

Nursing Students' Metacognitive Thinking and Goal Orientation as Predictors of Academic Motivation

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Abstract Metacognition is a self-monetary method that helps nursing students to discover strategies to learn and memorize. This capability enables students to improve types of goals that they adopt for learning, either mastery or performance, which in turn improves their academic motivation. **This study aimed** examine nursing students' metacognitive thinking and goal orientation as predictors of academic motivation at Faculty of Nursing, Zagazig University, Egypt. A descriptive correlational design was used for this study. A stratified random sample of 325 nursing students were chosen from the above mentioned setting. For this study; three tools were used to collect the data: Metacognitive awareness inventory, goal inventory, and academic motivation inventory. **Results** clarified that the highest percentages of nursing students (71.7%, 90.8%, & 90.8%) had high levels of metacognitive thinking, goal orientation, and academic motivation, respectively. Additionally, there were significant and positive correlations between nursing students' metacognitive thinking, goal orientation, and academic motivation, where P-value < 0.05. **Conclusion:** Nursing students' metacognitive thinking and goal orientation were significant predictors of academic motivation. **Recommendation:** The faculty administrators should increase students' and nurse educators' awareness of goal orientation and metacognitive thinking to create a desired teaching and learning environment.

Keywords: *metacognitive thinking, goal orientation, academic motivation, nursing students*

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1. Introduction

Today, nursing education faces a variety of complexities in both clinical and theoretical education. Students as the recipients of the educational services are the best source to identify the educational problems because they interacted with this process in a direct way [1]. Therefore, students need continuous academic motivation to solve problems facing them during their learning process. Additionally, they need to acquire the appropriate skills to provide the proper nursing care for patients after their graduation with various complicated health issues [2]. In order to work efficiently in this changing and complicated healthcare system, nursing students need to know how to apply cognitive and metacognitive strategies to elucidate multifaceted alternatives to such complicated issues [3].

Metacognition is one of the primary subjects in psychology and education, it is considered essential in understanding effective achievement; it allows students to adapt to challenges in problem-solving activities. Metacognition means supervising students during their learning and regulating the process of understanding [4]. It can be defined as "students' ability to store information in

their minds, comprehend and relate it to other information and monitor other cognitive activities [5].

Metacognitive thinking directs students in the process of defining the structure of problems, establishing connections with previous knowledge and understanding, and choosing the appropriate learning approaches [6]. Likewise, it is strongly linked to "learning to learn", which is essential for students to comprehend and store knowledge, but also to learn how to use, relate, and transfer these knowledge from one domain to another [7].

Metacognitive thinking has two major components namely; knowledge of cognition and regulation of cognition. Knowledge of cognition is students' knowledge of their learning and metacognitive strategies; such as knowledge of strategies and skills which work best for the student and the information that when and how these skills and strategies improve the learning process. Contrariwise, regulation of cognition includes students' abilities to regulate and manage their learning and thinking processes; such as planning, monitoring comprehension, and evaluation [8,9].

The use of cognitive strategies such as self-regulation and metacognition may influence goals that students assume for learning. Such factors that promote students to learn or goals they have for learning are called as goal orientation which appears to be a valuable concept for

understanding how students develop or demonstrate competences in the learning process. Goal orientation can be defined as "the goals that students set which affect their behaviors, responses, and motivation for learning" [10].

Goal orientation has two main kinds: Mastery goal orientation and performance goal orientation. Nursing students with mastery goals concentrate on assignments, prefer circumstances where they can magnify new knowledge and skills, and evaluate themselves using self-referenced norms. Additionally, students with mastery goals have a tendency to concentrate on learning and mastery of the content, and have been linked to good metacognition and achievement. Alternatively, students with performance goals concentrate on themselves and prefer circumstances where they can demonstrate and compare their ability with other students. Usually these students assess themselves using interpersonal standards. Performance goals promote students to concentrate on scoring better than others or avoiding any appearance of incompetence [11].

High level of goal orientation and well-developed metacognitive thinking enhance students' academic motivation and performance by allowing them to improve skills they possess, and be aware of those abilities that they do not have. As well, students with high academic motivation see that learning is essential and rewarding in all aspects of life and use metacognitive strategies in order to learn and develop their performance [10,12]. Academic motivation has been described as "the production of energy needed for academic success". Additionally, it is a successful process while accomplishing the necessary tasks throughout students' academic life; however absence of motivation can cause problems such as intolerance, not enjoying the work done, or even giving up immediately against difficulties [13]. Therefore, it is necessary to pay attention to this important topic to create successful educational atmosphere [14].

1.1. Significance of the Study

Nursing students face a lot of pressures and challenges in the academic environment such as working hard to maintain optimal achievement and entering healthcare environment that is significantly different from college. Subsequently, they may be confused by the new clinical setting and nursing practice that could, in turn, affect their academic motivation [15]. On the other hand, students' academic success depends on number of factors including goal orientation that may allow students to establish multiple goals; these goals not only affect their academic motivation and success but also are affected by metacognitive thinking. Metacognition help students to be strategic during their learning; it guides them to go and learn new information rather than repeating the previously learned material [9]. While, there are few studies were conducted to investigate the academic motivation in Egypt, there is no study was conducted to examine nursing students' metacognitive thinking and goal orientation as predictors of their academic motivation at Faculty of Nursing, Zagazig University. The findings of this study will assist fill the gap in identifying the effect of metacognitive thinking and goal orientation on students' academic motivation. This could improve students'

academic success, performance, decrease their turnover and absenteeism.

1.2. Aim

The present study aimed to examine nursing students' metacognitive thinking and goal orientation as predictors of academic motivation at Faculty of Nursing, Zagazig University.

1.3. Research Questions

1. What is the nursing students' levels of metacognitive thinking?
2. What is the level of nursing students' goal orientation?
3. What is the level of nursing students' academic motivation?
4. Are there relationships among metacognitive thinking, goal orientation, and academic motivation?
5. Does nursing students' metacognitive thinking predicts their academic motivation?
6. Does nursing students' goal orientation predicts their academic motivation?

2. Methodology

2.1. Design

To accomplish the aim of this study, a descriptive correlational design was used.

2.2. Setting

This study was conducted at Faculty of Nursing, Zagazig University, Egypt, which included seven scientific departments namely; Nursing Administration, Psychiatric and Mental Health Nursing, Pediatric Nursing, Community Health Nursing, Maternal and New Born Health Nursing, Medical Surgical Nursing, and Geriatric Nursing. These departments aimed to prepare highly qualified nursing students able to compete nationally and internationally and providing high quality of nursing care.

2.3. Subjects

A stratified random sample was used. The required number of nursing students from each academic year was calculated with the following formula: Number of nursing students in each academic year \times required sample size / total number of nursing students in the faculty. Accordingly 325 nursing students were chosen randomly as follows; first academic year (74 nursing students), second academic year (82 nursing students), third academic year (88 nursing students), and fourth academic year (81 nursing students).

2.4. Sample Size

The ideal sample size was estimated at confidence interval 95%, margin of errors 5.0%, a total population size of 1743 nursing students, and by using the following

formula $[n = N / 1 + N (e)^2]$ [16]; the required sample size was 325 nursing students.

2.5. Tools of Data Collection

Three tools of data collection were used for this study:

Tool I: Metacognitive Awareness Inventory: It consisted of two parts as follows: The first part: Personal characteristics of nursing students; this part was used to collect data about age, academic year, gender, marital status, and working during study. The second part: Was developed by Schraw and Dennison [17] to assesses students' metacognitive thinking. It consisted of 52 items subdivided into two main parts; the first part: Knowledge about cognition (17 items) included three subdomains namely; declarative knowledge (7 items), procedural knowledge (4 items), and conditional knowledge (6 items). The second part: Regulation of cognition (35 items) covered five subdomains that are; planning (7 items), information management strategies (9 items), comprehension monitoring (8 items), debugging strategies (5 items), and evaluation (6 items). Nursing students' responses were measured on a five-point Likert scale ranged from strongly agree (5) to strongly disagree (1). The total scores of this tool ranged from 52–260. Scores ≥ 192 indicated high level, from 122 to 191 indicated moderate level, and ≤ 121 indicated low level [18]. The reliability of the instrument was estimated using Cronbach's alpha, it was 0.89.

Tool II: Goal Inventory: Was developed by Rodell et al. [19] to assess goal orientation of nursing students. The inventory included 17 items divided into two domains: Mastery goals (12 items) and performance goals (5 items). The nursing students' answers were evaluated on a five-point Likert scale ranged from 1 (Strongly Disagree) to 5 (Strongly Agree). The total score of this tool ranged from 17–85. Scores ≥ 51 indicated a high level of goal orientation, while scores < 51 indicated a low level [20]. The internal consistency of this inventory was assessed by using Cronbach's alpha coefficient and it was 0.80.

Tool III: Academic Motivation Inventory: This 28-items scale was developed by Vallerand et al., [21] to measure academic motivation among nursing students. There are two dimensions in this scale: Intrinsic motivation (16 items) and extrinsic motivation (12 items). The responses of nursing students were measured on five-point Likert scale ranged from correspond exactly (5) to does not correspond at all (1). Student's score was considered high level of academic motivation if it was $\geq 60\%$ and low level if it was $< 60\%$. The reliability of this tool was measured by the Cronbach alpha coefficient and it was 0.87.

2.6. Field Work

Data collection took about one month from mid-March till mid-April, 2018. The researchers clarified the aim of the study to each student either individually or through group meetings. Each student was given an opportunity to complete the questionnaire under the guidance and supervision of the researchers. The time required to complete each questionnaire sheet was about 20-30 minutes.

2.7. Pilot Study

The pilot study was conducted in order to establish clarity, understanding, and applicability of the instruments before beginning the actual data collection. Additionally, to estimate the required time for each questionnaire sheet to be completed. The pilot study was conducted on 33 nursing students (10% of the study sample). Students were selected randomly and excluded from the main study sample and the necessary modifications were done.

2.8. Content Validity

After the tools were translated into Arabic; face and content validity was done by a panel of experts (7 assistant professors & professors) from the academic nursing staff, at Zagazig University. All needed adjustments were done according to their opinions.

2.9. Administrative and Ethical Consideration

This study was approved by Ethics Committee and dean of the Faculty of Nursing, Zagazig University. Verbal and written explanation of the aim and nature of the study have been explained to students included in the study sample. Students were given a chance to participate or refuse, and they were notified that they could withdraw at any stage of completing the questionnaire, without giving any reasons. As well, they were ensured that the data would be used confidentially and for the study purposes only. Confidentiality was confirmed by not writing their names. The researcher assured to participants that the participation is absolutely voluntary.

2.10. Statistical Analysis

Data entry and statistical analysis were conducted using the Statistical Package for Social Science (SPSS), version 21.0. Data was cleaned to guarantee that no missing or inadequate information existed. Data were presented using descriptive statistics in the form of frequencies and percentages for categorical variables, and means and standard deviations for continuous variables. ANOVA F test and Independent t-test were used to detect the relation between the variables. Pearson correlation analysis was used to assess the interrelationships between total scale scores. Multiple Linear inner regression analysis was used to measure the effect of predictors.

3. Results

Table 1 explains that 54.2% of nursing students aged ≤ 20 years, with a mean age of 20.43 ± 1.3 . As well, the highest percentages of them were in the third academic year, female, single, and didn't work during studying (27.1%, 72.3 %, 94.2%, and 83.1%, respectively).

Table 2 reveals the distribution of study variables' mean percent scores as reported by studied nursing students. As clear from the table, the highest mean percent score of the knowledge of cognition subdomains was for declarative knowledge; while the lowest was for conditional

knowledge (84.45%, & 65.93%, respectively). As well, the total mean percent score of knowledge of cognition was 76.55%. On the other hand, the highest mean percent score of the regulation of cognition subdomains was for information management; however the lowest was for comprehension monitoring (86.46%, & 69.37%, respectively). Additionally, the total mean percent score of regulation of cognition was 80.95%. Concerning the goal orientation domains, the mean percent score of the performance goals was higher than the mean percent score of the mastery goals (73.04%, & 72.96%, respectively). Additionally, the total mean percent score of goal orientation was 72.98%. As regards the academic motivation, the extrinsic motivation mean percent score was higher than the intrinsic motivation mean percent score ((79.83%, & 69.57%, respectively) and the total mean percent score of the academic motivation was 73.96.

Figure 1 portrays nursing students' levels of metacognitive thinking. As detected from this figure 71.7% of nursing students had a high level of metacognitive thinking; while 0.3% of them had a low level, (in response to research question 1).

Figure 2 clarifies nursing students' levels of goal orientation. This figure illustrates that 90.8% of studied nursing students had a high level of goal orientation, (in response to research question 2).

Figure 3 simplifies nursing students' levels of academic motivation. This figure sketches that 90.8% of studied nursing students had a high level of academic motivation, (in response to research question 3).

Table 3 presents correlation between the different study variables as reported by studied nursing students. This table displays that nursing students' metacognitive

thinking was significantly and positively correlated to their goal orientation and academic motivation ($r=0.615$, $P=0.000$ and $r=0.562$, $P=0.000$, respectively). In addition, there was positive and significant correlation between nursing students' goal orientation and academic motivation ($r=0.546$, $P=0.000$), (in response to research question 4).

Table 1. Personal Characteristics of Nursing Students (n=325)

Personal characteristics	No	%
Age in year:		
• ≤ 20	176	54.2
• > 20	149	45.8
Mean ± SD	20.34 ± 1.30	
Academic year:		
• First	74	22.8
• Second	82	25.2
• Third	88	27.1
• Fourth	81	24.9
Gender:		
• Male	90	27.7
• Female	235	72.3
Marital status:		
• Single	306	94.2
• Married	19	5.8
Working during studying:		
• Yes	55	16.9
• No	270	83.1

Table 2. Distribution of Different Study Variables' Mean Scores as Reported by Studied Nursing Students (n=325)

Study variables	Maximum score	Mean	±	SD	% of mean score
Metacognitive thinking					
I. knowledge of cognition					
• Declarative knowledge	35	30.61	±	4.48	84.45
• Procedural knowledge	20	14.67	±	2.54	73.35
• Conditional knowledge	30	19.78	±	3.80	65.93
Total score of knowledge of cognition	85	65.07	±	9.06	76.55
II. Regulation of cognition					
• Planning	35	27.57	±	6.46	78.77
• Information management	45	38.91	±	5.39	86.46
• Comprehension monitoring	40	27.75	±	3.48	69.37
• Debugging strategies	25	20.06	±	2.98	80.24
• Evaluation	30	23.31	±	3.44	77.70
Total score of regulation of cognition	175	137.63	±	17.31	80.95
Total score of metacognitive thinking	260	202.73	±	25.21	78.64
Goal orientation:					
• Mastery goal	60	43.78	±	6.89	72.96
• Performance goal	25	18.26	±	3.67	73.04
Total score of goal orientation	85	62.04	±	9.12	72.98
Academic motivation:					
• Intrinsic motivation	80	55.66	±	7.57	69.57
• Extrinsic motivation	60	47.90	±	7.53	79.83
Total score of academic motivation	140	103.55	±	13.91	73.96

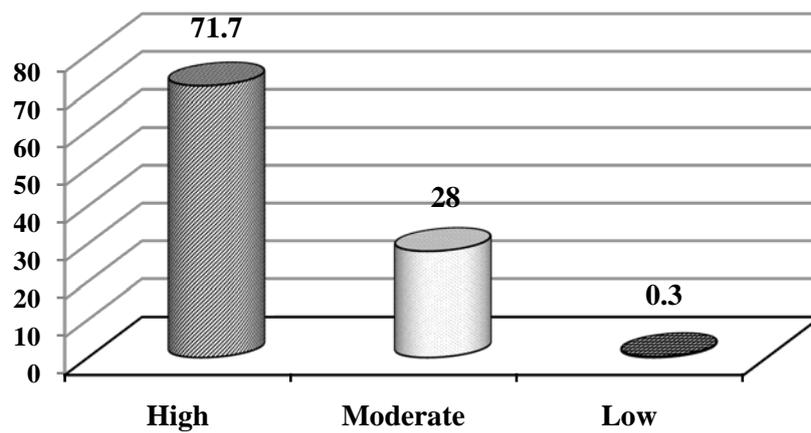


Figure 1. Nursing Students' Levels of Metacognitive Thinking (n=325)

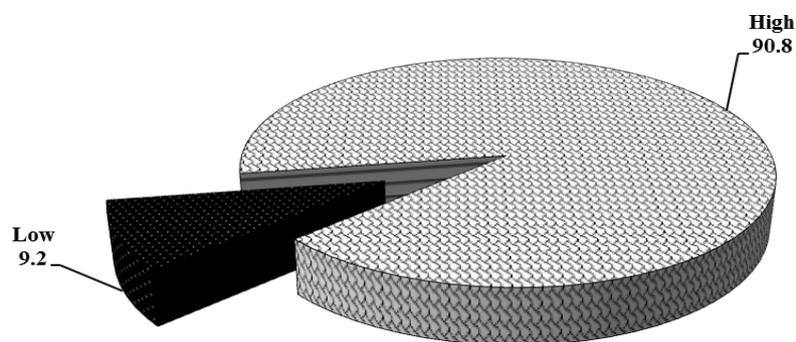


Figure 2. Nursing Students' Levels of goal orientation (n=325)

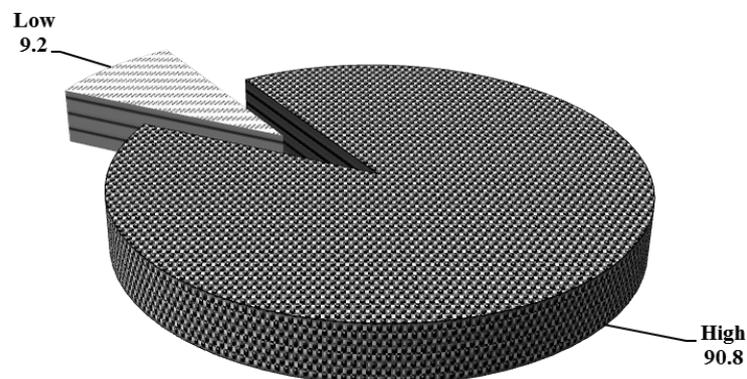


Figure 3. Nursing Students' Levels of Academic Motivation (n=325)

Table 3. Correlation between the Different Study Variables as Reported by Studied Nursing Students (n=325).

Study variables	Metacognitive thinking		Goal orientation	
	r	p	r	p
Goal orientation	0.615**	0.000		
Academic motivation	0.562**	0.000	0.546**	0.000

* Statistically significant at $P < 0.05$, ** Highly statistically significant at $P < 0.01$.

Table 4 shows the independent factors affecting nursing students' academic motivation. This table proves that nursing students' metacognitive thinking was responsible for 31.6% of the variation in their academic motivation ($R^2 = 0.316$, $p = 0.000$). Likewise, nursing students' goal orientation was responsible for 29.8% of the variation in their academic motivation ($R^2 = 0.298$, $p = 0.000$).

Accordingly, nursing students' metacognitive thinking and goal orientation were significant predictors of students' academic motivation (in response to research question 5)

Table 5 reveals that there was statistically significant relationship between nursing students' academic year as regards their metacognitive thinking and academic motivation, where p -value < 0.05 .

Table 4. Regression Analysis to Study the independent factors affecting Nursing Students' Academic Motivation (n=325)

Items	R	R ²	Unstandardized coefficient		t	Sig.
			β	Std. Error		
Metacognitive thinking	0.562	0.316	0.314	0.026	12.20**	0.000
Goal orientation	0.546	0.298	0.833	0.071	11.71**	0.000

* Statistically significant at P < 0.05, ** Highly statistically significant at P < 0.01.

Table 5. Relation between Nursing Students' Personal Characteristics and Different Study Variables (n=325).

Variables	Metacognitive thinking			Goal orientation			Academic motivation		
	Mean	±	SD	Mean	±	SD	Mean	±	SD
Age in year:									
• ≤ 20	203.44	±	24.32	62.67	±	6.62	105.72	±	13.24
• > 20	201.44	±	25.64	61.30	±	9.66	101.10	±	14.29
Independent t-test---P-value	0.09----0.82			1.16----0.28			0.21-----0.64		
Academic year:									
• First	207.51	±	22.92	62.80	±	8.86	107.91	±	12.86
• Second	206.28	±	24.84	63.62	±	7.73	104.82	±	12.77
• Third	193.03	±	26.89	60.80	±	9.96	99.10	±	15.77
• Fourth	205.38	±	23.17	61.11	±	9.54	103.14	±	12.51
ANOVA F test-----P-value	6.21-----0.000**			1.83-----0.141			5.92-----0.001**		
Gender:									
• Male	195.93	±	28.88	61.28	±	9.63	102.24	±	16.17
• Female	205.04	±	22.78	62.34	±	8.92	104.06	±	12.95
Independent t-test---P-value	1.39----0.23			0.99----0.32			1.92----0.16		
Marital status:									
• Single	202.17	±	25.25	61.96	±	9.27	103.61	±	14.07
• Married	208.21	±	18.14	63.42	±	6.24	102.68	±	11.35
Independent t-test---P-value	1.29----0.25			1.20----.27			0.70----0.40		
Working besides studying:									
• Yes	201.71	±	26.34	62.07	±	8.57	104.85	±	13.58
• No	202.69	±	24.66	62.04	±	9.24	103.29	±	13.99
Independent t-test---P-value	1.67----0.19			0.22----0.63			0.02----0.87		

* Statistically significant at P < 0.05, ** Highly statistically significant at P < 0.01.

4. Discussion

Metacognition of students identified as the awareness or understanding of their stored information and knowledge. This understanding can be articulated through the real use of this information and knowledge in their planning and setting achievement goals, or through the capacity to describe it verbally. As well, metacognition and goal orientation are essential in learning and powerful predictors of students' academic motivation and achievement [22]. Academic motivation relates to internal and external factors that contribute to the academic achievement of students; it is an significant predictor of learning. Additionally, understanding the academic motivation and its associated factors help the educational institutions to understand why some students have a good performance while others cannot finish their education [23].

Therefore this study aimed to examine nursing students' metacognitive thinking and goal orientation as predictors of their academic motivation at Faculty of Nursing, Zagazig University.

As regards the total mean percent scores of metacognitive thinking domains; the current study findings showed that the highest mean percent score of the knowledge about

cognition subdomains was for declarative knowledge; while the lowest was for conditional knowledge. On the other hand, the highest mean percent score of the regulation of cognition subdomains was for information management; however the lowest was for comprehension monitoring. These findings could be due to that studied students had information and knowledge about themselves and the abilities to organize them; but they did not know when and why they can use these information and knowledge in solving problem that facing them during the learning process that could negatively affected their conditional knowledge and comprehension monitoring scores.

The previous study findings are supported by a previous study carried out by Aljaberi & Gheith [18], who investigated the university students' level of metacognitive thinking, in Jordan, and they found that the declarative knowledge had the highest mean percent score. However, these findings were dissimilar with the same author, who found that the procedural knowledge had the lowest mean percent score as a subdomain of the knowledge about cognition. Additionally, planning and debugging strategies as subdomains of the regulation of cognition constituted the lowest and highest mean percent scores, respectively.

Regarding the level of metacognitive thinking, the study findings displayed that more than two thirds of nursing students had a high level of metacognitive thinking. The possible rational for this finding is that the faculty of nursing is very stressful and demanding for students; so they should have certain skills for learning, clinical problem solving, and critical thinking. Subsequently, nursing students who use their metacognitive skills effectively and are more aware of what, how, and when they can learn knowledge could struggle to overcome obstacles facing them during their learning process.

The previous study finding is supported by previous studies as the one carried out by Al-Hamouri & Abu Mokh [24], who examined the level of metacognitive thinking among Yarmouk University students, in Yemen, and the other done by Oguz & Ataseven [25], who studied metacognitive skills and motivation among university students, in Turkey, and they concluded that the studied participants had a high level of metacognitive skills. However, this finding is dissimilar with a study carried out by Aljaberi & Gheith [18], who found that the majority of subjects had a moderate level of metacognition.

Concerning the total mean percent scores of goal orientation domains; the findings of the present study revealed that the mean percent score of the performance goals was higher than the mean percent score of the mastery goals. This result could be attributed that nursing students prefer situations where they can demonstrate themselves and their abilities than situations that help them expand their skills; they gave importance to demonstrate higher competence and self-improvement than competing with their colleagues. This finding is in agreement with Khalifa [26], who studied goal orientation in nursing students, in Egypt, and found that the mean score of performance goals was higher than the mastery goals. Conversely, these findings were incongruent with Koksoy & Uygun [20], who investigated achievement goal orientation levels of students, in Turkey, and asserted that performance goal orientation scores of students were lower than their mastery goal orientation scores.

In relation to goal orientation level, the current study results exhibited that most of nursing students had a high level of goal orientation. This finding could be due to that nursing students had a lot of tasks and responsibilities during their learning process; so they should be talents and have the required skills to set goals and put good plans for their academic assignments of the various courses. These skills could in turn improve their levels of goal orientation. In the same way, in other studies carried out by Kassaw & Astatke [27], in India, where they assessed goal orientation as a predictor of academic achievement; and Koksoy & Uygun [20] they found that students had high level of goal orientation. Conversely, This result is in disagreement with that of Khalifa [26], who mentioned that nursing students had a medium level of achievement goal orientations.

As for the total mean percent scores of academic motivation domains, the findings of this study presented that extrinsic motivation mean percent score was higher than intrinsic motivation mean percent score. This could be due to that students in this sample were less motivated by the college experience than they are by the knowledge

and achievement connected with their scores. Likewise, this might be attributed to the nursing students' thinking was focused on earning good grades to get a good job which, in turn, increase the competition between them, and as a result their extrinsic motivation could increase. This result is consistent with Carroll [28], who conducted a study about academic motivation among undergraduate students at the university of Texas, in the United States of America (U.S.A), and mentioned that students displayed higher extrinsic motivation than their intrinsic motivation.

With regard to the academic motivation level; this study findings illustrated that most of nursing students had a high level of academic motivation. This might be due to that nursing students took the nursing field as an opportunity to find a job immediately after graduation. This could be an effective factor for increasing students' academic motivation. This result is consistent with Oguz & Ataseven [25], who asserted that studied students had a high level of academic motivation.

Pertaining to the correlations between the different study variables and the predicting effect of independent variables, the current study findings presented that nursing students' metacognitive thinking was significantly and positively correlated to their goal orientation and academic motivation. In addition, there was positive and significant correlation between nursing students' goal orientation and their academic motivation. Besides, nursing students' metacognitive thinking and goal orientation were significant predictors of students' academic motivation. The possible explanation for these findings might be due to that students who have metacognitive skills be aware of their learning process and achievements, and could realize their weak and strong points. Therefore, they could set their own goals to overcome weak points and increase strong points, that could consecutively make them more academically motivated. In addition, if students are able to think in a metacognitive way, they can plan, control, monitor, and evaluate knowledge and information correctly and thus boost the likelihood of experiencing more achievement of their goal orientation and subsequently improve their academic motivation.

These findings go in the same line with a study conducted in Iran, by Abassi & Dargahi [29] to assess predictors of academic motivation at Arak university, and found that metacognitive thinking was significantly and positively correlated to academic motivation. Similarly, these findings are consistent with those of studies done by Vrugt and Oort [15], who investigated the relationship between metacognition and goal orientation among students, in Amsterdam, and Alotaibi [30], who studied the possibility of predicting achievement goal orientations from metacognitive skills among graduate students, in the Kingdom of Saudi Arabia, and they concluded that metacognitive thinking was significantly and positively correlated to students' goal orientation. Likewise, in a study carried out by Oz [8], in Turkey, to investigate the metacognitive awareness and academic motivation; found that metacognitive awareness was a strong predictor of academic motivation. Moreover, AL-Baddareen et al. [10], who examined self-efficacy, achievement goals, and metacognition as predictors of academic motivation of university students, in Jordan, found that students' goal

orientation and metacognition skills were significant predictors of their academic motivation.

With reference to the relationship between studied nursing students' personal characteristics as regards the different study variables; this research findings indicated that there was significant relationship between nursing students' academic year as regards their metacognitive thinking and academic motivation. This result could be because of the fact that the learning environments are organized from one level to another; therefore, students become more understandable of their nature of study, more interested in learning, their abilities are improved, and they can complete their learning materials effectively. This could make them feel more challenged and motivated with new subjects and accordingly use additional metacognitive strategies. These results are in agreement with that of Oguz, and Ataseven [25], who mentioned that there is a significant difference in students' metacognitive skills according to their academic year. On the other hand, these findings were in disagreement with the same author, who mentioned that there was no significant difference in students' academic motivation according to their academic year.

5. Conclusion

Nursing students' metacognitive thinking and goal orientation were significant predictors of academic motivation.

6. Recommendations

Based on the results of the research the faculty administrators should:

- Encourage nurse educators to improve students' thinking abilities by putting specific approaches to improve thinking and embedding them in the various courses.
- Conduct training programs on metacognition thinking skills for nurse educators and students alike.
- Pay more attention to the growth of metacognitive thinking skills in all academic years.
- Infuse educational courses dealing with metacognitive thinking skills.
- Improve nurse educators' and students' goal orientation awareness to create a desired teaching and learning environment.
- Encourage students to talk about their future planning, including career and personal goals and assist them in mapping out steps to be taken to meet their goals. This can be done during the interview and the office hours throughout their studying years.
- Establish a motivation system for both academic and extracurricular achievements, such as written praise
- Design activities that can improve students' academic motivation such as engaging representatives of students in the faculty and departments' councils to improve their intrinsic motivation.

Further Research

Further study should be conducted to measure nurse educators' awareness regarding metacognitive thinking and goal orientation.

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