Learning Styles of Medical and Midwifery Students in Mashhad University of Medical Sciences

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Abstract

Background: *Students have individual learning style preferences including visual (V; learning from graphs, charts, and flow diagrams), auditory (A; learning from speech), read-write(R; learning from reading and writing), and kinesthetic (K; learning from touch, hearing, smell, taste, and sight). These preferences can be assessed using the VARK questionnaire.*
Purpose: *We aimed to assess different learning styles of medical students in our collage.*
Methods: *This study was conducted to describe learning styles of 214 Medical and Midwifery students in Mashhad University of medical sciences. By using the English version of the VARK questionnaire, we measured the difference in learning styles of medical students and midwifery students and compared with 57336 global general students who completed the test in VARK website up to Sep 2007.*
Results: *The dominant learning preference of our students was Aural preference (30.8%) followed by Read/Write (20.6%), while (7.5%) were in Kinesthetic and (5.6%) were Visual learners; still most of the students (35.5%) represented a multimodal learning preference. No significant difference was found between males and females. The general pattern between medical student and Midwifery student is the same. There was a significant relation between Internship Entrance Exam score and the learning styles of medical student and who were more Read/Write got higher scores.*
Conclusion: *Knowing that our students have different preferred learning modes will help medical instructors in our faculty develop appropriate learning approaches and explore opportunities so that they will be able to make the educational experience more productive.*
Key words: *Medical Education, Learning Models VARK, Visual, Auditory, Read-Write, Kinesthetic, Sstudents.*

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Introduction

Learning style is defined as the composite of characteristic cognitive, affective, and physiological characters that serve as relatively stable indicators of how a learner perceives, interacts with, and responds to the learning environment (1 , 2). Educational researchers supposed that everyone has different learning styles (3, 4, and 5). One characterization of learning styles is to define the learners preferred mode of learning (6). Fleming and Miles designed a questionnaire to evaluate the preferred method of learning named VARK (7). They suggested four categories that seemed to reflect the experiences of the students and teachers. VARK is acronym for Visual, Aural, Read/Write, and Kinesthetic learning styles. It can be used to guide instructors in their selection of learning and assessment strategies and also helps learners

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develop additional and effective study skills to take in information and, as a result, perform well in examinations (8).

Visual learners prefer the use of diagrams and symbolic devices such as graphs, flow charts, hierarchies, models, and arrows that represent printed information. Read-write learners prefer printed words and texts as a means of information intake; they also prefer lists, glossaries, textbooks, lecture notes, or handouts. Auditory learners prefer "heard" information and, thus, enjoy discussions, lectures, and tutorials when acquiring new information. Kinesthetic learning is a multimodal measurement employing a combination of sensory functions. Kinesthetic learners have to feel or live the experience to learn; they prefer simulations of real practices and experiences, field trips, exhibits, samples, photographs, case studies, "real-life examples," role-plays, and applications to help them understand principles and advanced concepts.

Some learners have a preference for one of these learning modalities, whereas multimodal learners do not have a strong preference for any single method. They rather learn via two or more of the modalities(7,8). VARK deals with only one dimension of the complex amalgam of preferences that make up a learning style. The VARK questions and results focus on the ways in which people like information to come to them and the ways in which they like to deliver their communication. The questions are based on situations where there are choices about how that communication might take place.(9)

In our educational system in IRAN traditional teaching such as lecturing, an essentially passive learning method is still used. As medical instructors, it is our task to assess and teach knowledge, attitudes, and skills, and lectures will be more effective when the educational needs of all students are met (5, 6, 10). Students' motivation and performance improves when instruction is adapted to student learning styles (2, 4, 8, 11, 12). The aim of this descriptive study was to determine the learning styles of medical and midwifery students by using of English version of the VARK questionnaire.

Methods and Materials

This study was performed at Department of Internal Medicine (Imam Reza hospital) in Oct-Nov 2007. Two hundred fourteen medical and midwifery students were participated in the study. The purpose of the study was explained to the students. The VARK questionnaire was selected because it is concise and quick to complete. The respondents were permitted to omit a question or to choose two or more options if appropriate. Questionnaires were evaluated on the basis of previously validated scoring instructions (13).

Data were analyzed using SPSS software (Version 11.5). Chi square test was performed to compare learning styles between medical and midwifery students and ANOVA test was used to compare their final exam score according to the predominant learning skill.

The current study aimed at answering the following research questions:

What were the learning styles of Medical and Midwifery students?

1.Were there significant differences between female and male Medical students in their learning styles?

2.What was the relationship between medical students learning preferences and their course grade?

3.Were there any difference between medical student's learning and midwifery?

4.What were the differences between our students' learning styles with global students?

Results

170 medical students and 28 midwifery students were enrolled in this study among all 214 students , 50 (23.4 %) were male and 164 (76.6%) were female. Learning styles were evaluated by VARK questionnaire and according to its final results: 66 students (30.8%) were in Auditory category ,44 students (20.6%) were in Read/ Write category of learners, while 16 person (7.5%) were in Kinesthetic and 12 students (5.6%) were Visual learners. 76 students (35.5%) were in Multimodal and preferred more than one

kind of information presentation [fig 1].
Learning styles were compared between medical and midwifery students. Almost one third of students in both groups were multimodal and among unimodal students, the most common learning style in both groups was auditory learning. Comparing two groups , kinesthetic style was less common in medical students although according to chi square test results the difference was not significant.(p=0.06)[fig 2]
Among Multimodal students (80.4%) were bimodal , 10.3% were trimodal and 9.3 % were quadrimodal. Comparing Preinternship exam in medical students with different learning styles, Read/Write learners had the highest scores and mean score in these population were significantly higher according to ANOVA test (p=0.01) [table]

Discussion

Knowing the learning style of students is a valuable skill in education. Knowledge of learning styles may help educators identify and solve learning problems among students, thus helping their students to become more effective learners (7,14).
In the present study, most of the students (35.5%) exhibited multimodality, indicating that they use a combination of learning styles when learning information. These findings are compatible with other studies (4, 6, 15) that have used the VARK questionnaire as a learning style inventory and said the most one is Multimodality. For example Dinakar (13) found multimodality to be 58.0% in the caregivers of asthmatic

Figure 1: Learning style preference among medical and midwifery students of MUMS

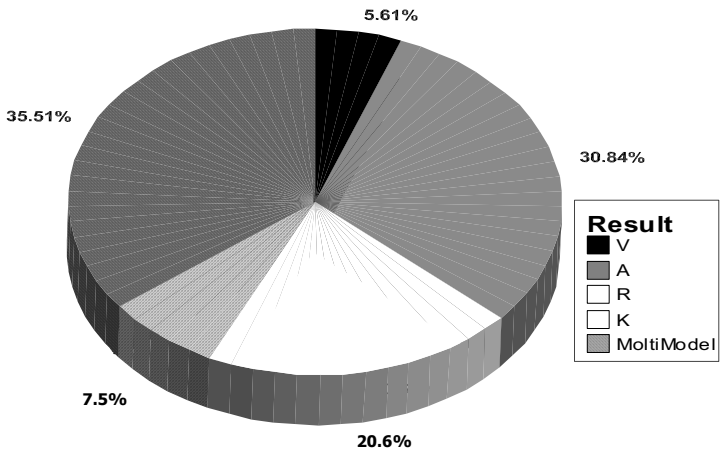


Table: Mean score of pre internship exam in different learning styles

Maximum	Minimum	Std. Deviation	Mean	N	Learning style
159	97	27.962	130.33	6	V
177	117	14.991	136.41	34	A
188	123	19.142	145.90	20	R
150	126	13.856	138.00	4	K
157	119	11.200	130.12	34	MultiModel
188	97	16.482	135.86	98	Total

children; Lujan (6) found it to be 63.8% in first-year medical students; Erkus¸ (10) found it to be 53.2% in medical students in their first 3 yr; and Murphy (4) found it to be 56.0% in dental students. Fleming provided us by email the last results that included 57,336 entries in his website (19) , and the ratio of single to multimodal preference has been stated as 38:62.
also in our study like the others study Multi modality is the most but its percentage is lower than others. In Iran, students have to perform an examination to enter university. To win a place at a medical faculty, the grade they have to get is high. But according to the type of the question We believe that Read/Write students are more successful in this university entrance examination, and, consequently, our Read/Write percentage is higher than that of other studies. How ever this results were showed in the mean of pre internship exam of medical students. So we believed that our examination test are based on read and write ability of students , whatever it should be better include all of the styles. although we think more effective in learning medicine is kinesthetic way.[Figure 3]

Figure 2: Comparing learning style preference among medical and midwifery students of MUMS

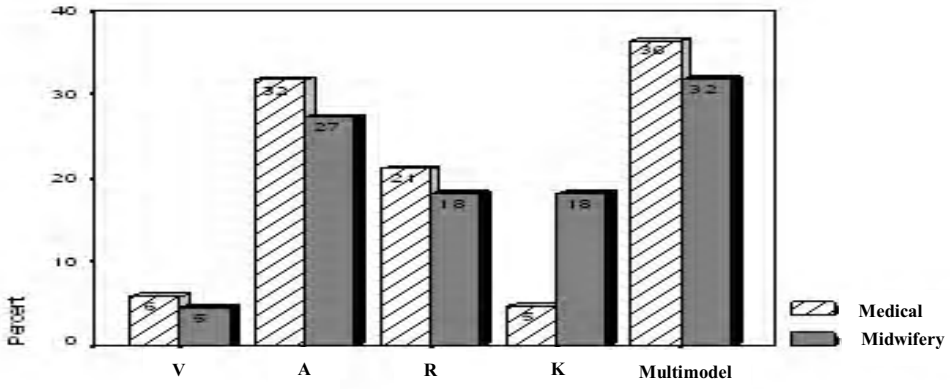
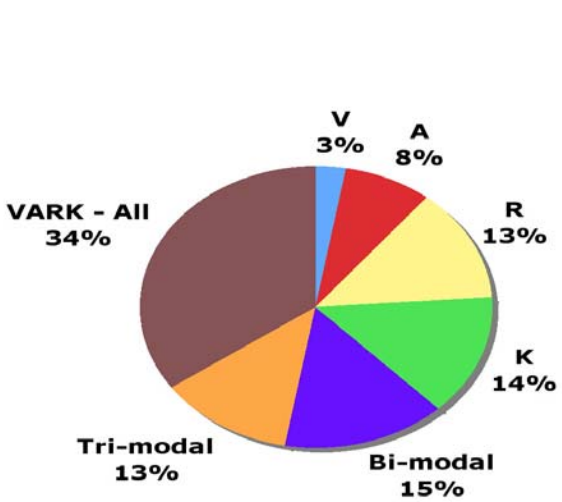


Figure 3: Learning style preference among 57336 students who were assessed by VARK questionnaire until se 2007



Multimodal students prefer information to arrive in a variety of modes. These students do not learn by simply sitting in a classroom listening to the educator, memorizing assignments (16). To achieve meaningful learning, these students must talk about what they are learning, write about it, relate it to past experiences and knowledge, and apply it to their daily lives (16). In a passive lecture format, the method generally used in our faculty, all students are assumed to be auditory learners, although in the present study about 30% of the students were found to be single auditory learners. It is important to emphasize that students will only remember 20% of what they read, 30% of what they hear, 40% of what they see, 50% of what they say, and 60% of what they do. This average increases to 90% for information they say, hear, see, and do (17).

Other studies have shown that students learn better by using active learning strategies, because active learning strategies reach all types of learners (6,16). Active learning strategies promote thinking through reasoning and improve problem solving and decision-making skills. In large classes, active learning strategies can also be applied. Discussion in class, cooperative learning exercises, role play, simulations, models, debates, and games are active learning strategies that can be used in larger classes (18). These activities also promote group work and generate high levels of motivation and enthusiasm. For medical students, who will always be working in team environments, these learning experiences are invaluable. In conclusion, Patient-based clinical education in small student groups is started in the fourth and fifth years, and students then should become problem solvers and more active but as the results of our study shows R/W style is more in number and also they are more successful.

To achieve the best result for education, we are proposing drastic reductions in passive lecture hours and preparing a more problem-based curriculum. Therefore, the strategy of using multiple teaching methods can help students develop different learning preferences and enjoy their learning experience. However, some students prefer one particular learning modality. Such students need special attention from the instructor since they could struggle to understand the subject material if their particular learning preference is not predominant in the course. And also because of some difference between males and females style (male: more Aural and Visual; Female :more Read & write and Kinestetics) in our university we should provide different styles based on what each individual needs if it is possible.

Knowing that our students have different preferred learning modes will help medical instructors in our faculty develop appropriate learning approaches and explore opportunities so that they will be able to make the educational experience more productive.

References

1. Bedford TA. Learning Styles: a Review of Literature [1st draft]. Toowoomba, Australia: OPACS, The University of Southern Queensland; 2006.

2. Karagiannidis C, Sampson D. Adaptation rules relating learning styles research and learning objects meta-data. Proceedings of 3rd International Conference on Adaptive hypermedia and Adaptive Web-based Systems; 2004;Indhoven, Netherlands.

3. Collins J. Education techniques for lifelong learning. Radiographics 2004;24: 1484-9.

4. Murphy RJ, Gray SA, Straja SR, Bogert MC. Student learning preferences and teaching implications. J Dental Educ 2004;68: 859-66.

5. Winn JM, Grantham VV. Using personality type to improve clinical education effectiveness. J Nucl Med Technol 2005; 33:210-3.

6. Lujan HL, DiCarlo SE. First-year medical students prefer multiple learning styles. Adv Physiol Educ 2006; 30: 13-6.

7. Fleming ND, Mills C. Not another inventory, rather a catalyst for reflection. Acad Med 1992; 11:137-44.

8. Zhang S. Students' Perceptions of Multimedia Classrooms at East Tennessee State University. (PhD thesis). Johnson City, TN: East Tennessee State University; 2002.

9. Felder RM, Brent R. Understanding student

differences. J Engineer Edu 2005. 94 (1), 57-72.
10. Langlois J, Thach S. Teaching and learning styles in the clinical setting. Fam Med 2001; 33: 344-6.
11. Boydak AL. Learning Styles. Istanbul: White; 2001. p. 8-10.
12. Brown B. Myths and Realities No. 26: Teaching Style vs. Learning Style. Columbus, OH: Educational Resources Information Center, 2003.
13. Dýnakar C, Adams C, Brýmer A, Sýlva MD. Learning preferences of caregivers of asthmatic children. J Asthma 2005; 42: 683–7.
14. Fleming N. VARK: a Guide to Learning Styles [online]. [Cited 2007 Mar 12] Available from : URL :http://www.vark-learn.com/documents/TheVARK Questionnaire.pdf
15. Cooper SS. Life Circles, Inc. Learning Styles [online]. [Cited 2007 Mar 12] Available from : URL : http://www.lifecircles-inc.com/learningstyles.htm
16. Lujan LH, Dicarlo SE. Too much teaching, not enough learning: what is the solution? Adv Physiol Educ 2006; 30: 17–22.
17. University of Newcastle. Study Skills Guide [online]. [Cited 2007 Mar 12] Available from: URL:http://www.ncl.ac.uk/disability-support/dyslexia/studyskills.pdf
18. Bonwell CC, Eison JA. Active Learning: Creating Excitement in the Classroom. Washington, DC: George Washington University; 1991.
19. Fleming N. VARK: a Guide to Learning Styles [online]. [Cited 2007 Mar 12] Available from : URL :http://www.vark-learn.com/english/page.asp?p= research