks 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 grows their existing knowledge, gaining competence, knowledge, skills and attitude that are applicable to the nursing practice of the clinical setting in which they are expected to perform **(Abd Elsalam et al., 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 need to be orientated to their new roles 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 roles by understanding its meaning correctly. New graduates face stress and strain also, difficulty of 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 poor 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 nurses as personal factors, social factors, educational factors, student's satisfaction, 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 abilities and self-efficacy are considered to be vital determinant of learning success.

Metacognition abilities help students to improve their 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 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 levels of nursing students' metacognitive abilities and academic self-efficacy and their relations to role-transition as perceived by them.

Research questions

To fulfill the aim of the current study the following questions were formulated;
- What are the levels of nursing students' metacognitive abilities as perceived by them?
- What are the levels of nursing students' academic self-efficacy as perceived by them?
- What are the levels of nursing student's perceptions regarding their role transition?
- Are there correlation among nursing student's metacognitive abilities, academic self-efficacy and role- transition?

Subjects and Methods

Research design

A descriptive correlational design was used

Research setting

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

Tools for data collection:

Three tools were used for data collection 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 of research subject such as; age, gender, marital status, place of residence and qualifications before faculty enrolment.

Part II: It was developed by **Koriat and Goldsmith, (1996),** then was modified by **Son and Schwartz, (2002)** and lastly it was modified by the researchers to assess nursing students' levels of metacognitive abilities. It consisted of five dimensions include 28 items as following; Self-monitoring 7 items, Self-modification 7items, Self-Awareness 6 items, Effective learning 3 items and Problem-solving 5 items.

Research subject:

It consisted of simple random 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:

The total number of students was 464, the final number of study subjects was 214 including both males and females that was determined according to sample size equation as follows;

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

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

Scoring system:

Responses of nursing students were measured by using a 3 points Likert Scale as follows; not relevant=1, somewhat relevant=2, and extremely relevant=3. 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%.

2^{nd}Tool: Academic Self-Efficacy Scale:

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

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

Scoring system:

Responses of subjects were measured on a 3 points Likert Scale as follows; exactly true=3, moderately true=2, not 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 had been developed by **Doody et al., (2012)** and then was 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 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 they were informed that their participation is voluntary and they can withdraw at any time with no consequences. In addition, assuring complete confidentiality of the obtained information, so the questionnaire sheets were coded. Also, participants were informed that the study would not affect their study and the time for data collection was determined considering their 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 covered two months started from the beginning of August to the end of September 2020, and included the following; Reviewing the national and international related literature 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 and reliability through five professors of Nursing Administration at five different universities as follows; Benha, Zagazig, Menofia, Tanta and Helwan. 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 as follows α=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 needed, and students of the pilot 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 through 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 16-19 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.

Results

Table (1) shows that more than two thirds 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, had secondary school, single and were living at rural areas, respectively.

Table (2) shows that the 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 was for "Self-monitoring" dimension 82% and the lowest mean percent score was for "Effective learning" dimension 69.1%.

Figure (1) shows that less than two thirds of nursing students 63.6% had high level of metacognitive abilities while only 5.1% had 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%) had high level of academic self-efficacy while only (8.4%) of nursing students had 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 score percent was 38.4% for "role preparation" dimension, while the lowest mean score percent was 26.3% for "role competence" dimension.

Figure (3) shows that less than half of nursing students 43.9% had moderate level of perception regarding their role-transition while only 13.6% of nursing students had the lowest level of perception regarding their role-transition.

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

Table (6) shows that there was 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 were highly statistically significant correlations between total level of academic self- efficacy and students' age, education before faculty enrollment and place of residence. And, statistically significant relation with students' gender.

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

Table (1): Percent distribution of studied nursing students' personal data   (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)

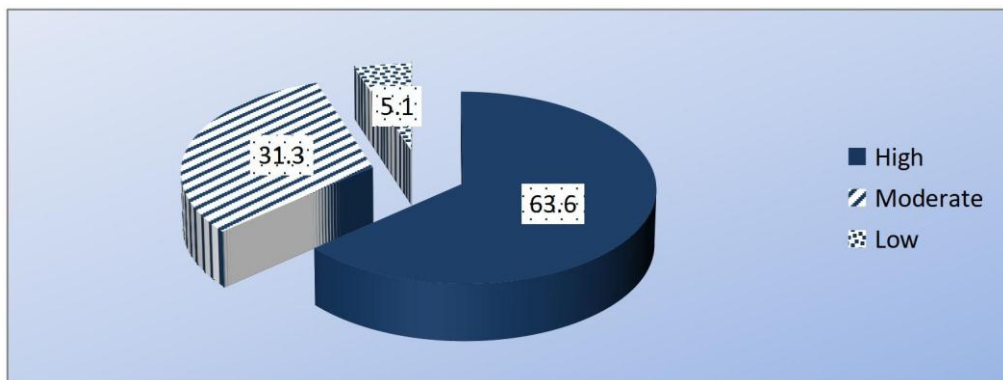| Metacognitive abilities dimensions	Min	Max	Mean-score	±SD	%	Ranking
Self-awareness	4.00	12.00	9.44	±2.38	78.7	4
Self-monitoring	1.00	14.00	11.48	±2.95	82.0	1
Self-modification	2.00	14.00	11.05	±2.81	79.0	3
Effective learning	.00	6.00	4.14	±1.52	69.1	5
Problem-solving	1.00	10.00	8.116	±1.86	81.2	2
Total	**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
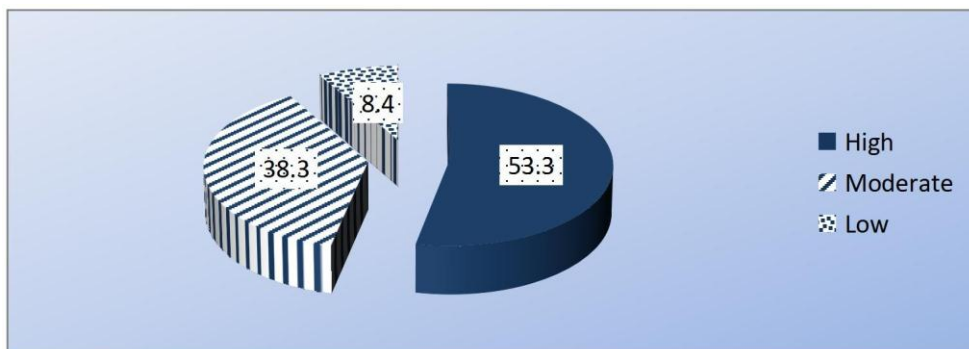
Figure (2): Total levels of nursing students' academic self-efficacy (n=214)

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

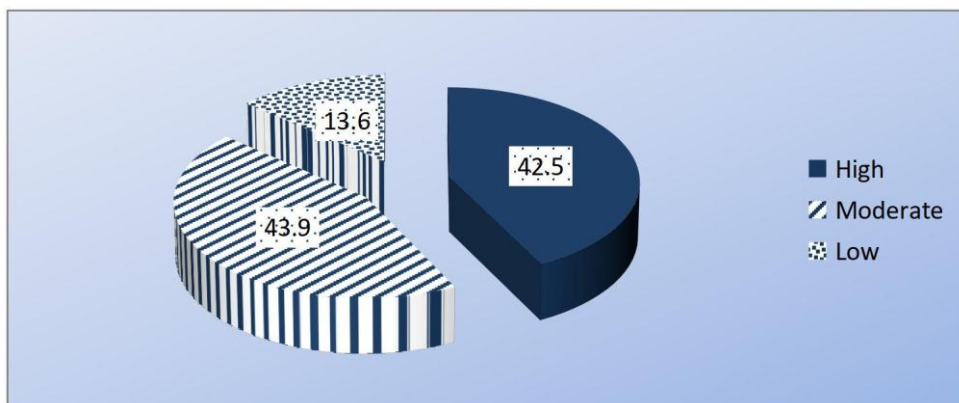| Role Transition dimensions	Min	Max	Mean score	±SD	% Score	Ranking
Role preparation	.00	11.00	8.00	±3.07	38.4	1
Role competence	4.00	18.00	13.41	±3.53	26.3	3
Organization and support	6.00	26.00	18.14	±5.54	30.5	2
Total	**12.00**	**54.00**	**39.57**	**±10.12**	**25.6**	

Figure (3): Total levels 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 data 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 major contributors to success in learning and represent 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 nursing students' metacognitive abilities and academic self- efficacy and identify their relation to role transition as perceived by them. To achieve the aim of the current study four questions were formulated; the 1st question was "What are the levels of nursing students' metacognitive abilities as perceived by them?"

The 2nd question was" What are the levels of nursing students' academic self-efficacy as perceived by them?" The 3rd question was "What are the levels of nursing students' perceptions about their role transition?" The 4th question was "are there correlations among nursing students' metacognitive abilities, academic self-efficacy and perceptions about their role transition?"

When discussing the results related to answering the research questions, the light should be directed to personal 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, single, had secondary school before enrollment in the faculty, and were living in rural area.

The first questions "What are the levels of metacognitive ability as perceived by nursing students?" the results of the current research found that than less two thirds of nursing students had high level of metacognitive abilities as perceived by them, this result may be due to Benha Faculty of Nursing is an accredited faculty that adopt various teaching strategies which relate theoretical courses to practical life with the help of faculty laboratories which are equipped with the latest technological equipment. Also the faculty targets developing students' learning abilities and thinking skills by organizing annual scientific students' conference, annual international students' camp, various scientific and social workshops and all these activities are fully organized by the students. This factors helped students in improving and organizing their thinking skills translated into high level of metacognitive abilities

The result of the current research was assured by **Jin and Ji (2021)** who found that the metacognitive ability of fourth-grade nursing students was significantly at high level. Similarly, the study was conducted by **Site, (2019)** indicated that two thirds of newly licensed nurses had high levels of metacognitive abilities. On the other side, this result is dissimilar with **García et al., (2016)** who concluded that students had 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 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 had 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 in addition to various students activities were encouraged by faculty administration that may facilitate academic self-efficacy development. This result was in the same line with the results by **Priesack and Alcock, (2015**) they 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)** they concluded that academic self-efficacy of nursing students was quite low.

The third question was about "what are the nursing student's levels of perceptions regarding their role-transitions?" The results of the   current research revealed that less than half of nursing students had 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 revealed through his study that nursing students had perceived moderate level regarding the process of transition. This finding is in disagreement with the results by **Jyoti and Kaur, (2018)** who conducted study they found that half of final year students had high positive perception regarding role transition.

Lastly, the fourth question was about "Relationship among metacognitive ability, academic self-efficacy and role- transition among nursing students" the results of the current study revealed that there was a highly statistically significant correlation between nursing students' total levels 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)** they conducted study and indicated that there was a significance relation between metacognitive abilities and academic self-efficacy. Moreover, the result of the current research is supported with **Ghonsooly et al. (2014)** they 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 was not statistically significant relation 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 transiting their academic classroom knowledge 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 was a highly statistically significant relation between total levels of academic self-efficacy and total perception levels of role transition. This finding may be interpreted by the fact that self- efficacy helps the students to gain self-confidence that facilitate their adapting to new experiences as a responsible person in real world. This result was supported by **George et al., (2017)** they indicated 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 and encourage their transition smoothly to competent professionals.

Moreover, the results of the current research showed that there were 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 and indicated that there wasn't significant relation between students' perception about transitioning and their region of living

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 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 found that there were not significant differences in metacognitive abilities between men and women. Also, **Doyle, (2013)** concluded that a linear relationship did not exist between

metacognitive abilities and age. Unlike the previous result, the findings by **Sart, (2014)** revealed that there is an increase in metacognitive abilities with age and experience. In addition to **Oguz and Ataseven, (2016)** they reported that there was significant effect of gender on metacognition among students.

Regarding to nursing students' total academic self-efficacy, the result of the current research affirmed that there was 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 indicated that age has a statistically significant positive relationship with academic self-efficacy.

In addition, the results of the current research showed that there was statistically significant relation 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 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)** they revealed that there was a statistically significant negative relation between students' age and their levels of academic self-efficacy. Also, this result contradicted with **Zhang et al., (2015**) they found through his study that self-efficacy is not related to place of residence. On the contrary of the previous result, the findings by **Aryani et al., (2015)** they detected that there was not significant relation between the interaction of gender and self-efficacy .

While, there was not statistically significant correlation between total nursing students' total self-efficacy and their marital status. This result is supported by **Andi et al., (2019)** they found that there was not statistically significant relation between self-efficacy and 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 revealed that male nurse student perceived their roles more than female nurse student.

In addition, the findings of the current research revealed that there were 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 found that there was statistically significant relation between age and gender of nursing students and their total perception level of role -transition.

Conclusion

Based on findings of the current study, we can conclude that nursing students with higher 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 relation between metacognitive abilities and academic self-efficacy, and a highly statistically significant positive relation between academic self-efficacy and role transition.

Recommendations

Based on the findings of the current study, we can recommend 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;

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

-Conducting more comprehensive studies for exploring professional challenge facing new graduate nursing students in adapting to their transition role.

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