

An Analysis of the Relationship Between Self-Efficacy Beliefs and Perceived Problem Solving Ability Among Nursing and Midwifery Students

Hemşirelik ve Ebelik Öğrencilerinde Öz-Yeterlik İnancı ve Problem Çözme Algısı Arasındaki İlişkinin İncelenmesi

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ABSTRACT Objective: Self-efficacy and problem solving are the main concepts of nursing and midwifery education. This descriptive study was conducted to identify the students' self-efficacy levels and to examine the relationship between self-efficacy and problem-solving. **Material and Methods:** Totally volunteer 251 nursing and midwifery students were participated to the study. Socio-demographic Data Form, the Self-efficacy Scale and the Problem Solving Inventory were used to collect the data. The data was analyzed with the SPSS 15.0 package using Mann-Whitney U, Kruscall Wallis, ANOVA and Pearson correlation tests. **Results:** The students' self-efficacy scores were found to be above mean (87.90 (\pm SD 12.54)) and problem solving scores were below mean (91.51 (\pm SD 22.83)). No significant difference was found between nursing and midwifery students in terms of their self-efficacy and problem solving levels ($p>0.05$). However, self-efficacy and problem solving levels of fourth year nursing students who reported that they received problem solving training were significantly higher than the rest of sample ($p<0.05$). Positive correlation was found between self-efficacy belief and perceived problem solving. Results showed that better problem solving skill, leads to an improved self-efficacy. **Conclusion:** There are mutual effect between the concept of self-efficacy belief and problem solving skill. Further studies are needed to examine the students' characteristics, curriculum, learning environment and teaching strategy in terms of self-efficacy belief and problem solving.

Key Words: Students, nursing; midwifery; self efficacy; problem solving

ÖZET Amaç: Öz-yeterlik ve problem çözme hemşirelik ve ebelik eğitiminin temel kavramlarıdır. Bu betimleyici çalışma, öğrencilerin öz-etkililik/yeterlik düzeylerini ve öz-yeterlik ile problem çözme algıları arasında ilişki olup olmadığını belirlemek amacıyla planlanmıştır. **Gereç ve Yöntemler:** Bu çalışmaya, 251 gönüllü Hemşirelik ve Ebelik Bölümü öğrencisi katılmıştır. Veriler, Sosyo-demografik Veri Formu, "Öz etkililik/yeterlik Ölçeği" ve "Problem Çözme Envanteri" ile toplanmıştır. Veriler, SPSS 15.0 paket programında Mann-Whitney U, Kruscall Wallis, ANOVA ve Pearson korelasyon testleri kullanılarak değerlendirilmiştir. **Bulgular:** Çalışmada, öğrencilerin öz-yeterlik ölçek puanlarının ortanın üstünde 87,90 (\pm SD 12,54) ve problem çözme puanlarının ortanın altında olduğu (91,51 (\pm SD 22,83)) belirlenmiştir. Hemşirelik ve ebelik öğrencileri arasında öz-yeterlik ve problem çözme becerileri açısından farklılık saptanmamıştır ($p>0,05$). Ancak, problem çözme eğitimi alan dördüncü sınıf hemşirelik öğrencilerinin hem öz-yeterlik hem de problem çözme puanları tüm öğrencilerden anlamlı olarak farklı bulunmuştur ($p<0,05$). Öz-yeterlik inancı ile, algılanan problem çözme becerisi arasında pozitif bir ilişki olduğu belirlenmiştir. Sonuçlar, problem çözme becerisi arttıkça, öz-yeterlik inancının arttığını göstermiştir. **Sonuç:** Öz-yeterlilik inancı ve problem çözme becerisi karşılıklı etkileşim gösteren kavramlardır. Öğrencilerin sosyo-demografik özelliklerinin, müfredatlarının, öğrenme ortamları ve eğitim stratejilerinin öz-yeterlik ve problem çözme becerisi açısından daha fazla incelenmesi için farklı araştırmalara gereksinim bulunmaktadır.

Anahtar Kelimeler: Öğrenciler, hemşirelik; ebelik; öz yeterlik; problem çözme

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Nursing and midwifery schools are supposed to train professionals who have a high self-efficacy (SE) belief and good problem solving (PS) skills, since these professions require coping with critical and vital situations. In terms of professional achievement, SE and PS enables individuals to believe that they have the necessary knowledge and competence to accomplish a certain task, which motivates them to put more effort.

SELF EFFICACY

A key concept in education, SE is known to be a factor that increases students' motivation to learn and succeed, and enhances their outcome expectancy.¹⁻³ Students with higher SE expectancies participate in learning activities more enthusiastically, they put more effort, struggle with challenging situations and display better performance when compared to those students with low SE expectancies.⁴ SE is the main determinant and central concept of education.^{2,5,6} The relationship between effective learning, academic performance and SE in nursing education has been clearly defined.^{1,2,7,8} In literature, those studies investigating the role of SE beliefs in the education of nurses and midwives have been mainly conducted in the field of nursing. However in a study it was found that first year nursing and midwifery students have equal level of SE.³

SE is the belief in one's capabilities to organize and execute the courses of action required to manage prospective situations. Bandura described these beliefs as determinants of how people think, behave, and feel.⁹ According to Bandura's theory, perception of students SE depends on four main information sources: mastery experiences (performers accomplishments of similar tasks), vicarious experiences (observing of role models, nurses), verbal persuasion (feed-backs, suggestions), emotional and physiological states (stress, physical reactions).¹⁰ It is common in nursing education and practice to use these sources for enhancing SE, since further insight into how SE sources influence SE beliefs can help improve the professional development of nursing students.^{2,3,5,11} A study by van Dinther et al. which review the literature in

between 1990 and 2010, explores the factors shown to affect the SE level of students in educational settings.¹ This review reveal that educational programmes based on social cognitive theory are proven to raise students' level of SE, that the most important source that boosts SE is mastery experiences, and vicarious experiences as the second most influential factor. Gloudemans et al. showed that differentiation of the vicarious experience sources into a peer- and expert based sources reflects better how nursing students develop self-efficacy beliefs.¹² They also stressed that although the concept of SE is extensively studied, the sources of SE beliefs are poorly investigated.

SE is conceived as a multidimensional notion that plays role in cognitive and affective processes and the factors that influence SE are known to be personal/cognitive ones.^{7,8,13} Lauder et al., evaluated the practice curricula based on SE and claimed that there is a virtuous cycle between cognitive strategies of SE and students performance.³ A concept analysis of SE by Zulkosky explores the "feeling", "thinking" and "behaving" dimensions of the cognitive model. In terms of "feeling", a low sense of SE is associated with stress, depression, anxiety, and helplessness. Hence, such individuals fail to cope with potential dangers, become pessimistic about their personal developments and accomplishments and, they eventually lose their self-esteem. In terms of "thinking", it is suggested that a strong sense of SE facilitates cognitive processes in a variety of settings such as decision making and academic achievement. As for "behaving", an individual's level of SE is said to be directly influential on his/her choice of activities. Zulkosky highlighted that "individuals with high levels of SE accomplish goals through visualizing successful outcomes rather than focusing on the possibility on negative consequences".⁷ High level of SE is associated with effective learning in nursing, students with high SE belief want to overcome difficult situations instead of avoiding them.^{1,2,8,12} Therefore educational programmes based on social cognitive theory, active learning strategies, student-centered learning environment, video-clips that stimulate real-life situation and attention to

the students who are from the millennial generation suggested which might be useful to raise SE.^{1,2,11}

PROBLEM SOLVING

PS is one of the most important basic skills utilized by nursing and midwifery students in caregiving.^{14,15} PS is a complex procedure which refers to the cognitive, affective, and behavioral processes through which individuals attempt to cope with the obstacles, stressful situations and problems they encounter throughout their lives.¹⁶ Teaching students how to use the PS process is critical to their ability for providing care for patients.¹⁵

Dewey defines PS as a teaching method and lays out the five steps of PS as follows: defining the problem, formulating hypothesis, and collecting, evaluating, organizing, interpreting data, reaching conclusions and testing those conclusions.¹⁷ These steps are taught through application of the nursing process as the scientific PS through nursing education.^{14,18} Students are expected not only to learn PS skills, but also believe in their skills to be able to use it effectively. However, studies revealed that the nursing students have moderate or low levels of PS.¹⁹⁻²³ Based on social cognitive theory, students' beliefs concerning their PS ability may affect their PS performance therefore educators should be aware of the relationship between SE and PS.

THE RELATIONSHIP BETWEEN SELF-EFFICACY AND PROBLEM SOLVING

SE and PS are the main concepts of nursing and midwifery education. However there is no study in the literature, which directly investigates the relationship between general SE belief and PS related to nursing students. There are some studies which examine the parallel concepts. In these studies, positive relation were found between SE and coping strategies and determined that higher critical thinking which positioned as an essential concept for effective PS skills leads to higher SE beliefs and perceived performance Gloudemans et al., highlighted that focusing on this relationship will help give direction to the professional development.⁵

Correlations between the SE and PS can be created when assuming a cyclical relationship between them: Belief in one's own competence increases the motivation to succeed, and the experience gained when a problem is successfully solved improves the belief in one's own competence, in other words, SE belief. This relationship highlighted by cognitive theory of SE. According to Bandura a high level of SE facilitates decision making which is an essential component of PS, and helps struggling with obstacles and confronting problems with perseverance.²⁴ Bandura's explanation which individuals with higher SE levels choose to perform more complicated and risky tasks; they challenge difficult situations and put more effort to achieve their goals, also stressed this affiliation between SE and PS.^{7,8,10}

The relationship between PS ability and SE beliefs in terms of their cognitive and affective dimensions can be seen in the Mayer's article titled "cognitive, metacognitive, and motivational aspects of PS."²⁵ According to Mayer, PS cannot function effectively without the motivational dimension which involves three cognitive dimensions: "interest", "self-efficacy", and "attributions". According to interest theory, students will work harder and be more successful on problems when they are interested. Self-efficacy theory predicts that students work harder on a learning task and understand the problem better when they have high SE. SE theory also predicts that students who improve their SE will improve their success in learning to solve problems. According to attribution theory, students' PS behavior depends on teachers reactions such as offering sympathy or pity to failure or encouraging them. Since SE belief and PS skill are both essential for nursing and midwifery students both of them were examined by questions are as follows:

- What is the level of SE beliefs among nursing and midwifery students?
- What is the level of perceived PS ability among nursing and midwifery students?
- Is there a correlation between students' SE beliefs and their perceived PS ability?

- Is there a significant difference between the SE levels of 1st and 4th year students?
- Is there a significant difference between the perceived PS ability levels of 1st and 4th year students?
- Is there a link between the SE and PS levels of students and their demographic and social profile?

MATERIAL AND METHODS

DESIGN AND SETTING

This descriptive study was conducted in May 2009 with the voluntary participation of first and fourth year students enrolled in the separate departments of Nursing and Midwifery at a State University Faculty of Health Sciences. Total number of students were 264 and 251 of them were volunteered. Data pertaining to 9 of the participants were excluded due to incomplete or invalid submission, and the analysis was carried out with 242 (91.6%) of the initial participants.

INSTRUMENTS

Socio-demographic Data Form: This form was developed by the authors to identify important socio-demographic information from the participants such as age, academic score, monthly income, place of residence, parents' status of education and employment.

Self-Efficacy Scale (SES): SES was developed by Sherer and Madduks (1982).²⁶ It was adapted for Turkish use by Gözümlü and Aksayan (1999).²⁷ The test-retest reliability coefficient was .92 and Cronbach-alpha reliability coefficient was .81 and .84 in our study. The scale has 23 items to assess general SE perception. The score range from 23 to 115, higher scores indicate higher level of SE belief. Each statement is evaluated on a 5-point Likert-type scale (1=strongly disagree, 5=strongly agree). The scale has four factors: Initiating behavior (IB), persisting behavior (PB), completing behavior (CB) and struggle against obstacles (SO). Since the Turkish version of the scale differs from the original in terms of the number of statements falling under each subdimensions, and since some items (numbered 11 and 19) are not in exact accord with the

subdimensions it is listed under, researchers using this scale are recommended to only evaluate the total score and to ignore the subdimensions. Therefore, the subjects' total scale scores were taken into account in this study.

Problem Solving Inventory (PSI): PSI developed by Heppner and Peterson (1982) and adapted to the Turkish language by Taylan (1990).²⁸ The six-point Likert-type scale has 35 questions. The responses to the items range between 1 (strongly agree) to 6 (strongly disagree). The score range of the scale is 32-192, the average score being 80. Lower score below 80 indicates higher PS, and higher score above 80 indicates lower PS. The Cronbach-alpha reliability coefficient was .88 by Taylan, and .87 in our study. The scale has three factors: Problem solving confidence (PSC), approach-avoidance style (AA) and personal control (SC).

DATA ANALYSIS

The data was analyzed using the SPSS 15.0 software package. Nominal variables were given with their frequency (percentage) in each group, while mean \pm standard deviation and median (minimum-maximum) values were given for metric variables. Spearman's rank correlation test was used for analyzing the relationship between socio-demographic variables and the scales, and the relationship between the scales (subscales) themselves. Mann-Whitney U for comparing differences between groups, Kruskal Wallis for comparing SES and PSI scores of nursing and midwifery students, Analysis of Variance for examining the role of PS training in groups and years and Pearson's correlation test for examining the relationship between SES and PSI scales were utilized for statistical evaluation. $p < 0.05$ was considered statistically significant.

It was also examined whether the students' SE and PS scores were affected by variables such as their academic achievement, their employment status, educational status and employment status of their parents, income status of their family, whom they live with, and whether or not they have ever received PS training.

*Taylan S. [Reliability and Validity of Perceived Problem Solving Inventory by Heppner]. Unpublished Master Thesis. Ankara Üniversitesi Sosyal Bilimler Enstitüsü, Ankara.1990.

ETHICAL APPROVAL

The study was conducted under the permission of the related educational institution, the students were informed about the research, and the ethical procedures were completed by obtaining the written informed consent of the volunteering students.

RESULTS

The sample consisted of 242 students, half of them (121) were nurse students and the others were midwifery. Among the students who participated in our study, 66.5% lived in a city, 51.23% lived in the Central Anatolia region of Turkey, 62.4% lived with their families, and their average age was 20.6 ± 1.9 years. As for their parents; 68.62% of the mothers and 55.782% of the fathers were primary school graduates, while 92.15% of the mothers were housewives and 97.93% of the fathers were employed. The average academic achievement was 3.0/4.0 for nursing students, and 2.9/4.0 for midwifery students. It was found out that 25.6% of the students who are fourth year nursing students reported that they have received PS training during their undergraduate education, as part of a course named "professional management in nursing".

Table 1 shows the scores obtained in each scale by nursing and midwifery students. The mean SE score of the total sample was $87.90 (\pm SD 12.54)$. Mean SE score was $85.52 (\pm SD 13.11)$ for 1st year nursing students and $94.11 (\pm SD 9.13)$ for 4th year nursing students. As for the department of midwifery, the mean SE score was found to be $88.16 (\pm SD 11.11)$ among 1st year students and $85.02 (\pm SD 14.87)$ among 4th year students. Mean PSI score was $91.51 (\pm SD 22.83)$ among 1st year nursing students

and $73.77 (\pm SD 15.18)$ among 4th year nursing students. In the case of midwifery students, 1st year students scored mean of $86.47 (\pm SD 19.23)$ points while the mean PSI score of 4th year midwifery students was $91.15 (\pm SD 24.30)$.

Table 2 demonstrates the Kruskal Wallis comparison of SES and PSI scores of nursing and midwifery students ranging from 1st year to 4th year. When the SES and PSI scores of nursing students were compared to those of midwifery students, no statistical significant difference was found between 1st year students of each department ($p > 0.05$). However, in the case of 4th year students, a significant difference was found at both scales in favor of nursing students ($p < 0.001$). It was also seen that 4th year nurse students had a significantly lower PSI score which means higher PS when compared to 1st year nurse students ($p < 0.001$).

A two-way analysis of variance (ANOVA) was used to examine the role of PS training in groups and years. This analysis showed that there is a significant relationship between SE and PS scores of 4th year nursing students who received PS training ($F=8.9$, $df=1$, $P=.003$).

The relationship between SE and PSI scores of nurse and midwifery students and their socio-demographic profile (their region of residence, whether they live in a city or town, their parents' educational level and employment status, their families' income status, and their academic achievements) was analyzed using the Kruskal Wallis test (Table 2). The analysis did not reveal a significant relationship for all of the demographic variables ($p > 0.05$). However, it was found that mean PSI scores of those who live alone ($79.67 \pm SD$

TABLE 1: The scores obtained in each scale by nursing and midwifery students.

Department/ Year	n	Nursing Students, PSI				Midwifery Students, PSI			
		Mean	sd	Min	Max	Mean	sd	Min	Max
Nursing/1 st year	75	85.52	13.11	36	111	91.51	22.83	41	154
Nursing/4 th year	46	94.11	9.13	70	110	73.77	15.18	44	108
Midwifery/1 st year	77	88.16	11.11	54	112	86.47	19.23	45	139
Midwifery/4 th year	44	85.02	14.87	59	111	91.15	24.30	46	157
Total	242	87.90	12.55	36	112	84.30	20.67	40	151

PSI: Problem solving inventory

TABLE 2: Comparison of scale scores with respect to field and year of education.

	Self-efficacy Scale	Problem Solving Inventory
Nursing/1 st year-Midwifery/1 st year	P=0.297	P=0.178
Nursing/4 th year-Midwifery/4 th year	P=0.000*	P=0.000*
Nursing/1 st year-Nursing/4 th year	P=0.000*	P=0.000*
Midwifery/1 st year-Midwifery/4 th year	P=0.266	P=0.222

* Statistically significant.

TABLE 3: Relationship between the students' scale scores and their demographic profile.

	Whom the Student Lives with	Working at a Job	Having Received Problem Solving Training
Self-efficacy scale total score	0.477	0.631	0.000**
Problem solving inventory total score	0.040*	0.083	0.000**
Problem solving confidence	0.038*	0.015*	0.000**
Approach-avoidance style	0.166	0.245	0.000**
Personal control	0.003**	0.407	0.001**

* (p<0.05); ** (p<0.05).

24.64) and those who share a house with their friends (82.86±SD 21.25) were found to be lower than those who live with their families (88.62±SD 21.29) (p=0.003). In other words, those who live alone or with their friends have better PS skills when compared to those who live with their families. It was also showed that working at a job is related to the PSC subdimension of the PSI (p=0.015, p>0.01), and receiving PS training is related to better SES and PSI scores (Table 3).

The relationship between SES and PSI scores were analyzed using Pearson's correlation test and Spearman's rank correlation test. It was determined that there is a negative and significant correlation between SES and PSI (r=-65, p=0.000) (Table 4).

As recommended in the validity and reliability studies of the Turkish version of SES, only the total scale score was taken into account, and the relationship between the subdimensions of SES and PSI were not examined. However, the relationship between the total SES score, the total PSI score, and the subdimensions of PSI was examined. A negative correlation was found between SES and each three subdimensions of the PSI: Confidence in problem solving (r=-67, p=0.000), approach-avoidance (r=-54, p=0.000), and self control (r=-36, p=0.000). Higher SE scores indicate a higher self-

TABLE 4: Relationship between SES and PSI.

	r	P
SES, PSI total scores	-0.65	<0.001
SES, PSI-Problem solving confidence	-0.66	<0.001
SES, PSI-Approach-avoidance style	-0.54	<0.001
SES, PSI- Personal control	-0.39	<0.001

SES: Self-efficacy scale; PSI: Problem solving inventory.

efficacy, whereas a PSI score equal to or below 80 indicates that the student perceives himself/herself as a competent problem solver. Our study results showed that lower PSI scores, in other words better PS skills, lead to an improved SE.

DISCUSSION

This study was conducted to determine the SE belief of nursing and midwifery students and to examine the relationship between SE belief and PS skills. First findings of this study was that the students' SE score was higher. This finding congruence with that of other studies conducted in Turkey²⁹⁻³¹ and with Lauders' study and can be interpreted as the students perceived themselves as having the confidence to perform the task, also expected higher results after the task.³ Based on social cognitive theory, high SE level of the students may

lead higher academic motivation, learning and skill development.

In the current study no significant relationship was found between the SE levels of students and their age, academic score, monthly income, place of residence, parents' status of education and employment. Contrary to our study findings, it was found relationship between age, experience, academic success/performance and SE in some studies.^{5,8,23} Similarly, no relationship was determined in our study between the students' SE levels and their socio-economic status, such as their monthly income, their place of residence, their parents' status of education and employment. It is known that SE levels of individuals are influenced by their social environment and socio-economic status is known to be an important variable in shaping individuals' social environment and thus their SE level, but no relationship was found in our study.³² This finding suggested that it would be better to use academic self-efficacy scale in future studies since students' environments and experiments throughout their education would have a great impact on their academic achievement specifically rather than generalized self-efficacy as measured in this study.

Findings of this study showed that PSI scores of students were below mean. This finding is congruence with the other studies which assess the PS skills of nursing and midwifery students and revealed that students' PS skills are not improved throughout their education.^{21,22,29} As Burns et al. stated, students acquisition of PS is impeded by many factors such as the lack of opportunities to practice PS skills and the challenges instructors face in teaching the skills in realistic situations.¹⁸ Number of studies revealed that nursing and midwifery students had difficulty in performing PS activities;^{14,15,19-22} they cannot grasp PS procedures adequately; they are reluctant to utilize PS skills in clinical practice since they find them difficult, time-consuming and too theoretical.^{19,21} Therefore problem/context-based learning strategies are commonly recommended to improve PS skills of students.^{18,33-36} Additionally it was suggested to attention to the motivational factors in clinical PS, and simulation.³⁷

It was determined that employment is related to the PSC, whereas living alone or living with friends is related to the PSC and personal control. These relationships have been demonstrated by other studies as well.²⁸ One implication that can be drawn from this finding relates to the importance of urging to solve their own problems independently and making their own decisions would improve students' PS skill. It can also be inferred that employment provides individuals with economical and social status, and also with various PS opportunities in the work environment, which again improves their PS skills.

Surprisingly, in the present study students reported that they have not received any PS training (exception of fourth year nurse students). They were actually taught nursing process called scientific PS procedures through 4-6 hours theoretical training and up to 16 hours of clinical practice weekly through 3.5 years, they do not perceive nursing process as a PS process. It may be related to nursing process education. At this point, further studies are needed to investigate why students don't perceive nursing process as a PS process how PS skills are taught to students and what the impact of nursing process on their PS skills. In Turkey, relationship between nursing process and PS skills are examined only by Bayindir and Olgun, they found that no relationship between the PS skills of students and nursing process grades. Wang et al., demonstrated that PS strategies should be integrated into the nursing process and PS skills can be improved.¹⁴ In a study which recruited third-year nursing students, it was reported that the students' PS skills and nursing process skills improved.¹⁵ It appears that relationship between PS skills and nursing process should be investigated precisely. This current study and similar studies reveal that the nursing process training may not improve students' PSI scores, which lead us to think that there might be problems regarding to the three cognitive dimensions included interest, self-efficacy and attributions of PS constructed by Mayer.²⁴ Therefore nursing process training should be evaluated based on cognitive dimensions of PS.

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The other finding of this study is that, SE and PS scores of nursing students who received PS training in the nursing management course are increased in the fourth year whereas midwifery students' scores are showed no difference. Statistical analysis revealed that receiving PS training in the management course is related to better SES and PSI scores for nursing students. Based on this result it would be beneficial for midwifery students to receive PS training. Actually, it was expected that having nursing process training would progress in PS level of students. Curriculum, clinical placements, teaching strategies, instructors and also students' characteristics needed to be examined the to determine the factors which influence SE and PS of these students. Similarly, content, teaching strategies and clinical applications of nursing management course are needed to be examined precisely to find out why nursing management course effect SE and PS skills of nursing students and whether this course program can be used to promote PS and SE in future studies.

Our study demonstrated a significant relationship between SE and PS. In the light of this finding we can say that SE belief enhances PS skill, while PS skill increases SE belief. Mayer's model and social cognitive model mentioned above clarifies the mutuality between SE and PS. The relationship between SE and PS also demonstrated in many studies as identified in the current study.^{1-3,7,23} Overallly, improving students' PS ability increases their enthusiasm and motivation; their SE belief improves their mastery in PS and coping.

STUDY LIMITATIONS

There were only female students in Nursing and Midwifery departments, the findings are only valid for the female sample analyzed. Moreover, since there was a lack of tangible data concerning how clinical practice and clinical problem solving skills are taught to students throughout their training, no ideas could be produced as to whether the training they received was based in cognitive theories of SE and PS.

CONCLUSION

The main goal of nursing and midwifery education is to teach students the caregiving skills that serv-

ice users need. Nursing process is a PS process that requires coping with complicated situations. This process demands the students to have a high level of SE belief, which involves motivation and confidence about one's own skillfulness.¹³ While SE belief is one of the perceptual cognitive factors that are effective on individual's behavior and learning, developing new skills in turn improves SE belief by facilitating one to cope with challenging situations. The findings of our study demonstrate that the students have a SE level above average and a PS ability below average, and that PS training might be effective in improving students' PS levels. Unfortunately no improvement was identified in the SE belief and PS skill of the students throughout their course of education, and decline trend was seen from the first year towards the fourth year midwifery students. Hence it is required to investigate the factors which influence PS skill and SE belief by examining educational strategies, learning environment and curriculum based on social cognitive theory and cognitive dimentions of PS. Further and more comprehensive studies are required to determine the relationship between SE and PS and also the influence of PS training on SE belief.

The findings from this study indicate that students have a high degree of SE and low degree of PS tend to attain higher PS skill. One implication that can be drawn from this finding relates to the importance of designing PS training or integrating PS skills to nursing process that would aid in enhancing students SE and PS. From the social cognitive perspective, when students experience successes through completing various course activities in PS they will be more likely to experience increased general SE and also PS skill which, in turn, serve to students' academic achievement. Therefore, it might be plausible to examine teaching practice, curriculum and learning environment included classroom and clinical placements based on social cognitive theory.

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REFERENCES

1. van Dinther M, Dochy F, Segers M. Factors effecting self-efficacy in higher students. *Educational Research Review* 2011;6(2):95-108.
2. Robb M. Self-efficacy with application to nursing education: a concept analysis. *Nursing Forum* 2012;47(3):166-72.
3. Lauder W, Watson R, Topping K, Johnson M, Porter M, Roxburgh M, et al. An evaluation of fitness for practica curricula: self-efficacy, support and self-reported competence in preregistration student nurses and midwives. *J Clin Nurs* 2008;17(4):1858-67.
4. Eggen, P. Kauchak D. *Educational Psychology: Windows on Classrooms*. 9th ed. New Jersey: Pearson Education, Limited; 2013. p.342.
5. Gloudemans H, Schalk R, Reynaert W, Reynaert W. The relationship between critical thinking skills and self-efficacy beliefs in mental health nurses. *Nurse Educ Today* 2013; 33(3):275-80.
6. Zimmerman BJ. Self-efficacy: an essential motivation to learn. *Contemp Educ Psychol* 2000;25(1):82-91.
7. Zulkosky K. Self-efficacy: a concept analysis. *Nursing Forum* 2009;44(2):93-102.
8. McLaughlin K, Moutray M, Muldoon OT. The role of personality and self-efficacy in the selection and retention of successful nursing students: a longitudinal study. *J Adv Nurs* 2008; 61(2):211-21.
9. Bandura A. Self-efficacy. In: Ramachandran VS, ed. *Encyclopedia of Human Behaviour*. Vol. 4. New York: Academic Pres; 1994. p.71-81.
10. Bandura A. Self-efficacy: toward a unifying theory of behavioral change. *Psychol Rev* 1977;84(2):191-215.
11. McConville SA, Lane AM. Using on-line video clips to enhance self-efficacy toward dealing with difficult situations among nursing students. *Nurse Educ Today* 2006;26(3):200-8.
12. Gloudemans H, Schalk R, Reynaert W, Braeken J. The development and validation of a five-factor model of sources of self-efficacy in clinical nursing education. *J Nurs Educ Pract* 2013;3(3):80-7.
13. Bandura A. Theoretical Perspectives. Self-Efficacy: The Exercise of Control. 1st ed. New York: WH. Freeman and Company; 1997. p.2-3.
14. Wang JJ, Lo CH, Ku YL. Problem solving strategies integrated into nursing process to promote clinical problem solving abilities Of RN-BSN Students. *Nurse Educ Today* 2004; 24(8):589-95.
15. Lee MB, Brysiewicz P. Enhancing problem solving and nursing diagnosis in year III Bachelor of nursing students. *Nurse Educ Today* 2009;29(4):389-97.
16. Heppner PP. A review of the problem solving literature and it's relationships to the counseling process. *J Couns Psychol* 1978;25(5):366-75.
17. Hermanowicz HJ. Problem Solving as Teaching Method. *Educational Leadership* 1961;299-305.
18. Burns HK, O'Donnell J, Artman J. High-fidelity simulation in teaching problem solving to 1st-year nursing students. a novel use of the nursing process. *Clinical Simulation in Nursing* 2010;6(3):e87-95.
19. Olgun N, Kan Öntürk Z, Karabacak Ü, Eti Aslan F, Serbest Ş. [Problem solving skills of the nursing students: results of the 1-year observation problem solving skills of the students]. *Acıbadem Üniversitesi Sağlık Bilimleri Dergisi* 2010;1(4):188-94.
20. Bayindir Çevik A, Olgun N. Do problem-solving skills affect success in nursing process applications? An application among turkish nursing student. *International Journal of Nursing Knowledge*. 2014; Aug; 7. doi: 10.1111/ 2047-3095.12043. [Epub ahead of print].
21. Altun I. The perceived problem solving ability and values of student nurses and midwives. *Nurse Educ Today* 2003;23(8):575-84.
22. Seyedfatemi N, Abadi ZM, Borimnejad L, Haghani H. Problem solving skill and Iranian nursing students. *European Psychiatry* 2011; 26(1):477.
23. Keskin G, Orgun F. [An analysing of self-efficacy and coping strategies of students]. *Anatolian Psychiatry Journal* 2006;7(2):92-9.
24. Bandura A. Social cognitive theory: an agentic perspective. *Asian Journal of Social Psychology (AJSP)* 1999;2(1):21-41.
25. Mayer RE. Cognitive, metacognitive, and motivational aspects of problem solving. *Instructional Science* 1998;26:49-63.
26. Sherer M, Madduks JE. The self-efficacy scale construction and validation. *Psychological Reports* 1982;51:663-71.
27. Gözüm S, Aksayan S. [The reliability and validity of Turkish version of self efficacy scale]. *Atatürk Üniversitesi Hemşirelik Yüksekokulu Dergisi* 1999;2(1):21-34.
28. Heppner PP, Peterson CH. The development and implications of a personel problem solving inventory. *J Couns Psychol* 1982;29(1):66-75.
29. Aştı T, Şendir M, Acaroğlu R, Öztürk, A, Büyükyılmaz F. [An evaluation of self-efficacy and competency of problem solving in 1th year nursing students]. *İ.Ü.F.N. Hem Derg* 2009; 17(3):151-7.
30. Yiğitbaş Ç, Yetkin A. [Assessment of self-efficacy level of health students]. *C. Ü. Hemşirelik Yüksek Okulu Dergisi* 2003;7(1):6-13.
31. Karadağ E, Derya YA, Ucuzal M. [The self-efficacy-sufficiency levels of a health college student]. *Maltepe Üniversitesi Hemşirelik Bilim ve Sanatı Dergisi* 2011;4(1):13-20.
32. Bandura A. Self-efficacy mechanism in human agency. *Am Psychol* 1982;37(2):122-47.
33. Distler JW. Critical thinking and clinical competence: results of the implementation of student-centered teaching strategies in an advanced practice nurse curriculum. *Nurse Educ Pract* 2007;7(1):53-9.
34. Crookes K, Crookes PA, Walsh K. Meaningful and engaging teaching techniques for student nurses: a literature review. *Nurse Educ Pract* 2013;13(4):239-43.
35. Heppner PP, Krauskopf CJ. An information processing approach to personel problem solving. *The Counseling Psychologist (TCP)* 1987;15(3):371-447.
36. Taylor C. Clinical problem solving in nursing: insights from the literature. *J Adv Nurs* 2000; 31(4):842-9.
37. Cholowski KM, Chan LK. Cognitive factors in student nurses' clinical problem solving. *J Eval Clin Pract* 2004;10(1):85-95.