



Learning Styles Among Undergraduate Nursing Students' in School of Nursing and Midwifery, Tehran University of Medical Sciences, Tehran, Iran

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Abstract: *Background:* Learning style has been the focus of numerous studies, but it remains complex and affected by many factors. Nursing students should learn large quantities of theoretical content in a short period of time. *Aims:* The purpose of this study was to determine learning styles among undergraduate nursing students in School of nursing and midwifery, Tehran University of Medical Sciences, Tehran, Iran. *Method:* Using Institutional based cross-sectional descriptive study and self-administrated structured questionnaire. The questionnaire was divided into two sections including (a) demographic profile, and (b) Kolb's Learning Style Inventory. Data was collected from 232 systematically selected undergraduate nursing students from School of nursing and Midwifery, Tehran University of Medical Sciences, Tehran, Iran. After coding and cleaning, data was entered and analyzed by SPSS Window version 21. Descriptive statistics was used to see the frequency and percentage of each variable. P-value <0.005 was significance measurement for the result in this study. *Results:* A total of 232 undergraduate Nursing students on the study; the majority 143(61.6%) were female and 89 (38.4%) of respondents were male. Most of the participants (60.8%) being in the age group of 20-25 years. The most frequency learning style of students was AC (37.5%). In addition, AE (30.17%), RO (19.83%) and CE (12.5%) were in the next order in LS of students. However, there was a relationship between self management and AC of LS ($F=8.485$; $P=0.004$). In addition, female students were a high scorer than male students respectively (55.6% and 14.4%). There was no relationship between LS and self study, permanent residence, living, place and the average hours of independent study. *Conclusion:* Facing the various challenges of the effective learning issue, many researchers attempted to conceptually systematize the learning preferences by constructing explanatory models of learning styles.

Keywords: LS, Nursing Students', Iran, Undergraduate Degree

1. Introduction

Facing the various challenges of the effective learning issue, many researchers attempted to conceptually systematize the learning preferences by constructing explanatory models of LS. The present study is based on one of the most popular and influential model of LS, which it was developed (1). On the other hand, taking into account the teachers' perspective, the fact that students have different LS represents a constant challenge, because the optimal instruction presupposes diagnosing individuals' LS and tailoring instruction accordingly(2). LS refers to this view that

different people learn information in different ways "and "refers to the concept that individuals differ in regard to what mode of instruction or study is most effective for them" (3). During the last three decades, many studies have been conducted on the field of LS and academic achievement(4). Most of the studies fields were focused on the progresses of nursing student's readiness. Many studies indicated that nurses need continuing education to ensure they maintain professional competence(5). A study was conducted in Egypt which used to investigate that how LS and preferred learning approaches influence student's LS and academic achievement in nursing faculty(6). The study result indicated that students were prefer their LS: Read and visual learning(19.4%), Read

and writing (4%) and Visual LS(48.5%). In addition, 40% of all students in Saudi Arabia were constituted on Active Learning style.). Many studies have focused on the weakness in LS and students' study strategies in college (7), tested the hypothesis that "there is an interaction between LS and student's study strategies, which indicates that only 36% were completed their courses. In the study it was suggested that students who have failed in two courses. They had less opportunity to complete their program. Moreover, a number of Studies showed that there are significant relationships between LS preference and academic achievement. Also, LS affect the way of students learning process(8). The purpose of this study was determined the learning style among undergraduate nursing students'.

2. Methods

A cross-sectional descriptive study was conducted from March 2013 to February, 2014 in the school of nursing and midwifery consists of total undergraduate nursing students in the school from 2009-2013 were about 743 persons (Tehran University of Medical Sciences., 2012).

The required sample size was determined by using an employing stratified population in order to determine statistical formula. The study was included at least 221 students, then the total students who enrolled at study area is 743 nursing students. The required minimum sample is obtained and with 5% non-response rate of total were calculated 232 were obtained. All Undergraduate nursing students who attended at the school of nursing and midwifery and they can fulfill the criteria for inclusion were enrolled in the study. The number of undergraduate nursing students included from each academic year was determined based on the proportion of participants found in each academic year nursing study. Quota stratified sampling technique was employed to select 141 female and 89 males from the undergraduate nursing students. The study sample characteristics were included; not any work experience as a teacher among the participants, the participants should be native Persian speakers and age ≥ 17 years old. In cases where there were not eligible interviewee/respondents in the selected undergraduate nursing students, change respondent was done.

An anonymous self-directed self-administrated and pretested consisting of closed ended-and ordering questions, was utilized. One female instructor were recruited and trained to work as data collectors. the questionnaire was divided into 2(two) sections including (a) socio-demographic profile which consists: Age, sex, marital status, permanent residence, living area, Department grade level, academic achievement, average hours of independent study, average hours for social activities, and students study planning. It was consists all these variables and each variable have their own options; (b) learning styles questionnaire. On Kolb's LS in nursing student's questionnaire. For LS was used the Persian version of the Kolb's LSI (Learning Style Inventory) in nursing students which were showed valid and reliable instruments. The Kolb's LSI questionnaire consists of 12 items with 1-"least like you"2-"third most like you"3-

"Second most like ", and 4-"Most like you" grading option. It requires the respondents rank order, their preferences. It classifies an individual's LSs based on 4 major kinds of capability. This inventory measures an individual's relative emphasis on 4 learning Modes or scales; Concrete Experience (CE), Reflect Observation (RO), Abstract Conceptualization (AC) and Active Experimentation (AE) (Kolb's., 2012).

The data were entered; cleaned and analyzed using statistical package of Social Sciences (SPSS) software Version 21.0.Descriptive statistical like frequency distribution and percentage calculation was made for most of the variables. The inferential statistics was calculated using all the participant scores as well as course subgroup. Finally, the results were presented with 95% confidence interval(IC) ($P < 0.05$).

In this study, the four constructs(Concrete Experience, Reflect Observation, Abstract Conceptualization, Active experimentation) theory of experiential learning that can give us a useful model by which to develop our practice (Stage of learning from Institute for take place Model were used according to the following definitions. Concrete Experience was considered when students had a new experience of Situation is encountered, or a reinterpretation of existing experience. Reflective Observation was assured when the nursing students had a new experience; of particular importance are any inconsistencies between experience and understanding. A students had Abstract conceptualization when they give rise to a new idea, or a modification of an existing abstract students were applies them to the world around them to see what results.

Ethical clearance was obtained from the school of nursing and Midwifery academic head and administration body for access to the study sites. In addition, Permission was sought from the medical Research Council of Tehran, Iran and the Joint research Ethics Committee, Ethical Review Boards for the protection of human subjects in the study. After Clear Explanation of the purpose of the study to undergraduate nursing students, their verbal consents were obtained.

3. Result

This table shows that the most frequency learning style of students was AC (37.5%). In addition, AE (30.17%), RO (19.83%) and CE (12.5%) were in the next order in LS of students.

Table 1. Distribution of Learning styles in students.

Learning styles	Frequency (n)	Percentage (%)
Concrete Experience	29	12.5
Reflective Observation	46	19.83
Abstract Conceptualization	87	37.5
Active -Experimentation	70	30.17
Total	232	100

Table 2 shows that students in this study had mainly AC learning styles. Although female students had a higher AC mean score than male students (32.36 ± 6.408 ;

31.02±5.717 respectively) but there was no statistically relationship between LS and Gender. In addition, students in age between 20-25 years old had a higher AC mean score than other groups. There was no statistically relationship

between learning style and age classification, academic level. However, there was relationship between AC learning style and academic achievement ($F=4.890$; $P=0.003$) and AE learning style and academic achievement as component.

Table 2. Students' learning styles according to some of demographic characteristics.

Variables	Description	Concrete Experience			Reflective Observation			Abstract Conceptualization			Active Experimentation			Total		
		M±SD	F	P	M±SD	F	P	M±SD	F	P	M±SD	F	P	M±SD	F	P
Sex	Female	27.86±4.848			32.36±6.408			29.35±6.102			30.57±6.292			120.13±0.906		
	Male	28.90±4.941	F=2.482	P=0.117	31.02±5.717	F=2.57	P=0.110	29.52±4.578	F=0.049	P=0.824	30.60±5.900	F=0.001	P=0.972	120.03±0.923	F=0.648	P=0.422
	Total	28.26±4.899			31.84±6.174			29.41±5.55			30.58±6.132			120.09±0.911		
Age (Year)	<20	27.59±4.96			29.06±5.317			31.76±5.955			31.58±5.863			119.99±0.781		
	20-25	28.67±4.992			29.58±5.655			31.96±6.231			29.93±6.306			120.13±0.781		
	>25	27.85±2.940	F=1.265	P=0.284	29.69±5.893	F=0.233	P=0.792	31.15±7.244	F=0.112	P=0.894	31.62±5.157	F=2.029	P=0.134	120.31±0.855	F=1.034	P=0.357
	Total	28.26±4.899			29.41±5.557			31.84±6.174			30.58±6.132			120.09±0.911		
Academic year	First year	29.03±5.102			29.64±5.022			31.47±5.754			29.83±6.202			119.97±0.942		
	Second year	28.36±4.567			29.11±5.479			30.42±5.535			32.22±6.271			120.11±0.848		
	Third year	27.63±4.712			28.88±5.920			34.18±6.151			29.52±5.829			120.22±0.944		
	Fourth Year	27.74±5.568	F=1.012	P=0.388	30.77±6.009	F=0.928	P=0.428	31.03±7.273	F=4.890	P=0.003	30.52±5.750	F=2.748	P=0.044	120.06±0.929	F=0.804	P=0.493
	Total	28.26±4.899			29.41±5.557			31.84±6.174			30.58±6.132			120.09±0.911		

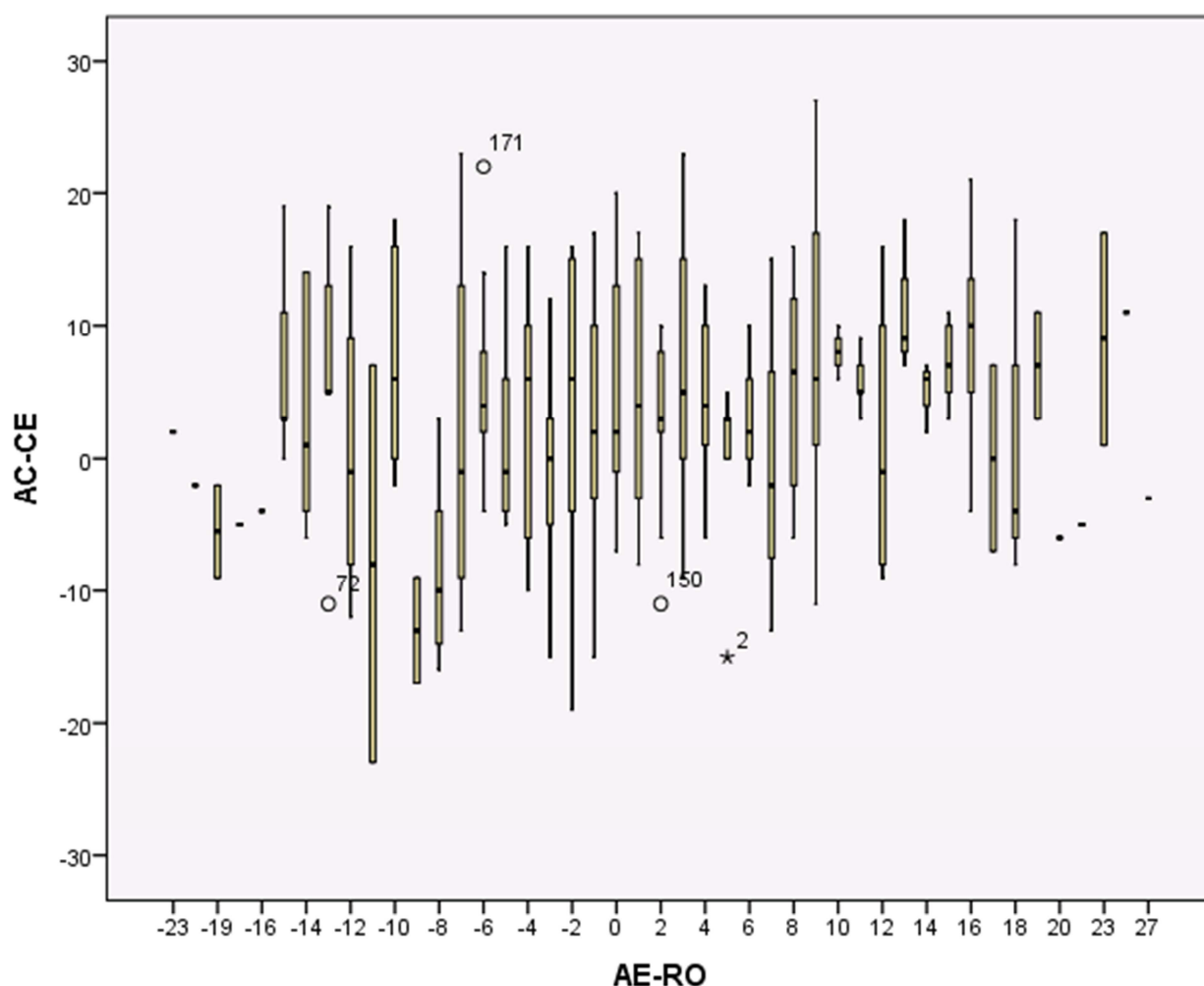


Figure 1. P-Plot graph of learning styles of samples among classification of learning styles in School of Nursing and Midwifery, Tehran University of Medical Sciences, Tehran, Iran, 2014.

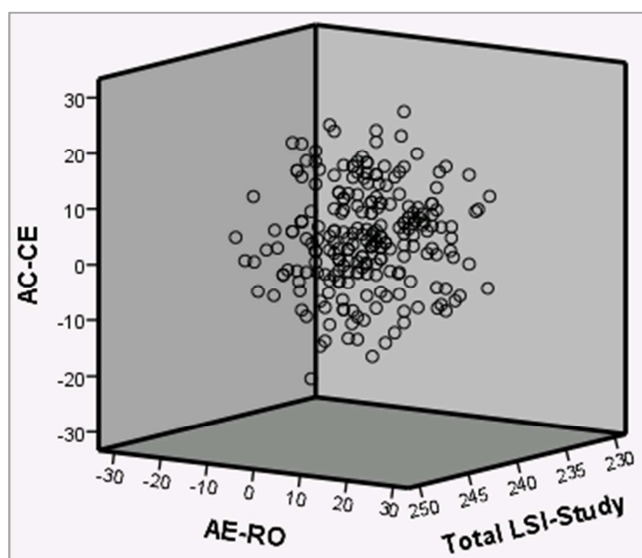


Figure 2. AC-CE and AE-RO scores of learning styles of samples among classification of learning styles in School of Nursing and Midwifery, Tehran University of Medical Sciences, Tehran, Iran, 2014.

The mean score of convertor learning style (62.42 ± 7.199) was higher than mean score of Assimilator (60.81 ± 6.769). The mean scores of Assimilator, convertor, Accommodator and Diverter were 60.81 ± 6.767 , 62.40 ± 7.199 , 58.84 ± 6.104 and 57.42 ± 7.032 respectively (Figure 3).

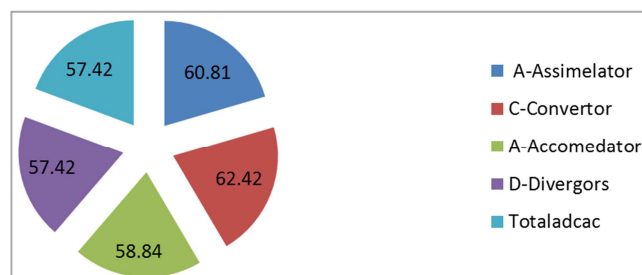


Figure 3. Mean scores of learning styles of samples among classification of learning styles in School of Nursing and Midwifery, Tehran University of Medical Sciences, Tehran, Iran, 2014.

4. Discussion

The objective was to determine the LS of TUMS nursing students. The present study shows that in a diverse group of undergraduate nursing students, the learning style. The AC learning style was indicated that the main dominant for the present study group of participants. Undergraduate nursing students in the present study are mainly AC learning style in their study. In contrast, Baker et al (2007) and Gyeong and Myung (2008) who found that nursing students have been shown to be concrete learners (9,10). Another study which was conducted by D'Amore et al (2012) showed that the nursing and midwifery students are more reflective (RO) learners, and more concrete (CE) learners (11). This indicated that in this study the result of learning style of undergraduate nursing students was higher in AC than other learning style

compared with previous studies. The probable reason for this difference may be due to the service given on LS becomes increased from time to time in this study area. Students' need of practical uses for ideas and theories and this may suggest that those who learn by AC learning style (thinking) rely more on seeking the best knowledge. The current study revealed that the most frequency learning style of students was AC followed by AE, RO and CE in LS of students. The result which related to the watching types of LS more represented in this study is consistent with the studies conducted by (12,13,14,15,16), which determined nursing students to be a predominant thinking LS. In contrast, regarding to the results of other different researchers, nursing students tend to have either an doing, watching or feeling LSs as revealed in the previous studies. For example, the LS in this study are compared with the study done by Westcott and Johnson (2011) in the Education, Learning, Styles, Individual differences Network (ELSIN) conference at Qatar. The finding which indicated that, the majority or 64% of faculty who participated had as their strength AC or thinking, analyzing, and planning systematically. The average LS quadrant of faculty was Assimilating AC plus RO to gather information, synthesize it logically, focus on abstract concepts, prefer lectures and models, and think things through. Faculty results contrasted with the averages of the majority of students, especially with new students to the university. The most predominant style according to the Kolb LSI for 50% of all students was AE or doing, experimenting, taking risks, and influencing others through action. About 30% of students also had AC (thinking) and 25% had RO (watching) as a strong category. However, there were significant differences among students who were new to the university, regular students, or graduating students. For the LS quadrants, all students' averages placed them in the Diverging quadrant RO plus CE, preferring concrete situations, observations, different viewpoints, brainstorming, groups, and feedback (17). Still this study result differ than all research above, it indicated higher percentage of AC learning followed by AE. This wide difference of LS among undergraduate nursing students in this study, it may help for them to consider their feature and to evaluate methods on their best learning preferences. This agreed by Mori (2010) who found a students' LS affects their preferred method of problem solving (Experimenting, conceptualizing, RO) (18). This agreed by Mori (2010) who described that LS may vary for different situations (18). Another similar study which conducted study by Mori (2010) also agreed that a student LS affects how they prefer to receive information (18). When we compared with the study which conducted by Hawk and Shah (2007) who are reported that LS is a process whereby knowledge is created through the transformation of experience (18,19). This study suggest that all types of LS during academic study must be taken into consideration as at once the most important and the most basic teaching and learning method in school of nursing. The present study also determined a relationship between learning styles and a

number of sociodemographic characteristics. Undergraduate nursing students are some of the most studied groups with regard to learning styles and Kolbs LSI is the most frequently used instrument, which determine LS. No study assessing LS of undergraduate nursing has used the most recent version of Kolb LSI (Version 3.1). But, this instrument was currently used in the United State of America to identify LS of otolargology resident(19). This study indicates that students in this study had mainly AC learning styles. Although female students had a higher AC mean score than male students. However, there was no relationship between LS and Gender. In contrast, D'Amore et al (2012) showed that female students had a higher reflective observation (RO) score than male students (11). This study result also indicated that there was no statistically relationship between learning style and age classification, academic level. However, there was relationship between AC learning style and academic achievement and AE learning style and academic achievement as a component. In similar, Smith (2012) showed that there was no relationship between LS and age, previous employment or nursing experience(20). This is unexpected since it would be anticipated that those with more experience would have more a balanced LS. This is agreed with Salehi (2007) who found the relationship between academic years and AC was found statistically significant as well as between academic years and AE (21). This study result indicated that there was no statistically significant difference according to total LS among students in different sex ($P>0.05$). This is agreed with Salehi (2007) who observed that there was no significant relationship was found between the LS and gender (Salehi, 2007). In contrast, the study which was conducted by Fleming et al (2011) who found the most common dominant LS in first year was the dual learning category (35%) while a large proportion of the students (53%) in their final year had no dominant LS (22). The preferred LS of students in their first (69%) and final (57%) year was reflector. In comparison with a previous study which conducted by Salehi (2007) who found the nursing students' preference in LS, senior students were less likely to use AE than junior undergraduate nursing students. However, senior undergraduate nursing students were more likely compared with all other academic years/level of study who use AC to AE (21). A more recent study of undergraduate nursing students found that students had a high preference for the reflector LS followed by the theorists LS (23,24). In contrast, the study was conducted by Erol (2010) in Tukey, who explored the Kolb LSs inventory was used to explore the LS of the study group(Erol Gurpinar et al., 2010). This is agreed with Aziz et al (2013), who determined Reflector the LS was the most common among the students. The preferred LSs were statistically independent of the demo graphic variables examined such as level of academic years, sex, race and pre-University qualifications (25). Similarly, in the current study we show that first-year nursing and nursing used the AC learning style closely followed by the AE in learning style. LS were significantly different at the two time points and there was a significant

relationship between some LSs and students' age but not with academic achievement (22, 26, 27, 28, 29). Failure of find significant difference between the LS and socio demographic characteristics of nursing students was not surprising because it conforms to the reviewed literature. Because they represent same population. The main reasons might be: the questionnaire used may not be a suitable tool to detect any gender differences in LS or it may not include questions related to the areas of differences. Students who are RO learning style in the previous studies are motivated themselves to discover the relevancy of an environment or situation. They may like to reason from concrete, specific information and to explore what a system has to offer, and they may prefer to have information presented to them in a detailed, systematic, reasoned manner.

5. Conclusion

This is the first study which conducted among undergraduate nursing students' LS in school of nursing and midwifery of TUMS. More research with larger groups is needed to generalize this result. Meanwhile, Practitioners in universities, school of nursing and midwifery, higher education need consideration in identifying the factors that lead to change their Learning style. In nursing, the rapidly changing health care delivery and practices require sound LS and decision making skills. Furthermore, it is necessary to provide students with the skills to seek analyze and utilize information effectively.

Recommendations for Applications

The recommendations for future research include:

- Educate all students who are attending universities, college and any higher educational level about the main purpose and importance of LS.
- Examine the effectiveness of teaching strategies in continuing education programs that incorporated the predominant LSs of course participants.
- The study could be replicated in a greater number of nursing and midwifery schools at different Universities and institutions of higher education.
- Replicating the study with students in other educational disciplines might yield beneficial insight into classroom engagement as well.
- Persistence between gender groups was another serious issue in this finding that might also be an area of future research.

Recommendations for Further Studies

- The main recommendation is to repetition of this study with a larger sample size.
- Conducting action research that would apply specific techniques to target diverse perspectives, communication with faculty and peers, asking questions in class, class discussions, and perceived difficulty of

course work, and preparation for class is recommended.

- For future research, it would be interesting to explore LS in undergraduate nursing students.
- Replicating the study with only nursing students who have been accepted into a nursing program, might address engagement issues (diverse perspectives, communication with faculty and peers, asking questions in class, class discussions, perceived difficulty of course work, and preparation for class) that are specific to students who are committed to a particular course of study. Although the majority of subjects in this study were admitted into the nursing program, the majority of subjects from the freshman course had not yet been admitted. This study might be designed as a longitudinal study over the three year period that a student would be in the nursing program.

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Author's Contributions

AAG, have made substantial contributions to beginning and design, collection of data, analysis and interpretation of data and in drafting the manuscripts and correcting the comment given by the advisors. SG, involved in revising the research paper and the manuscript critically for important intellectual context and approval of the final version to be published and participated in its design and coordination. He participated in the approval and funding process, participated in the design of the study participated in its design and coordination. NM involved in revising the research paper and the manuscript critically for important intellectual context and approval of the final version to be published and participated in its design and coordination, and had greater contribution in reviewing the manuscript English and topography and helped to draft the manuscript.

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