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THE RELATIONSHIP BETWEEN PROBLEM-SOLVING SKILLS AND LEARNING MODALITIES OF MIDWIFERY STUDENTS

ABSTRACT

This study was conducted for determining whether a relationship exists between learning modalities and problem-solving skills of midwifery students. Data were collected from 254 midwifery students studying in the midwifery department of the Faculty of Healthcare Sciences. The "Sociodemographic characteristics" data form, BIG 16 Learning Modality Inventory," and "Problem-Solving Inventory" were used in the study. In light of the results obtained from the study, it was determined that the most students had visual learning modality and moderate level of problem-solving skills. There was no relationship between problem-solving skills and learning modalities of the students. It can be recommended that learning-teaching settings be created in universities to provide students with the opportunity of recognizing their own styles of learning. Training programs can be prepared for improving problem-solving skills of the students.

Keywords: Midwifery Student, Problem Solving, Problem-Solving Skills, Learning Modalities

1. INTRODUCTION

Mankind has been solving many problems they face with the problem-solving skills they have had from the time they appeared on earth. In time, this problem-solving skill developed with education that they received and experiences they gained. An individual continues living his life using his own problem-solving skills that he has developed to solve the problems [1 and 2]. Problem solving is the sum of all thoughts regarding the solution of the problem that comprises choosing the most appropriate out of the possible reactions to the problem [3]. Thus, problem solving is a complicated process as it relates to the needs, goals, standard of judgments, beliefs, some habits, and attitudes of a person while requiring exploration, analysis, time, and effort. Motivation, cultural and social environment of an individual, education level, and the level of development and capabilities can be counted among the factors affecting problem-solving skills of a person [2]. The flaws in the problem-solving process will bring about failure. Obstacles faced by a person in the problem-solving process include intellectual, emotional, expressional, perceptual, cultural, and environmental obstacles. Besides these, another obstacle is the negative attitude and thoughts the person has toward a problem. These types of thoughts cause failure in solving the problem [4].

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2. RESEARCH SIGNIFICANCE

During the learning process, students use the sensory organ that is the most appropriate to the characteristics of the stimulant presented by the teacher. For example, the students will use their eyes if the education is presented to the students by the teacher in written, they use their ears if the education is presented verbally, and they use their hands if they are expected to do something. Some students learn easier by seeing, some by hearing and some by touching. In literature, learning modality according to information acquiring preference is called the learning modality. There are three learning modalities: physical, auditory, and visual [5]. Since the students with visual learning modality learn by seeing, it is important for them to see the information in order to perceive the information. Pictures, drawings, directions, maps, etc., catches their attention. Students with auditory learning modality learn more by listening to the teacher since they learn by listening. Taking notes and reading during the class will distract their attention. Students with a physical learning modality may need both hearing and seeing during the learning process. Since they are always moving, they choose learning activities based on movement [6 and 7]. The main purpose of the healthcare system is to solve the problem of the patient at the shortest time. Thus, the students need to learn how to manage the problem-solving process throughout the training they receive while studying to be able to provide quality healthcare services [8]. The level of the problem-solving skills of the students is important [9]., while at the same time factors affecting the problem-solving skills must be known by the students for them to be able to use problem-solving methods [10]. Moreover, the instructors need to know the learning modalities of midwifery students to ensure that students acquire durable knowledge and the education bring about permanent change in behavior.

3. MATERIALS AND METHODS

This analytical cross-sectional study was conducted to determine the learning modalities and problem-solving skills of the midwifery students and to reveal whether a relationship exists between them. The data of this study was collected in September during the 2017-2018 academic year. The universe of this study is composed of 265 students studying in the midwifery department of the Faculty of Healthcare Sciences. The intention was to reach the entire study universe without selecting a study sample. The final study group was composed of 254 midwifery students who provided consent to participate in the study. The "Sociodemographic characteristics" data form, "BIG 16 Learning Modalities Inventory" (LMI) and "Problem-Solving Inventory" (PSI) were used in the study. The sociodemographic characteristics form developed by the researchers by reviewing the relevant literature [2, 11 and 13] inquires demographic characteristics such as age, grade, gender, and educational statuses of the mother and father. Number, percentage, arithmetic mean, chi-square, variance analysis, and Pearson's correlation coefficients were used in the analysis of the data. Moreover, ethics committee approval was acquired to conduct the study.

The PSI was developed by Heppner and Petersen by considering problem-solving stages such as "general orientation", "problem definition", "generating alternatives", "decision making", and "evaluation" [14 and 15]. Turkish adaptation studies of the scale was conducted by Taylan, Şahin, Şahin, and P.P. Heppner [2 and 15]. The inventory consists of 35 items, 6 subscales (thinking approach, self-confident approach, evaluating approach, planned approach) rated on a 6-point Likert-type scale ("I always behave this way", "I usually

behave this way", "I frequently behave this way", "I occasionally behave this way", "I rarely behave this way", and "I never behave this way") and some of the items are positive and some of the items are negative statements. The lowest score that can be achieved from the PSI is 32 and the highest score is 192. It is considered that higher scores in the PSI indicate the feeling of inadequacy and lower scores indicate positive perception toward problem-solving skills of an individual [15]. The LMI developed by Şimşek measures three learning modalities: physical, auditory, and visual. It consists of 48 items and each learning modality contains 16 items. The items in the LMI are rated on a 5-point Likert-type scale for determining the total points acquired from each modality. We analyze the evaluation of LMI as follows:

- Each item is coded from −2 to 2 on a table depending on the agreement level of the user (Strongly Agree 2, Agree 1, Undecided 0, Disagree −1, Strongly Disagree −2).
- Summation of the points received from each item (a number ranging from −32 to 32) is written (a number changing between −32 and 32) in the space under that category. These total scores indicate the scores received from the relevant category.
- The modality scores are not taken into consideration if they range between "7" and "−7". A score ranging between 8 and 32 indicates that the user possesses that modality. A score ranging between "−8" and "−32" indicates that the user is reactive to that modality.
- Positive (+) modality scores are sorted from the highest to the lowest. The modality with the highest score shows the dominant, the second highest score shows secondary, and the lowest score shows the tertiary learning modality of that user.
- Although rate, modality scores can be close to each other. This is interpreted as the student has more than one modality [6].

4. FINDINGS

Sociodemographic characteristics of the midwifery students are presented in Table 1. 56.9% of the students were in the age group of 20–22 years, 64.0% of the mothers and 59.2% of the fathers were high school graduates, and 45.6% had protective family structure; 59.0% of the midwifery students were regular high school graduates and when their studying habits were evaluated, it was determined that 37.6% study for a certain period before the exams.

Table 1. Sociodemographic characteristics of the midwifery students

Characteristics	Number	%
Class		
1	76	30.0
2	54	21.2
3	56	22.0
4	68	26.8
Age Group		
17-19	76	30.0
20-22	144	56.8
23-25	34	13.2
Number of Siblings		
None	5	2
1	82	32.4
2	83	32.8
3	40	15.6
4 and above	44	17.2
Mother Education Status		
Primary school	22	8.4
Middle School	21	8.0
High school	161	64.0
University	44	17.2
Graduate	6	2.4
Father Education Status		
Primary school	7	2.4
Middle School	10	3.6
High school	149	59.2
University	58	22.8
Graduate	30	12.0
Family Type		
Authoritarian	23	8.8
Democratic	83	32.8
Irrelevant	7	2.4
Extreme Related	27	10.4
Guardian	114	45.6
Study Habits		
I Work Regularly Every Day	76	30.0
I Work Before an Exam	95	37.6
One Day Before Exam	83	32.4
Graduated High School Type		
General High School	129	50.8
Anatolian High School	70	27.5
Vocational High School	11	4.3
Super School	44	17.4
Total	254	10.00

Table 2 shows the distribution of total mean PSI and subscale scores of midwifery students. It was determined that the problem-solving skills of the students were at a medium level (Table 2). Moreover, it was determined that the problem-solving skills of the students did not significantly differ according to age, educational status of patients, family structure, studying habits, and the type of high school they graduated from ($p>0.05$).

Table 2. Distribution of total mean PSI and subscale scores of midwifery students

Sub-scales	Mean± SS	Min. Max.
Hasty Approach	30.42± 7.25	9-54
Thoughtful Approach	14.54±3.14	5-30
Avoidant Approach	12.88±5.37	4-24
Evaluative Approach	8.71±3.66	3-18
Confident approach	20.63±5.38	7-42
Planned Approach	11.27±3.23	4-24
Total PSI	108.02	32-192

When the PSI subscales of the midwifery students in the 17–19, 20–22, and 23–25 year age groups were analyzed, it was found that the F values calculated for the mean scores in hasty approach (F=1.982), thoughtful approach (F=1.343), avoidant approach (F=1.824), evaluative approach (F=.267), confident approach (F=1.245), planned approach (F=.912) subscales and the mean total score in problem-solving skills subscale (F=1.651) were not significant at the alpha level of 0.05 (p>0.05). It was found that the F values calculated for the mean scores in hasty approach (F=1.832), thoughtful approach (F=.192), avoidant approach (F=.719), evaluative approach (F=.289), confident approach (F=1.324), planned approach (F=.303) subscales and the mean total score in problem-solving skills subscale (F=.987) of the midwifery students who graduated from a regular high school, Vocational High School, Super High School, Anatolian High School were not significant at the alpha level of 0.05 (p>0.05). It was found that the F values calculated regarding the avoidant approach (F = 3.029), evaluative approach (F=.765) and planned approach (F=1.380) subscale point averages according to how the students plan their studying habits, it was found that the F value was not significant at a 0.05 level (p>0.05). Distribution of the learning modalities of midwifery students is shown in Table 3. It was detected that 23.2% of the midwifery students included in the study had physical learning modality, 22.8% had auditory learning modality, and 54% had visual learning modality (Table 3).

Table 3. Distribution of the learning modalities of midwifery students

Learning Modalities	Number	%
Physical	59	23.2
Auditory	58	22.8
Visual	137	54.0
Total	254	100.0

It was analyzed whether the learning modalities of the students differ according to age. No significant age-related difference was identified in the learning modalities (X^2=6.339, p=0.456, p>0.05). The analysis of learning modalities according to the type of high school revealed that learning modalities of midwifery students did not significantly differ according to the type of high school they graduated from (X^2=5.346, p=0.378, p>0.05). The analysis of learning modalities according to the studying habits revealed that learning modalities of students did not significantly differ according to the studying habits (X^2=3.218, p=0.257, p>0.05). The relationship between the problem skills of the midwifery students and the learning modality scores in table 4, the relationship between problem skills and learning modality scores of midwifery students is shown.

Table 4. The relationship between the problem skills of the midwifery students and the learning modality scores

Learning Modality		PSI
Physical	R	-.145
	p	.000
	N	254
Auditory	R	-.185
	p	.000
	N	254
Visual	R	-.312
	p	.000
	N	254

The Pearson Product-Moment Correlation Coefficient was used for determining that there was a significant relationship between learning modality scores and problem-solving skills. The results showed a significant negative weak relationship between physical, auditory, and visual learning modalities and problem-solving total scores.

5. DISCUSSION

It was found that midwifery students had moderate problem-solving skills (Table 2). Lower scores obtained from the inventory indicate higher problem-solving skills and higher scores indicate lower problem-solving skills. Previous studies have reported mean PSI subscale scores and mean total scale scores that are generally comparable with the results of the present study [9, 12, 16 and 19]. The reasons for moderate level of problem-solving skills can include the inability of students to follow peculiar strategies to develop problem-solving skills throughout their education and to comprehend the problem-solving process, and the inability to introduce problem-solving skills into their clinical practice. The present study found that problem-solving skills of midwifery student did not significantly differ according to age and the type of high school from which they graduated ($p>0.05$). The results of the present study support the results of other studies [11 and 20]. These results show that the problem-solving skills subscale scores and the mean total score did not change significantly according to the age variable and the type of high school from which they graduated.

Similar to the findings of the present study, the studies reporting different student groups in different countries suggested that the majority of students have visual learning modality [6, 11, 21 and 23]. Literature review shows that identifying physical learners is not as easy as identifying visual and auditory learners. It was stated that physical learners use a combination of learning modalities and they need to both see and hear when new information is presented [5]. Due to the teaching methods used in Turkey, the students are exposed to auditory and in particular visual means of teaching. Students who positively respond to this challenge remain in the education system, whereas those who are not able to adapt themselves are eliminated from the system [24]. The present study found that learning modalities of midwifery students did not significantly differ according to age, the type of high school from which they graduated, and their studying habits. Similar results have been reported in other studies conducted on this subject [11, 25 and 26].

There was a statistically significant relationship between the problem-solving skills and learning modalities of midwifery students ($p<0.05$). A study conducted with different student groups reported a relationship between the learning modalities and problem-solving

skills of the students [11]. Problem solving and learning modalities are learnable skills that can be improved with increasing experience [6]. Considering the existing problems in education program of nursing and midwifery students and in their professional life, it is obvious that there is a need for graduate students with improved problem-solving skills and learning modalities. In fact, regulations on the syllabus of several nursing and midwifery universities and vocational schools and the efforts of content development can be regarded as an indicator of demand for midwives who can think critically, who have developed problem-solving skills, who think creatively, who can make correct decisions and use their autonomy, and who provide woman-oriented midwifery care [27 and 28].

6. CONCLUSION AND RECOMMENDATIONS

This study emphasizes the need for the students studying in the midwifery programs to be aware of their own learning modalities and to be informed regarding what type of approach they must follow when they encounter problematic situations. Educational institutions are advised that learning-teaching settings be organized in universities to give students the opportunity of recognizing their own styles of learning. The literature review showed that there are a very few (only one) studies examining the relationship between the learning modalities and problem-solving skills of midwifery students in Turkey. There is a need for further scientific studies determining the learning modalities of students, teaching problems solving skills and evaluating the relationship between these two, and the nature of this relationship can be further examined using different inventories.

NOTICE

This study was presented as verbal statement in the 1st International Midwifery Education and Research Development Congress (November 7-9, 2018 Izmir).

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