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DOI:

10.4103/jehp.jehp_1481_22

Correlation between critical thinking dispositions and self-esteem in nursing students

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Received: 10-10-2022

Accepted: 06-11-2022

Published: 28-04-2023

Abstract:

BACKGROUND: Critical thinking has been acknowledged as a key component of clinical decision-making and professional competency. Therefore, it is of great importance to reflect on how critical thinking is acquired and investigate its determinants, including self-esteem, in nursing education. The present study was thus to assess the correlation between critical thinking and self-esteem in nursing students.

MATERIALS AND METHODS: This descriptive correlational study was fulfilled in 2019 on 276 nursing students selected via the random sampling method. For this purpose, Ricketts' Critical Thinking Disposition Questionnaire and Eysenck's Self-Esteem Scale were employed to collect the data, which were then analyzed using the SPSS Statistics (ver. 22) software along with independent-samples *t*-test, Pearson correlation coefficient, and one-way analysis of variance, considering the significance level of $P < 0.05$.

RESULTS: The study findings showed a significant correlation between critical thinking and self-esteem ($r = 0.529$, $P < 0.001$) as well as self-esteem and critical thinking dispositions, that is, commitment, perfectionism, and creativity ($r = 0.40$, $P < 0.001$). Moreover, these dispositions had a significantly increasing trend during various academic years, but the difference was not significant with regard to perfectionism ($P < 0.001$).

CONCLUSION: Given the positive correlation between self-esteem and critical thinking, commitment, perfectionism, and creativity in nursing students, it is essential to develop self-esteem skills in such students, using appropriate approaches to boost self-esteem as one of the important missions of higher education systems. As well, a lack of perfectionism during academic years confirms that it is possible that determinants other than educational environments, for example, families, are involved. Therefore, managers are suggested to hold meetings with parents and nursing students.

Keywords:

Creative thinking, nurses, self-esteem

Introduction

In today's scientific societies, educational systems revolve around experiential educational activities and thinking, and learning training. Therefore, their identification is an educational necessity.^[1] Critical thinking is one of the important skills needed by clinical students, which is considered one of the main components

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in the education of the medical profession and the training of qualified professionals.^[2] In advanced educational systems, critical thinking can be utilized as one of the most important competencies in the twenty-first century.^[3] Paying much attention to thinking in education is thus important, and the ultimate goal of education is to empower individuals to think in a logical and constructive manner.^[4] Thinking and knowing are two interconnected processes,

How to cite this article: Vasli P, Mortazavi Y, Aziznejadroshan P, Esbakian B, Ahangar HG, Jafarpoor H. Correlation between critical thinking dispositions and self-esteem in nursing students. *J Edu Health Promot* 2023;12:144.

as thinking helps create knowledge, and a knowledge base is necessary for thinking to emerge. Despite its scientific relevance, particularly in higher education systems, critical thinking is a valuable resource for planning, management, monitoring, and evaluation of academic domains that are beyond classrooms and aid students improve their personal and social lives.^[3] Individuals with critical thinking skills have abilities such as information searching, data analysis, decision-making, and reflection. Critical thinking is also the foremost predictor of academic achievement. On the contrary, poor critical thinking can bring about numerous negative consequences in clinical conditions, such as depression, failure to solve patient problems, and deficient clinical reasoning. Moreover, it has been emphasized that the main goal of nursing education is to promote critical thinking in students.^[5] Reinforcing nurses' critical thinking skills will accordingly help them make correct decisions and provide effective services during patient care processes.^[6] Furthermore, critical thinking is one of the basic skills that prepare nursing students to have clinical practices. This type of thinking will also enable them to effectively manage their patients' problems, make the best clinical decisions, take better control over critical clinical situations, and provide safe and high-quality care.^[5] Besides, nurses need to have the ability to detect changes in patients' conditions, practice independent nursing interventions, and predict patients' needs and prioritize them for further implementation. Such measures demand critical thinking skills, advanced problem-solving skills, and clear communication. Nursing graduates are similarly expected to have critical thinking skills so that they can make good decisions based on clinical conditions.^[7] Therefore, it is vital to emphasize how critical thinking is acquired in nursing education and how nursing students do it to think critically.^[6]

Diverse definitions of critical thinking have been provided thus far. In this sense, critical thinking has been defined as the ability to have logical, reflective, systematic, and practical thinking during judgments about a situation to do reviews and make appropriate decisions.^[8] Critical thinking is also a complicated process, demanding higher reasoning to achieve the desired goals.^[3] In another definition, critical thinking represents the ability to employ reasoning and logic in ideas, comments, and new situations, which helps have a vision and review an idea or a concept from different aspects.^[9]

The review of the related literature also suggests that some personality traits, such as self-esteem, curiosity, flexibility, creativity, thinking disposition, etc., can effectively reinforce critical thinking skills.^[10] Here, self-esteem can be seen as a personality trait that shapes

all life aspects, including thinking modes. Since critical thinking is one area of character and way of thinking, it may be assumed that it is a determinant.^[9] In other words, self-esteem is an underlying factor for critical thinking; as a result, fostering self-esteem and critical thinking skills can enhance the ability to acquire knowledge and skills essential to achieve personal goals and fulfill educational ones, which helps students be actively involved in today's knowledge-based society.^[11]

According to Rosenberg, self-esteem is depicted as a stable characteristic of adulthood.^[12] It has also been defined as positive or negative attitudes towards oneself, whose positivity is the main feature of self-esteem.^[13] In other definitions, self-esteem refers to individuals' perceptions of self-worth and self-satisfaction. This concept means how close the person is to the real self.^[14] Additionally, self-esteem has been described as personal emotional responses to perceived values and no differences between the actual self and the ideal one.^[15]

Given the importance of critical thinking and self-esteem, numerous studies have been conducted so far on the relationship between these two concepts. In this line, Pilevarzadeh *et al.* (2014)^[4] found a significant relationship between critical-thinking dispositions and self-esteem among nursing students and pointed out that the critical-thinking total score in all cases was poor and the majority of the students demonstrated moderate levels of self-esteem. Kermansaravi *et al.* (2013),^[7] evaluating critical thinking in junior, senior, and graduate students, further established that the levels of critical thinking in senior students were statistically different from those in the other two groups. Moreover, Barkhordary *et al.* (2010),^[16] in their study on the correlation between critical thinking and self-esteem among nursing students, concluded that critical thinking in most cases was poor, and their self-esteem was at a moderate level. In addition, a significant relationship was observed between critical thinking and self-esteem. Amirpour (2012),^[17] reflecting on the relationship between critical thinking dispositions and happiness and social self-esteem among undergraduate students of Payame Noor University, Kangaver branch, Iran, correspondingly concluded that critical thinking and its dispositions (except for perfectionism) could predict happiness and social self-esteem. Besides, Supriya (2016)^[18] assessed self-esteem in third-year nursing students and reported that 97% of them had moderate levels of self-esteem, and no relationship had been revealed between their age, level of education, family income, and medical history and self-esteem. Furthermore, Choi *et al.* (2017)^[19] did not find a statistically significant relationship between nursing practice environments and self-esteem and critical thinking dispositions among clinical nurses.

Even with the worldwide expansion of such studies on critical thinking and learning in other countries with a thirty-year history, no research has been thus far fulfilled on the correlation between critical thinking dispositions and self-esteem, particularly among nursing students in a comprehensive manner in Iran, to the best of the authors' knowledge. As it is expected that nursing graduates have critical thinking skills to make the right decisions in clinical settings, it is essential to shedding light on its determinants.^[16] Therefore, the main purpose of this study was to assess the correlation between critical thinking dispositions and self-esteem in undergraduate nursing students of different academic years.

Material and Methods

Study design and setting

This descriptive correctional study was conducted on the first- to fourth-year undergraduate students enrolled at Babol University of Medical Sciences, Babol, Iran, and Shahid Beheshti University of Medical Sciences, Tehran, Iran, selected using the random sampling method.

Study participants and sampling

According to Pilevarzadeh *et al.* (2014).^[4], the sample size was determined by 276 individuals, with reference to the correlation coefficient ($r = 0.17$, $\alpha = 0.05$, and $\beta = 0.20$). Upon making coordination with the heads of the schools of nursing at Babol University of Medical Sciences, Babol, Iran, and Shahid Beheshti University of Medical Sciences, Tehran, Iran, the heads of departments and the nursing educators in these centers, the researcher referred to the students during classroom time-outs, introduced oneself, explained the study objectives, obtained their consent to participate in the study, and provided some information about the research tools and how to complete them, and then distributed the questionnaires. In the case of senior students taking internship courses, the required coordination was made with the leaders, the process of completing the research was explained, and the questionnaires were distributed. The researcher also asked the study samples to complete the questionnaires and return them immediately. Data collection was further performed at one stage, and the researcher assured all the students that all their information would remain confidential.

Data collection tool and technique

Three questionnaires were administered to collect the data. The first one was related to demographic characteristics, including age, gender, academic year (*viz.*, first to fourth), and marital status. The second questionnaire was the Ricketts' Critical Thinking Disposition Questionnaire (RCTDQ), containing 33 items and three sub-scales of creativity (11 items), perfectionism (9 items), and commitment (13 items),

whose answers were in the form of a five-point Likert-type scale from *totally agree* (5 points) to *totally disagree* (1 point). The minimum and maximum scores obtained from the given questionnaire were 33 and 165, respectively. The data were then divided into three groups of poor, moderate, and good using the cutoff point through percentage. In this respect, scores below 33 were considered poor, those between 34 and 66 were marked as moderate, and scores from 67 to 100 were deemed good. The third questionnaire was the 30-item Eysenck's Self-Esteem Scale (ESES) with *yes* (1 point), and *no* (0 point) answers, in which the minimum and maximum scores were respectively 0 and 30. The scores were also turned into percentages and then categorized into three levels: scores below 33 as poor, those between 34 and 66 as moderate, and those from 67 to 100 as good.

The validity and reliability of the Persian versions of both questionnaires had already been established in various studies.^[20,21] The reliability values in the study by Pacmehr *et al.* (2013)^[22] for the RCTDQ had been thus determined by 0.76, and it had been reported as 0.88 for the ESES in the study by Hormoznezhad *et al.* (2001)^[20] in Iran. In the present study, the reliability of the RCTDQ and the ESES, in a pilot study of 30 nursing students at Babol University of Medical Sciences, Babol, Iran, using the test-retest method, was 0.75 and 0.82, respectively.

Ethical consideration

This study was approved by the ethics committee of Babol University of Medical Sciences, Iran, with code no. IR.MUBABOL.REC.1399.468.

Statistical analysis

The data were analyzed using the SPSS statistics (ver. 22) software through descriptive statistics (frequency, mean, and standard deviation) as well as independent-samples *t*-test, one-way analysis of variance (ANOVA), and Pearson correlation coefficient considering the significance level of $P < 0.05$.

Results

In total, 83.3% of the nursing students were female, and 16.7% of them were male. In terms of marital status, 88% of the students were single. The mean age of the students was also 21.02, with a minimum of 18 and a maximum of 29 years old. In addition, 67.7% of the students had good critical thinking skills, and 31.9% were at moderate levels. Moreover, 64.1 and 35.5% of the cases had good and moderate levels of self-esteem [Table 1]. The independent-sample *t*-test results also showed that both genders had no statistically significant differences with regard to self-esteem, but critical thinking in women was higher compared with men. Besides, married students had higher self-esteem than single ones [Table 2].

Table 1: Levels of critical thinking and self-esteem among nursing students during different academic years

Variables	Levels	Academic years n (%)				Total 276 (100)
		First 60 (21.7)	Second 81 (29.3)	Third 66 (24)	Fourth 69 (25)	
Critical thinking	Poor	0	0	0	1 (1.4)	1 (0.4)
	Moderate	23 (38.3)	31 (38.3)	23 (34.8)	11 (15.9)	88 (31.9)
	Good	37 (61.7)	50 (61.7)	43 (65.2)	57 (82.6)	187 (67.7)
Self-esteem	Poor	0	0	0	1 (1.4)	1 (0.4)
	Moderate	26 (43.3)	38 (46.9)	23 (34.8)	11 (15.9)	98 (35.5)
	Good	34 (56.7)	43 (53.1)	43 (65.2)	57 (82.6)	177 (64.1)

Table 2: Mean, standard deviation, and significance levels of critical-thinking dispositions and self-esteem in terms of gender and marital status

Variables	Categories	Commitment	Perfectionism	Creativity	Self-esteem	Critical thinking
Gender	Male	6.27±48.50	29.80±4.17	41.00±4.02	20.46±5.95	119.30±10.98
	Female	4.23±49.53	32.37±3.95	43.04±3.79	21.5091±4.88	124.94±9.23
	<i>P</i>	0.28	0.001	0.002	0.12	0.002
Marital status	Single	4.72±49.50	31.84±4.12	42.49±3.96	21.3±25.17	123.63±9.89
	Married	3.98±49.85	32.67±3.89	44.27±2.95	24.21±3.64	126.79±8.59
	<i>P</i>	0.47	0.26	0.003	0.001	0.058

As illustrated in Table 1, more than 67.7% of the nursing students had a good level of critical thinking, and 64.1% of them had a good level of self-esteem. Figure 1 compares critical-thinking dispositions and self-esteem in nursing students during four academic years.

The one-way ANOVA results also revealed that critical thinking and its dispositions, namely, creativity and commitment, as well as self-esteem, had increasing trends during different academic years, but perfectionism was not so [Table 3].

The results of the correlation between critical thinking dispositions and self-esteem are displayed in Table 4. Accordingly, there is a statistically significant correlation between both variables ($r = 0.529, P = 0.001$) and self-esteem and critical thinking dispositions ($r = 0.4, P = 0.001$).

Discussion

This study was to assess the correlation between critical thinking dispositions and self-esteem. One of the important findings of this study was the higher mean scores of critical thinking in female students than males, consistent with the results reported by Orujlu *et al.* (2017),^[23] examining the relationship between critical thinking and self-efficacy of nursing students ($P < 0.05$). Farzin *et al.* (2018),^[24] in their study on practice teachers also found that the mean scores of critical thinking in females were higher than in males. In contradiction of these findings, Mohammadi *et al.* (2016)^[25] had not observed a statistically significant difference between critical thinking dispositions in male and female students. In line with these findings, it can be thus acknowledged that several determinants may be effective

in the discrepancy of critical thinking levels in male and female students, such as self-efficacy,^[26] learning styles,^[27] and cognitive differences.^[28] In this respect, Marshman *et al.* (2018)^[26] pointed out that self-efficacy could shape performance as one of the basics of critical thinking. Moreover, self-efficacy could be related to fields of study, and female students in some disciplines, such as engineering and mathematics, could have lower levels of self-efficacy compared with their male counterparts.

Among other findings was the variations in critical thinking levels during different academic years, which had gradually elevated in a statistically significant manner, in agreement with the reports by Gharib *et al.* (2010)^[29] but in conflict with the study by Pilevarzadeh *et al.* (2014)^[4]; in other words, critical thinking in the students did not significantly boost based on their academic years. These findings were also in contrast to those revealed by Mohammadi *et al.*^[25] (2016), wherein no statistically significant differences occurred in the students' critical thinking with reference to their academic achievement. No development of critical thinking among the students of different academic years can be thus explained by several factors affecting critical thinking score differences; for example, policies governing some universities, such as no emphasis by some schools on the dynamic methods of instruction, and the common use of lecture-based teaching methods. Moreover, the current nursing programs implemented in some schools of nursing do not include modern methods of instruction inducing critical thinking.^[16] Among other reasons for the discrepancy between different studies can be the research tools administered in a way that most studies are recruiting the California Critical Thinking Skills Test (CCTST) had shown that the critical thinking scores of students were low and moderate. In this sense,

Hatefi *et al.* (2017)^[30] noted that only 24 out of 33 items of the RCTDQ had been consistent with the CCTST.

The moderate-to-good levels of self-esteem in 99.6% of the nursing students and the statistically significant difference between academic years were additionally among other important findings in this study. In line with these outcomes, the students' self-esteem in the study by Figen and Avci (2020)^[31] showed significant progress during various academic years ($P < 0.03$). Unlike the present study, Supriya (2016)^[18] found that the nursing students' self-esteem in various academic years had not

been significant, and the levels of self-esteem in 97% of the students were moderate. Besides, Barkhordary *et al.* (2010)^[16] noted that self-esteem had been moderate in 73% of the students recruited, but similar results were obtained by Pilevarzadeh *et al.* (2014)^[4], in which a significant difference was detected between self-esteem in the nursing students of low and high academic years. In addition, self-esteem in female students was higher than in male ones, in line with the findings reported by Figen and Avci (2020)^[31] ($P < 0.03$). In this study, self-esteem was at good and moderate levels with a significant difference in various academic years, which can be attributed to numerous factors such as guidance counseling, mass media, high-quality education, group work, seminars, and lectures, contributing to nurses to improve their self-esteem and provide care for their patients. Among the other factors which could positively affect self-esteem in nursing students are communication skills, personal characteristics, that is, religious beliefs, family cohesion, social and emotional support, good general health or mental health, and learning process and outcomes such as critical thinking, success, stability, goal-oriented competitiveness, and professional features, namely, professional identity and

Table 3: Mean and standard deviation of critical-thinking dispositions and self-esteem during different academic years

Variables	Academic years	Frequency	Mean	Standard deviation	P
Commitment	Group 1	60	47.98	4.44	0.01
	Group 2	81	49.57	4.21	
	Group 3	66	49.76	5.16	
	Group 4	69	49.94	4.62	
	Total	276	49.36	4.64	
Perfectionism	Group 1	60	32.58	3.70	0.29
	Group 2	81	31.63	3.95	
	Group 3	66	31.32	4.64	
	Group 4	69	32.35	3.99	
	Total	276	31.94	4.09	
Creativity	Group 1	60	41.37	4.27	0.001
	Group 2	81	42.27	3.88	
	Group 3	66	43.21	3.46	
	Group 4	69	43.87	3.59	
	Total	276	42.70	3.89	
Self-esteem	Group 1	60	20.92	4.50	0.001
	Group 2	81	20.72	5.18	
	Group 3	66	21.62	4.80	
	Group 4	69	23.48	5.37	
	Total	276	21.67	5.09	
Critical thinking	Group 1	60	121.93	10.00	0.01
	Group 2	81	123.47	8.76	
	Group 3	66	124.29	9.83	
	Group 4	69	126.16	10.30	
	Total	276	124	9.75	

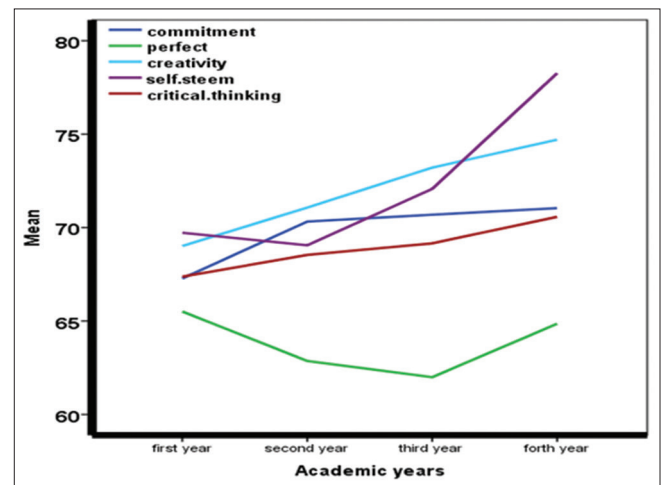


Figure 1: Comparison between critical-thinking dispositions and self-esteem in nursing students during four academic years

Table 4: Matrix correlation between critical-thinking dispositions of self-esteem

Variables	Statistical test	Commitment	Perfectionism	Creativity	Self-esteem	Critical thinking
Commitment	Pearson correlation coefficient	1	0.190**	0.639**	0.429**	0.811**
	Sig. (2-tailed)		0.002	0.000	0.000	0.000
Perfectionism	Pearson correlation coefficient	0.190**	1	0.353**	0.392**	0.652**
	Sig. (2-tailed)	0.002		0.000	0.000	0.000
Creativity	Pearson correlation coefficient	0.639**	0.353**	1	0.400**	0.852**
	Sig. (2-tailed)	0.000	0.000		0.000	0.000
Critical thinking	Pearson correlation coefficient	0.811**	0.652**	0.852**	0.529**	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	
Self-esteem	Pearson correlation coefficient	0.429**	0.392**	0.400**	1	0.529**
	Sig. (2-tailed)	0.000	0.000	0.000		0.000

** . Correlation is significant at the 0.01 level (2-tailed)

development, professional views, value internalization, and professional competency or perceived competency.^[15] In addition to the above-mentioned factors, some factors affecting self-esteem in students might be off schools, such as parental education. In this sense, Figen and Avci (2020) reported that students whose parents were university graduates had much excitement about choosing this profession, wanted to work as a nurse after graduation, and liked to recommend this profession to others, so they had obtained a significantly higher mean score of academic stress and self-esteem with regard to their profession. Of note, one of the reasons for the differences in the self-esteem of students in this study compared with those in the related literature was parental education.

The study findings also showed a positive correlation between critical thinking and self-esteem in nursing students. In line with these results, several investigations on nursing students have also demonstrated a significant relationship between self-esteem and critical thinking.^[4,5,19] Hong *et al.* (2020)^[32] further observed a correlation between self-esteem and compromising thinking ($r = 0.31, P < 0.001$). Moreover, Wang *et al.* (2020)^[9] reported a positive relationship between positive self-esteem and critical thinking dispositions ($r = 0.34, P < 0.001$) and a negative correlation between negative self-esteem and critical thinking ones ($r = -0.26, P < 0.001$). It can be acknowledged that one of the important determinants of critical thinking development is having enough independence and self-esteem, so nursing students need to have independence, trust, and responsibility to judge and make the right decisions in different clinical.^[16] Parenting style is also one of the most significant factors shaping self-esteem, which is associated with critical thinking dispositions. Therefore, understanding critical thinking disposition requires the knowledge of parenting styles.^[9]

The present study similarly established a correlation between creativity and critical thinking during different academic years. Consistent with these findings, Mohammadi *et al.* (2016)^[25] noted that creativity could be one of the predictors of critical thinking ($r = 0.267, P < 0.001$). Critical-thinking skills and creativity can thus develop in harmony. Like any other thinking skill, creativity can be fostered, and dominance over any knowledge demands both critical thinking and creativity. Highlighting the values of critical thinking and creativity, Cran believes that creativity can protect one when reasoning fails and vice versa.^[33] Creativity here refers to the conception of dedicated and thoughtful ideas, concepts, and new understandings of values, which cannot be realized until new ideas and concepts are retested and evaluated. Given the overlap of creativity and critical thinking, it can be concluded that the growth

of one of them is accompanied by the other one. Thus, it is imagined that a person who creates (creativity) has acquired the ability to analyze and evaluate (critical thinking), and creativity can be the predictor of critical thinking.^[34]

The study results also showed a direct correlation between self-esteem and critical thinking dispositions, that is, commitment, perfectionism, and creativity, which was somewhat in line with the reports by Ghadampour *et al.* (2015),^[35] reflecting on the effect of an assertiveness training program on critical thinking of students, in which the given program had been correlated with critical thinking, and its dispositions, particularly perfectionism and commitment, but creativity had not been influenced. The study findings also supported the reports by Amirpour (2012),^[17] in which self-esteem had been positively correlated with all three dispositions of critical thinking. Consistent with these findings, Sadoughi *et al.* (2017)^[36] found a statistically strong relationship between commitment and self-esteem among health management employees ($P < 0.05$). Moreover, Johar *et al.* (2018)^[37] revealed that self-esteem could shape employee commitment. Tetteh *et al.* (2019)^[38] further established a correlation between commitment and self-esteem ($r = 0.49$), but commitment could indirectly affect organization-based self-esteem. Considering the correlation between self-esteem and commitment in the nursing students here, it can be acknowledged that nurses with good levels of self-esteem can provide better patient care services, feel satisfied with their profession, be fully committed to it, and develop ethics, values, and professional images of their own successful development.^[4] People endowed with this type of thinking have characteristics that can elevate their self-esteem, including continuous efforts to develop their profession that can influence their self-esteem and then lead to no bias in judgment, knowledge, and awareness about their strengths and weaknesses.^[17] Hence, organizations must realize that self-esteem is one of the principles of forming attitudes, behaviors, personality traits, and psychological reactions. As a result, efforts to help boost self-esteem among employees in organizations need to be reconsidered.^[37]

A positive correlation between self-esteem and perfectionism was additionally among other findings in this study. In this respect, Ghahramani *et al.* (2011)^[39] reported a significant correlation between positive perfectionism and positive self-esteem and negative perfectionism and negative self-esteem. Hamza and Helal (2012)^[40] further concluded a correlation between self-esteem and perfectionism ($r = 0.627, P < 0.05$). Furthermore, Chou *et al.* (2019)^[41] established that self-esteem could have a moderating role in the relationship between perfectionism and creative

thinking. Ghahramani *et al.* (2011) further pointed out that positive perfectionism could augment self-esteem through increasing competency and self-acceptance, and negative perfectionism could emerge with no improvement in competency and self-acceptance due to aggravated psychological disorders such as anxiety, depression, or inter/intrapersonal problems.

Of the other findings in the present study was a positive correlation between self-esteem and creativity. In this vein, Jamshidi *et al.* (2012)^[42] found a relationship between creativity and self-esteem ($r = 0.199, P < 0.007$). As well, Yazdani Charati *et al.* (2016),^[43] in their study on 281 employees of Mazandaran University of Medical Sciences, Sari, Iran, reported a correlation coefficient between 0.63 and 0.98 with regard to self-esteem and critical thinking in four dispositions of flexibility, accountability, initiative, and sense of solidarity ($P < 0.007$). In their study on the students of 11 schools in seven Chinese cities, Liu *et al.* (2017)^[44] also found that self-esteem (that is, personal competency and egotism) could positively affect creativity in a significant manner and synergistic internal and external motivations could do so in respect of creativity. They further concluded that both self-esteem and motivation could influence creativity, forming a dynamic cycle that was constantly being improved. Considering that a high level of self-esteem can be correlated with high creativity, it can be assumed that students' self-evaluations need to be figured out to encourage them to have creative cognition. On the other hand, there is a need to work on students' thinking systems using different methods to verify whether they can help improve their self-esteem or not. It can be concluded that these are associated with positive feedback from universities in the form of good grades, students themselves as good self-esteem, or creative processes adopted by them.

Limitation and recommendation

This study also had limitations. First, a cross-sectional design cannot draw causal conclusions; therefore, future researchers should use an experimental design to further investigate its effect on critical thinking. Second, the type of critical thinking and self-esteem can largely be based on family culture and East Asian characteristics compared to Westerners; Therefore, future research should be able to focus on cultural differences in self-esteem and its effects on thinking styles; so, more measures should be taken in future research in this field. Third, age seems to have a positive relationship with self-esteem due to psychological maturity. For this reason, it is suggested that future studies should be able to examine people of various ages in different cultures to help validate the correlation and advance a better understanding of the development of critical thinking. However, this study has

been able to deal with the correlation between self-esteem with perfection, commitment, and creativity in addition to critical thinking.

Conclusion

The results of this study showed that critical thinking dispositions and self-esteem in nursing students were positively correlated so that self-esteem could predict critical thinking dispositions. Given that universities and educational centers can play a leading role in increasing self-esteem and critical thinking in students, educators and planners are expected to reinforce self-esteem in students in both theoretical and clinical settings to improve their clinical skills, particularly in clinical settings. Therefore, educators are suggested to create positive attitudes in students towards the nursing discipline and profession at the early stages of education, delegate sufficient authority to them in clinical settings and encourage them to apply the knowledge acquired in the delivery of care services to patients to give them a sense of self-esteem to judge and make decisions under various clinical conditions. Therefore, there is a need to focus on the parental role in promoting self-esteem in students because attitudes and parenting behaviors can have a direct impact on students' thinking or even feelings. Among the main points in this study was the use of a cross-sectional method for data collection; thus, it is suggested to recruit other experimental designs and shed light on the effect of family culture on self-esteem and thinking styles. In addition, the variable of age should be reflected in future studies differently because age can be positively correlated with self-esteem due to psychological maturity, so further research should include many young people of various ages as much as possible to validate the findings and promote a better understanding of critical thinking development.

Acknowledgement

This article is based on the findings of an approved research project with a number: IR.MUBABOL.REC.1399.468, and also, the authors hereby extend their gratitude to the authorities at the School of Nursing and Midwifery affiliated with Babol and Shahid Beheshti University of Medical Sciences, Tehran, Iran, as well as nursing students and all colleagues contributing to this study.

Declaration of patient consent

The authors certify that they have obtained all appropriate Students consent forms. In the form, the Student (s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The Students understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

The study was not funded by any institution or organization. Only the code of ethics has been obtained from the Ethics Committee of Babol University of Medical Sciences, Babol, Iran.

Conflicts of interest

There are no conflicts of interest.

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