Background: Studies of study habits are very important particularly in medical school which is characterized by heavy workload, heavy time commitments, and high stakes assessments. Students' approach to learning, which includes study habits, has an important impact on both the excellence of the learning and their academic success. The aim of this study was to evaluate the study habits of Shiraz medical students.

Methods: In this descriptive cross sectional study Persian version of Study Skills Inventory for Students (ASSIST) was distributed randomly among 265 Shiraz medical students in May 2010. Total completed questionnaires were 193 (72.83%). data was analyzed using SPSS 18.

Results: The results showed that most of the students use deep and deep or surface approach towards their studies (89.4%) and some use strategic approach (72.7%) but score was relatively low for surface approach (69.8%). There was no statistically relation between gender and deep or surface approach that they adopted but there was a statistically positive relationship between gender and strategic approach that they adopted with males good in adopting strategic approach. No statistical relationship was detected between educational level and deep approach but analysis detected a statistically positive relationship between level of education and both surface and strategic approaches. Non clinical students adopted strategic approach whereas clinical students adopted surface approach towards their studies. There was no relationship detected between place of living and approaches that they adopted.

Conclusions: Our finding suggests that there is an overlap correlation between learning approaches adopted by students in different situations.

Keywords: Learning; Deep Approach; Strategic Approach; Surface Approach.

A Survey on Study Habits of Medical Students in Shiraz Medical School

مراجعات:

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نحوه قطعات فارسی:

1. بررسی عادت های مطالعه دانشجویان پزشکی دانشگاه شیراز
2. زمینه و هدف: مطالعه آداب و عادات مطالعه و نگاه در دانشگاههای پزشکی می‌باشد که دانشجویان پزشکیهم می‌دانند و در این مطالعه با یک هدف اصلی به این موضوع از آن طرف دو مدل سنجش استفاده کرده‌ام.

3. یافته‌ها: نتایج نشان داد که شاخص‌های مطالعه در دانشگاه‌های پزشکی شیراز متفاوت است. در این مطالعه که در این مطالعه با یک هدف اصلی به این موضوع از آن طرف دو مدل سنجش استفاده کرده‌ام.
INTRODUCTION
What we learn depends on how we learn, and why we have to learn it (1). Students learn in different ways, some of which may be more appropriate than others. The approach students choose appears to be a central factor in determining both the quality and quantity of their learning (2). Learning and teaching processes contain active cooperation and interaction between student and educator (3). The students' approach to learning, which includes study habits, has been shown to predict the students' success (4). Good study habits make the job of being a college student much easier. Many students, who could succeed in university, fail because they never learned to manage their time efficiently. Good study habits result in better grades and more time for other activities. Even the best students can usually benefit from an in-depth evaluation of their current study habits. Of course there are many ways to achieve academic success, but your approach may not be the most effective or efficient (5). Academic success for the student may encompass goal setting, proper time management, study skills, and their preferences for a particular style of learning. A student learning style determines how that person comprehends and retains information and is important for the student and educators (6). The approach students' use in their study has a significant impact on both the quality of the learning and their academic success and plays an important role in determining the outcome of any educational endeavor (7, 8). Learning styles influence the maintenance of information and the depth of understanding (9). Fielden states that good study habits help the student in critical reflection in skills outcomes such as analyzing, critiquing, and synthesizing (10). Nneji states that study habits are learning tendencies that enable students work privately (11). Azikiwe describes study habits “as the way a student plans his or her reading outside lecture hours in order to master a particular subject or topic”. Study habits help students master their areas of specialization (12).

Many students entering university do not always have the necessary skills to deal with the challenges of the new learning environment. Ultimately, their success or failure within university courses can be determined by their skill to choose the most appropriate strategy within a particular learning situation. This might, for example involve working within a group to get ready for an oral presentation on a given topic or studying for a multiple choice question test. Each requires a different set of skills (13).

Students also come into universities with different attitudes about what learning itself really means. When adults from a range of ages and educational backgrounds are asked to explain what they understood by "learning," a series of contrasting conceptions are found which can be seen as a hierarchy, increasing in both sophistication and complexity (1).

Three basic study approaches have been identified as: surface, deep and strategic, each resulting in different learning outcomes. The most advantageous and successful is the deep study approach. A student with a deep approach seeks to understand, relates new ideas to previous knowledge, relates concepts to experience, examines the logic of the argument and uses evidence critically. In a surface approach, the student’s intention is to complete the task, memorize information and focus on individual points, without recognizing the wider context or reflecting on the process or the purpose of study. They also tended to use rote learning in an attempt to remember the facts they thought they might be required to reproduce at the end of the exercise. Such students have fear of failing and lack motivation. Student adopting a strategic approach organize their work, manage time well, and aim especially to pass assessments (14).

Students adopting the surface study approach are mainly motivated by either a wish simply to complete the course or a fear of failure. The intention is to complete the course requirements by memorizing the material they believe will possibly come up in the final assessments. In contrast, students adopting the deep approach are predominantly motivated by paying attention to the subject material and / or appreciation of its professional relevance. While studying the subject their aim is to understand its meaning and to relate it to previous knowledge and personal experiences. The third approach is the strategic one, students for whom the major motivation is achievement of high grades. They are motivated by a sense of competition. Their main intention is to be successful and is prepared to use whatever means necessary. At any one time they might elect to use a surface approach or a deep approach depending on what they feel would produce the most successful results. (2)

Each of the learning approaches surface, deep and strategic are reflected in characteristic intellectual processes that are used by the students as they set about their learning task. These are by no means simple, as students in each main category may operate in different ways. These processes have a considerable importance because they appear to be related directly to the quality of learning outcome. In 1999, Chou et al. evaluated the effects of learning approaches on academic achievement of Taiwanese college accounting students. Their result showed that Taiwanese accounting students tend to display moderate uses of deep processing. They show slightly more signs of surface processing, and fear of failure (15).

In year 2007 Jonas-Dwyer and Sudweeks at University of Western Australia and Murdoch University Perth conducted an exploratory study of students’ approaches to studying histology and pathology. Results indicated that one third of the students (31%) changed their learning approach from deep approach to either a strategic or surface approach. There was an 11% increase in the strategic approach and 20% increase in the surface approach. (16).

In December 2003 Siddiqi investigated study approaches of Pakistani students in tertiary institution using revised version of Biggs Study Process Questionnaire (R-SPQ-2F). The results showed that the students predominantly have higher score on deep approach. No statistically significant difference was observed on the basis of age, gender and highest qualifications obtained but differ significantly for various fields of study (17).

In year 2003 Mansouri, Soltani et al. investigated the approaches to the learning of midwifery and nursing students at School of Nursing and Midwifery in Shiraz Iran. The result showed that rate of nursing students adopting the deep approach was high (64%). This result for midwifery
students was also high (63%) (18).

METHODS

In this cross sectional, descriptive study questionnaires were distributed randomly among 265 medical students of Shiraz medical school in May 2010. The sample size was determined by Krejcie and Morgan table of research activities. The questionnaires were distributed randomly among students studying in different educational levels from the first year to seventh year. A total of one hundred ninety three questionnaires were returned back and analyzed in this study.

The Approaches and Study Skills Inventory for Students (ASSIST) was used to identify students’ preferred approaches for studying. The ASSIST is based on Marton and Saljos ideas on approaches to learning (1976-1997) and developed by Tait, Entwistle and McCune in 2000 (19). The ASSIST was previously known as the Approaches to Study Inventory (ASI) but developed over time to Revised Approaches to Study Inventory (RASI) and then the ASSIST. ASSIST is a self-report questionnaire containing 52 items, each of which scored on five-point Likert-type scale ranging from 1 (disagree), 2 (disagree somewhat), 3 (unsure), 4 (agree somewhat) and 5 (agree). The 52 items are grouped into three factors: 16 items represent the deep approach, 16 represent the surface approaches, and 20 represent the strategic approach to learning. The inventory was translated into Persian by experts of English language. The content validity of the Persian translation of inventory was checked by experts and its reliability was checked by pilot study.

The first part of the questionnaire included a number of questions about demographics of the respondents, age, sex, year of entrance into the medical school, and level (year) of education.

The responses to 52 inventory items were categorized into deep, strategic or surface approaches according to the guidelines supplied with the inventory. Accordingly, those who achieved the highest score in 16 particular items were using deep approach, those who achieved the highest score in another 16 items were using surface approach, and those who achieved the highest score in the remaining 20 items were using strategic approach. The ranking from each questionnaire as well as demographic information were entered into statistical program for data analysis. The data was analyzed using the Statistical Package for Social Sciences (SPSS) version 16 for window. Descriptive statistics like means, percentages and Chi-square significance test were used in the analysis. A probability value of <0.05 was considered significant.

RESULTS

In this study a translated version of ASSIST was distributed among 265 medical students studying in different educational years. Out of 265 questionnaires distributed 193 questionnaires were completed and returned back giving a response rate of 72.83%. Among 193 students seventy (56.30%) were male and one hundred twenty three (63.7%) were female with ages ranging from eighteen to twenty seven years (mean age 23.27 ± 2.216 years).

Basic science students were forty two (21.8%), physiopathology student were twenty one (10.9%), students were thirty three (17.1%), externs were forty (20.7%) and interns were fifty seven (29.5%). These students were further categorized into two groups, clinical and non clinical group. Therefore clinical students were one hundred thirty (67.3%) and non clinical basic science students were sixty three (31.7%).

One hundred eight (56%) students were living in dormitory and eighty five (44%) were living outside dormitory in rented houses alone or with family and friends.

It was seen that the age of students in each educational level was almost in the same range giving the same results on the basis of age and educational level so only educational level was taken into consideration.

The number and percentage of medical students adopting
and not adopting deep, strategic, and surface approaches are presented in table 1. The rate of medical students adopting deep approach was high (89.4%). In this study 123 females and 70 males participated using different approaches towards their studies. The frequency of students who adopt deep & strategic approach and those who don’t adopt deep & strategic is shown in table 2. Statistical analysis revealed no statistically significant positive relationship between gender and deep approach as P > 0.05. Statistic analysis revealed a statistically significant positive relationship between gender and strategic approach as P<0.05. Males are better at using strategic approach than females. The frequency of females and males using surface approach towards their studies and those who don’t use surface approach are represented in the table 3. The statistical analysis does not reach a statistical significance. A total of 193 students who participated in this study categorized into clinical and non clinical basic science students on the basis whether they have joined their clinical course in hospitals or not. Out of 193 students 130 (67.3 %) were clinical and 63 (31.7 %) were nonclinical. The frequency of both groups using deep and strategic approach towards their studies is shown in table 4. Statistical analysis did not detect a relationship between clinical and using non clinical students adopting deep approach as P > 0.05. Statistical analysis revealed a statistically significant positive relationship between clinical and non clinical basic science students in their use of strategic approach (P < 0.05). Non clinical students manage their studies with strategic approach more successfully than clinical students. Now the frequency of clinical and non clinical medical students who used surface approach is shown in table 5. Statistical analysis revealed a statistically significant positive relationship between clinical and non clinical students and surface approach adopted by them (P< 0.05). Clinical students used surface approach more than non clinical students. Statistical analysis revealed a statistically significant positive relationship between clinical and non clinical students and

Table 1. The Number and Percentage of Medical Students using and not using Deep, Strategic and Surface Approaches

<table>
<thead>
<tr>
<th>Approaches</th>
<th>Deep Approach</th>
<th>Strategic Approach</th>
<th>Surface Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Using</td>
<td>Not using</td>
<td>Using</td>
</tr>
<tr>
<td>Students</td>
<td>N (%)</td>
<td>N (%)</td>
<td>N (%)</td>
</tr>
<tr>
<td></td>
<td>168 (89.4)</td>
<td>20 (10.6)</td>
<td>136 (72.7)</td>
</tr>
</tbody>
</table>

Table 2. The Frequency of students using and not using deep approach by gender

<table>
<thead>
<tr>
<th>Students</th>
<th>Deep Approach</th>
<th>Strategic Approach</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not using</td>
<td>Using</td>
<td></td>
</tr>
<tr>
<td></td>
<td>N (%)</td>
<td>N (%)</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>14 (11.6)</td>
<td>107 (88.4)</td>
<td>0.57</td>
</tr>
<tr>
<td>Male</td>
<td>6 (9.0)</td>
<td>61 (91)</td>
<td></td>
</tr>
</tbody>
</table>

Table 3. The Frequency of students using and not using surface approach by gender

<table>
<thead>
<tr>
<th>Students</th>
<th>Not using surface approach</th>
<th>Using surface approach</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N (%)</td>
<td>N (%)</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>43 (35)</td>
<td>80 (65)</td>
<td>0.056</td>
</tr>
<tr>
<td>Male</td>
<td>15 (21.7)</td>
<td>54 (78.3)</td>
<td></td>
</tr>
</tbody>
</table>
surface approach adopted by them (P< 0.05). Clinical students used surface approach more than non clinical students. Out of 193 students who participated in our study, 108 (56%) lived in university dormitory and 85 (44%) lived outside dormitory. The frequency of students who used deep and strategic approaches and those who didn’t use these approaches on the basis of place where they lived is presented in table 6.

Statistical analysis did not reveal any statistical relationship between the place where students lived and deep approach they adopted. No statistically significant relation was detected between places where students lived and strategic approach that they used (P > 0.05). The frequency of students using surface approach and the place where they lived is shown in table 7.

### Table 4. The frequency of clinical and non clinical students using and not using deep & strategic approaches

<table>
<thead>
<tr>
<th>Approaches</th>
<th>Students</th>
<th>Not using deep approach</th>
<th>Using deep approach</th>
<th>P Value</th>
<th>Not using strategic approach</th>
<th>Using strategic approach</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>N (%)</td>
<td>N (%)</td>
<td></td>
<td>N (%)</td>
<td>N (%)</td>
<td></td>
</tr>
<tr>
<td>Non clinical</td>
<td>7 (11.1)</td>
<td>56 (88.9)</td>
<td>NS</td>
<td>0.656</td>
<td>10 (16.9)</td>
<td>49 (83)</td>
<td>0.031</td>
</tr>
<tr>
<td>Clinical</td>
<td>13 (10.4)</td>
<td>112 (89.6)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NS denotes not significant.

### Table 5. The frequency of clinical and non clinical students using and not using surface approach

<table>
<thead>
<tr>
<th>Approaches</th>
<th>Students</th>
<th>Deep</th>
<th>Strategic</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>N (%)</td>
<td>N (%)</td>
<td></td>
</tr>
<tr>
<td>Non clinical</td>
<td>25 (40.3)</td>
<td>37 (59.7)</td>
<td></td>
<td>0.035</td>
</tr>
<tr>
<td>Clinical</td>
<td>33 (25.4)</td>
<td>97 (74.6)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Table 6. The frequency of students using and not using deep and strategic approaches on the basis of their place of living

<table>
<thead>
<tr>
<th>Approaches</th>
<th>Students</th>
<th>Deep Approach</th>
<th>Strategic Approach</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Not using</td>
<td>Using</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>N (%)</td>
<td>N (%)</td>
<td></td>
</tr>
<tr>
<td>Dormitory</td>
<td>12 (11.5)</td>
<td>92 (88.5)</td>
<td>656</td>
<td>0.833</td>
</tr>
<tr>
<td>Non Dormitory</td>
<td>8 (9.5)</td>
<td>76 (90.5)</td>
<td>22 (26.5)</td>
<td>61 (73.5)</td>
</tr>
</tbody>
</table>

### Table 7. The frequency of students using and not using surface approach on the basis of their place of living

<table>
<thead>
<tr>
<th>Approaches</th>
<th>Students</th>
<th>Not using surface approach</th>
<th>Using surface approach</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>N (%)</td>
<td>N (%)</td>
<td></td>
</tr>
<tr>
<td>Dormitory</td>
<td>35 (32.7)</td>
<td>72 (67.3)</td>
<td></td>
<td>0.397</td>
</tr>
<tr>
<td>Non Dormitory</td>
<td>23 (27.1)</td>
<td>62 (72.9)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
There was no statistical relationship detected between the place where the students lived and the surface approach (P > 0.05).

**DISCUSSION**

The result of current study provided us with a better understanding of Shiraz medical students study habits. The results also yield insights into the relationship between different study approaches used by the students and their gender, educational level, and the place where they lived.

The main finding of this study was that most of the students used deep approach towards their study (89.4%). Some of the students used strategic approach (72.7%), surface approach used was relatively low (69.8%). It is encouraging to see that students’ scores are high in the case of deep approach. The adoption of deep approach by the students in this study might be related to their internal motivation and their interest in this field, what else is the reason for their preference to deep approach needs to be studied comprehensively.

In 2006 a study was performed by Siddique in Pakistan in which approaches of students in Pakistan were evaluated in 15 higher educational centers across Pakistan. They reported that their highest score for surface approach might be due to their old fashion teaching practices which are still based on traditional models of teacher-centered learning. Their examination system does not take higher cognitive skills into account although they are more inclined towards the reproduction of facts (17).

In 2005 a survey was done in University of Edinburgh Medical School U.K by Reid, Durall and Evans to study medical students’ approaches to learning. They used ASSIST as their instrument. Their results were similar to ours with deep and strategic approaches scoring high and surface learning scoring low (14). In 2005, another study was conducted among nursing and midwifery students in Shiraz Iran by Mansouri, Soltani, Rahemi et al. Their study was also in favor of deep approach (18).

In the present study there was no statistically significant difference between adopting deep approach by students and their gender but there was a statistically significant positive relationship between gender and strategic approach that they adopted. Male students were better at using strategic approach than female. The characteristic features of students adopting a strategic approach are that they are efficient in organizing their work and managing their time, and working hard in their studies. They were concerned about their working conditions and had clear objectives for their studies. The strategic approach is also known as “Achieving Orientation”. Achieving motive of this approach is based on competition: to get the highest grades, whether or not the material is attractive (20). There is accumulating evidence that overloaded syllabuses, limitation of time that forces them to work hard and manage their time efficiently so adopt strategic approach.

According to our result that male students are good at strategic approach, meaning that male students are good at managing their time, they are more goal-oriented, study with strategies and aim in mind, are flexible in learning and study harder. So male students better know how to be competitive and attain highest possible grades in their exam.

On the basis of level of education no statistically significant relationship was detected between clinical and non clinical students and deep approach that they adopted but there was statistically positive relationship between clinical and nonclinical students and strategic approach. Non clinical students manage their studies with strategic approach more successfully than clinical students. Non clinical students being better at strategic approach might be due to their aim of attaining high grades. When medical students are qualified in passing medical entrance examination they are competitive and maintain their competitiveness in first few years of their course. They work hard not to ensure understanding but to ensure that their marks are sufficiently high. The other possible reason might be overloaded syllabuses and limitation of time that forces them to work hard and manage their time efficiently so adopt strategic approach.

Our results revealed that clinical students were using surface approach more than non clinical students as there was a statistically significant positive relationship between surface approach and their level of education. Numerous researches have documented factors that encourage surface approaches to learning. These factors consist of overload of work, students’ perception of the significance of the content, assessment processes, poor teaching, poor student teacher interpersonal relationship, lack of chance for self management (21, 22, 23, 24, 25). Many times students express difficulties with the courses they are studying. They frequently reported problems in literature; such as difficulty in organizing study time effectively, overloaded feeling with vast study material, decreasing motivation, difficulty in seeing the relevance of some subjects, difficulty in recalling previously acquired knowledge, and difficulty in applying acquired knowledge to practical situations (26). Lack of alignment, heavy workload and high stakes assessments are precisely the factors that influence students towards using surface study approaches in order to ‘keep up’, irrespectively of their personal motivation or intelligence (27, 28).

In a study conducted among 2005 in Shiraz nursing and midwifery students, a higher percentage of nursing students adopted a strategic approach as their year of study increased which was in contrast to our study. This difference might be due to difference in clinical schedule between medical and nursing students but in midwifery students adoption of deep or strategic approach was not affected by the level of education (18).

This study has shown that medical students in their early years of basic sciences get high scores in the case strategic approach and as their level of education increases they prefer surface approach. But overall students scored high for deep approach. This shows overlap correlation between different approaches that students select in different situations. Thus, students use different approaches at different points in their studies and this is encouraging. The
learning process is dynamic and based on the students’ requirements for different abilities at different times. The reason for the deep approach of medical students might be their interest in this medical field. Students selected for joining medical courses were the students who were the top ones in passing the national entrance exam called “Konkoo”. This shows that these students were already used to adopting deep approach in their studies. Now, the reasons for changing their strategies throughout the medical courses need further studies. As it was clear from this study that as student’s educational level increases there is more trends towards surface approach. Therefore, medical students should be encouraged to be self-advocate in their learning approaches and should also be encouraged to increase their internal motivation, active learning, group work, problem based learning, examinations assessing higher level of learning, interactive lecturing, adequate study time, text book reading, oral or written class presentation, teachers enthusiasm, and organized lectures, all of which foster deep learning, should bring about improved outcome.

Limitations
There were some limitations to this study. Firstly, the number of student participating in this study were not enough to consider learning approaches adopted by students in each educational level separately, this was due to lack of cooperation of students. Secondly, it was not a longitudinal study therefore it was not possible to compare the students study approach as their level of education increases. Thirdly, the approach student selected was not compared with their grades in order to see the affect of approach selected by students on their grades.

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