Enhancing Study Skills among Freshman Nursing Students: an Intervention Study

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Abstract:
The aim of the current study was to assess the effect of study skills educational training program among freshman nursing students. Subjects & methods: design: A quasi-experimental research design with pre-post assessment was used to achieve the aim of the study. Setting: The study was conducted in a selected accredited Nursing Faculty in Cairo-Egypt. Subjects: The study involved a group of forty freshmen nursing students recruited in level 1 medical surgical nursing specialty. Results: Most of studied student (92.5%) had moderate total study skills pre-program. After implementation of the program, the findings pointed to general improvement in all dimensions of students' study skills with statistically significant relations (p<0.05). Furthermore, there was a statistically significant improvements of studied students' GPA were observed post program (p <0.001). Also, a statistically significant relation between studied students' study skills and their GPA was present post program. In multivariate analysis, employment and age was the only statistically significant independent negative predictor for the students' study skills. Conclusion & recommendations: The study skills of nursing students significantly improved after participation in a study skills educational training program, with associated significant improvement in their academic achievement score. Study skill training program in addition to further studies on larger scale and examining of factors affecting students' study skills are recommended.

Key words: study skills, freshmen nursing students, intervention study

I. Introduction
Growing body of literatures had investigated study skill in higher education and revealed that students in the health sciences may have unclear idea about anticipations as independent learners [1]. Transmission from secondary school to higher education is usually hard and demanding experience for students [2-3]. In addition, study skills have a key role in students' professional future and need to be utilized for academic success [4-5].

Study skills are required as a preliminary in university life [6]. Moreover, nursing students are probably liable for more stress than other students [7]. This stress is high especially during the first year of study due to clinical and classroom tasks [8]. So, early in the nursing course the principle of learning should be used [9]. A fresh way of thinking, feeling, dealing with critically appraising data, obtaining empathy and professional relationships management are in demand especially in first year students [10].

Students cannot perform effectively without proper learning. Each student uses different techniques and methods on a scheduled and regular basis for learning, these habitual practices for studying can be termed as study habits or study skills [11]. The terms of study habits and study skills are used as interchangeable ways [12]. Study skills are education methods and techniques that aid effective learning, especially viewed as a set of skills that can be acquired or taught; the ability to study effectively [13]. Study habits are student’s methods of studying whether systematic, efficient or inefficient [14]. Study habit is the pattern of behavior adopted by students in the pursuit of their studies that serves as the vehicle of learning. It is the degree to which the student engages in regular acts of studying that are characterized by appropriate studying routines [15]. Study skills are approaches applied to learning that assist students to be successful in schools in a way of passing an exam or even obtaining good grades [16].

Improving efficient study skills can be considered as a valuable factor for students to attain academic success [17, 16]. Developing good study habits among the students is vital for their school and lifelong education [18]. Previously published studies described the importance of study habits in many aspects such as: level of test anxiety and academic achievement [12], academic performance and acquiring proper knowledge [19] and learning and academic achievement which affect their cognitive and practical skills, and eventually their future career [20].
Textbook reading, memory, time management, note-taking, test preparation and concentration are six aspects of study skills introduced by Congos [21]. Improvement of students’ academic performance of university students can be achieved through study skills teaching [22]. The training and academic performance of student nurses constitute a vital aspect of their competency [23]. Study habits of nursing students should be supported [24]. Nursing students require academic support before admission in the program to acquire effective study skills and adjust their study habits for easier adaptation to the rigors of nursing education [25].

Significance of study:
Improving student nurses’ abilities toward self-directed study is one of the main responsibilities of the nurse educator [26]. Insufficient academic performances can affect knowledge needed to strengthen professional skills needed for nursing procedures which can represent a threat to the lives of the patients [27]. Ineffective study habits were reported as a factor that affects the academic achievement of community college among Jordanian students [28]. Recently, inadequate performance of undergraduate nursing students in the university and professional examinations is a source of attention for both educators and other stakeholders [29].

More recent attention was focused on students’ study skills and strategies, but only in developed countries. So, investigating the study skills of students in different cultures is crucial [30]. Furthermore, Numan and Hasan [12] pointed out the need for strategies and intervention plans for improving study habits of undergraduate students in higher education. Efficient and effective health care system depends mainly on training of health care workers in which nurses constitute majority of them [23]. Numerous studies results recommended different strategies for study skills development such as: educational course or workshop [6], Seminars and workshops [31], workshops and counseling and guidance [32] and an experimental study [33].

Aim:
The aim of the current study was to assess the effect of study skills educational training program among freshman nursing students

Research hypothesis:
The study skills of nursing students will be significantly improved after participation in a study skills educational training program, with associated significant improvement in their academic achievement score.

II. Subjects and methods

2.1 Research design:
A quasi-experimental research design with pre-post assessment was used to achieve the aim of the study.

2.2 Setting:
The study was conducted in a selected accredited Nursing Faculty in Cairo-Egypt.

2.3 Study subjects:
The study involved a group of forty freshmen nursing students recruited in level 1 medical surgical nursing specialty, second semester, male and female, enrolled in the number of credit hours equal to the number of hours of first term, graduated from the secondary school education system as pervious certificate. Students who did not have an Egyptian nationality were not enrolled in the study. The sample size was calculated using a G-power version 3.1.1 for power analysis. A Power of .95 (β = 1-.95 = .05) at alpha .05 (one-sided) was used as the significance level, and effect size= (.03) was utilized.

2.4 Data collection tool:
A self-administered questionnaire form was utilized to collect data. It consists of two parts.

The first part is concerned with students’ characteristics and academic data as age gender, place of residence during the study, part time employment and first semester cumulative grade-point average (GPA).

The second part of the tool consists of the Study Skills Inventory Scale developed by Congos [21] to provide feedback on students’ current approach to college level study skills. It is a 51-item questionnaire that measures six study skills; text book reading, note taking, memory, test preparation, concentration, and time management. Each include 8, 5, 9, 13, 10, 6 items respectively. The scale has 5-point Likert scale almost always, more than half of the time, about half of the time, less than half of the time, almost never, scored 5, 4, 3, 2 and 1 respectively. A total score of each sub scale is calculated by simple summation of the scores of its item, converted into a percent score by dividing the total by the number of items, and multiplying the remainder by 100. Low skills are below 50%, moderate from 50% - 70% and high above70%. The reliability analysis was
measured in the current study and proved to be high with Cronbach alpha coefficient for internal consistency 0.92 for the entire scale.

2.5 Pilot study:
Pilot study was done on 10% of the study sample to test the study tool in terms of clarity, and the time required to be applied, as well as the applicability of the scale. Students involved in the pilot study were not included in the main study sample.

2.6 Procedure for data collection
The study was conducted in four phases; assessment, planning, implementation, and evaluation phase.

Assessment phase:
Freshman nursing students enrolled in the program according to the previously mentioned inclusion criteria. At the beginning of the educational program, the researcher identified herself to the students, clarified the purpose of the study and gave guidelines for completion of the self-administered questionnaire. First semester cumulative grade point average (GPA) was taken as a benchmark measure of academic achievement. The duration of this phase was one week.

Planning phase:
Based on extensive literature review the study skills educational program was developed. The designed educational program content is based on six components of study skills identified by Congos [21]: Textbook reading, note-taking, memory, test preparation, concentration, and time management. The researcher prepared the instructional materials that were presented. The educational program calendar was formed consequently.

Implementation phase:
The program designed for the current study has been implemented through 6 sessions. Students were divided into two groups, each group included 20 students. Each group received two hours weekly session as following:

- **First session**: It entailed effective text-book reading using SQ5R reading method (survey, question, read, respond, record, recite and review).
- **Second session**: It contained effective note-taking method through the Cornell method which provides a systematic format for condensing and organizing notes. The student divides the paper into two columns: the note-taking column (usually on the right and larger) and the questions/key word column (on the left).
- **Third session**: It covered how to improve memory through using Buzan’s revision cycle; The students were asked to reduce their notes to key words after the session (in 10 minutes), a day later write out those key words from memory, refer to the actual notes and fill in the gaps (in 2 minutes), repeat again writing the notes out from memory and plugging gaps again in a week later; then a month later and lastly three months later.
- **Fourth session**: It was concerned about effective test preparation for multiple choices, true/false, matching, problem-solving, essay tests and objective structured clinical examination (OSCE exam).
- **Fifth session**: It covered concentration through:
  A. **Developing self-regulation strategies**: the students were asked to concentrate in the present moment, use the spider technique to ignore distractions, write worry list to deal with them later and concentrate to get started.
  B. **Active learning strategies**: read out loud, use a highlighter, write notes, ask questions, and make connections between the subject matter and its real world applications.
- **Six session**: It involved time management through making To-Do list, Prioritize based on due dates, concentrate on one assignment at a time and avoid procrastination, sticky notes and create a weekly plan

  Each session started with a summary of what has been taught in the preceding session and the objectives of the new one. In addition, the students presented written and oral reports about the application of the study skill strategy which was introduced in the previous discussion. This phase was executed in 6 weeks.

Evaluation phase:
The program evaluation was done immediately after implementing the training by using the same tool of data collection. Students’ GPA of the semester’s exam was taken as a measure of academic achievement post-program. This phase took about one week.
2.7 Ethical considerations:
After obtaining official permissions, the purpose and nature of the study was clarified to the students and the possibility to withdraw at any time assured. The researcher confirmed that the information they gave would not affect their grade in courses and that data would be utilized only for the purpose of scientific study. Confidentiality was guaranteed by assigning each subject a code number.

2.8 Statistical analysis:
Data entry and statistical analysis were done using SPSS 20.0 statistical software package. Chronbach’s alpha coefficient was calculated to assess the reliability of the developed tool. For descriptive statistics, numbers and percent were used to describe the students’ characteristics, as well as the study variables. Means and standard deviations were used to describe skills of students’ pre and post program. Paired t-test was used to detect any significant differences in the mean scores pre and post program on study skills, as well as Chi-square test was used to compare students’ academic performance pre and post program and to test the relation between grades of students and students’ characteristics. ANOVA test was used to test the relation between skills and students’ characteristics. Statistical significance was considered at p-value <0.05.

III. Results

Table (1): Characteristics of studied students (N=40)

<table>
<thead>
<tr>
<th>Item</th>
<th>No</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 - 20</td>
<td>8</td>
<td>20</td>
</tr>
<tr>
<td>19 - 22</td>
<td>22</td>
<td>55</td>
</tr>
<tr>
<td>20 - 21</td>
<td>7</td>
<td>17.5</td>
</tr>
<tr>
<td>21</td>
<td>3</td>
<td>7.5</td>
</tr>
<tr>
<td>Range</td>
<td>18.0 - 21.0</td>
<td></td>
</tr>
<tr>
<td>Mean ± SD</td>
<td>19.1± .8</td>
<td></td>
</tr>
<tr>
<td>Median</td>
<td>19.0</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>12</td>
<td>30.0</td>
</tr>
<tr>
<td>Female</td>
<td>28</td>
<td>70.0</td>
</tr>
<tr>
<td>Part time employment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>8</td>
<td>20.0</td>
</tr>
<tr>
<td>No</td>
<td>32</td>
<td>80.0</td>
</tr>
<tr>
<td>Residence with family</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>30</td>
<td>75.0</td>
</tr>
<tr>
<td>No</td>
<td>10</td>
<td>25.0</td>
</tr>
</tbody>
</table>

Table (1): Illustrated that studied sample age ranged between 18-21 years old with Mean ± SD19.1± .8. In addition, 70% of them were female and 75% of them live with their families. Concerning employment, only 20% of studied sample had part time job.

Table (2): Levels of reported study skills of studied students throughout the program (N=40)

<table>
<thead>
<tr>
<th>Study skills</th>
<th>Pre-program</th>
<th>Post-program</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>*Textbook reading</td>
<td>10</td>
<td>25</td>
</tr>
<tr>
<td>*Note taking</td>
<td>16</td>
<td>40</td>
</tr>
<tr>
<td>*Memory</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>*Test preparation</td>
<td>10</td>
<td>25</td>
</tr>
<tr>
<td>*Concentration</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>*Time management</td>
<td>21</td>
<td>52.5</td>
</tr>
<tr>
<td>Total</td>
<td>3</td>
<td>7.5</td>
</tr>
</tbody>
</table>

* Statistically significant at p<0.05
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Pre-program, the table reveals that 17.5% of students had high level in relation to concentration item. Moreover, only 7.5% of them reported high level regarding note taking and memory and 2.5% in relation to textbook reading item while none of them had high level regarding items of test preparation and time management as well as the total score of their study skills whereas, 92.5% of student had moderate total study skills . On the other hand, after implementation of the program, the table pointed to general improvement in all dimensions of students' study skills with statistically significant relations (p<0.05). The highest percentage was obtained in relation to both note taking and concentration followed by textbook reading (55%, 55% &52.5% respectively). In addition, 42.5% of students had high level of total study skills.

**Table (3):** Studied students’ GPA throughout the program (N=40)

<table>
<thead>
<tr>
<th>Students' GPA</th>
<th>Pre program</th>
<th>Post program</th>
<th>Chi-square</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. %</td>
<td>No. %</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very good (B)</td>
<td>0 0.0</td>
<td>6 15.0</td>
<td>30.00</td>
<td>0.0001*</td>
</tr>
<tr>
<td>Good (C)</td>
<td>16 40.0</td>
<td>19 47.5</td>
<td>39.50</td>
<td>0.001*</td>
</tr>
<tr>
<td>Pass (D)</td>
<td>20 50.0</td>
<td>15 37.5</td>
<td>109.73</td>
<td>0.001*</td>
</tr>
<tr>
<td>Fail (F)</td>
<td>4 10.0</td>
<td>0 0.0</td>
<td>10.00</td>
<td>0.001*</td>
</tr>
</tbody>
</table>

(*) Statistically significant at p<0.05

**Table (4):** Relation between studied students' study skills and their GPA post program

<table>
<thead>
<tr>
<th>Students' GPA</th>
<th>levels of students' study skills</th>
<th>Low</th>
<th>Moderate</th>
<th>High</th>
<th>Total</th>
<th>Chi-square</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. %</td>
<td>No. %</td>
<td>No. %</td>
<td>No. %</td>
<td>No. %</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grades B</td>
<td>0 0.0</td>
<td>0 0</td>
<td>6 100</td>
<td>6 100</td>
<td>100</td>
<td>13.52</td>
<td>0.001*</td>
</tr>
<tr>
<td>Grades C</td>
<td>0 0.0</td>
<td>10 52.6</td>
<td>9 47.4</td>
<td>19 100</td>
<td>100</td>
<td>13.52</td>
<td>0.001*</td>
</tr>
<tr>
<td>grades D</td>
<td>0 0.0</td>
<td>13 86.7</td>
<td>2 13.3</td>
<td>15 100</td>
<td>100</td>
<td>13.52</td>
<td>0.001*</td>
</tr>
<tr>
<td>TOTAL</td>
<td>0 0.0</td>
<td>23 57.5</td>
<td>17 42.5</td>
<td>40 100</td>
<td>100</td>
<td>13.52</td>
<td>0.001*</td>
</tr>
</tbody>
</table>

* Statistically significant at p<0.05

**Table (5):** Best fitting multiple linear regression model for the students' study skills

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Regression coefficient</th>
<th>Standard error</th>
<th>R-square</th>
<th>t-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>-.027</td>
<td>.166</td>
<td>.294</td>
<td>-1.165</td>
<td>.870</td>
</tr>
<tr>
<td>Employment</td>
<td>-.597</td>
<td>.175</td>
<td></td>
<td>-3.421</td>
<td>.002*</td>
</tr>
<tr>
<td>Age</td>
<td>-.204</td>
<td>.084</td>
<td></td>
<td>-2.432</td>
<td>.020*</td>
</tr>
<tr>
<td>Residence</td>
<td>.057</td>
<td>.173</td>
<td></td>
<td>.332</td>
<td>.742</td>
</tr>
</tbody>
</table>

*significant Note: Regression is significant at p-value=0.014

In multivariate analysis, employment and age was the only statistically significant independent negative predictor for the students' study skills. While no positive statistically significant independent predictors could be detected.

**IV. Discussion**

The current study findings indicates that majority of studied student had moderate total study skills preprogram. Consistent with previous studies, an Iranian survey for assessing study skills of university students revealed that majority of the participants had moderate study skills [30]. Furthermore, Mashayekhi et al. [34] found that, the majority of students had moderate or moderately good study habits. In the study of Zare’zadeh [35]; the study habits of the students were at a moderate level. In addition, findings of Indian study about study habits among nursing students reported that the subjects were having moderate study habits [9]. In contrast, a variety of studies had reported lacking of students' study habits [36,6,37,38,39,33].

Improving and promoting the study skills of university students require the designing and implementing of education programs for study strategies [30]. Also, Study habits seem to be an essential
determinant of achievement, academic performance and acquiring proper knowledge. In view of the relationship between study habits and academic achievement and significance of medical education, the students should be trained to promote their study habits and strategies [19]. In addition, a study of Numan and Hasan [12] has highlighted the importance of effective study habits at university level and the need for strategies and intervention plans for improving study habits of undergraduate students. It is suggested that university administration in collaboration with teachers should implement such intervention plans and workshops for developing effective study habits. Moreover, in view of the relationship between study habits and academic achievement and significance of medical education, the students should be trained to promote their study habits and strategies [19]. In this regards, the present study demonstrated that after implementation of the program, general improvement in all dimensions of students’ study skills with statistically significant relations (p<0.05) was detected. Similarly, a British study which assessed the impact of a study skills program for nursing diploma reported that all students who attended at least one workshop improved their academic grade in their next assignment [1]. Furthermore, Fazal, et.al, [40] reported that study skills courses were beneficial to secondary school students and students at higher levels of education.

Study skills are one important factor influencing academic achievement of students [6]. Also, globally researches revealed that a relationship exists between study habits and academic performance [41,11]. In addition, the study habits are very important aspect of academic success [9]. In this regards, the present study has shown that there was a statistically significant improvements of studied students’ GPA were observed post program (p <0.001). Also, a statistically significant relation between studied students’ study skills and their GPA was present post program. Similar to other study findings, Okpala, Okpala, and Ellis [42] reported that student study strategies were positively associated with course grade. Nuthana and Yenagi [43] found significant correlation between study habits and academic achievement. Similarly, other researchers reported that the study habits and Grade Point Average of students are positively correlated [44,11,45,12]. Moreover, a correlation between study habits and students’ academic performance was reported by many other studies [15, 46, 47, 48, 34, 33].

In multivariate analysis, employment and age was the only statistically significant independent negative predictor for the studied students’ study skills. These findings are in contrast with a study about behavior of nursing students which demonstrates that nursing students who reported that they worked more than 30 hours per week had the highest nursing GPA. Moreover older students studied more hours per week and had higher study scores [49]. In addition; students who have jobs have the experience of managing their time for their studies. They can be able to manage their study habits in terms of the use of resources. They have the practice of studying in an environment that improves their study habits [50]. Furthermore, Jones et al., [51] and Jones et al., [52] found that older students reported more appropriate study behavior. In contrast, the current study finding is in agreement with Lammers et al., [53] who reported a correlation between total study score and age.

V. Conclusion & Recommendations

The study findings support the hypothesis that the study skills of nursing students significantly improved after participation in a study skills educational training program, with associated significant improvement in their academic achievement score. The study recommends discipline-based study skills training program for freshman students in the beginning of their university life. Further studies with a larger sample for confirmation of the study findings; as well as identification of the factors that may influence study skills among students.

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