

## **A follow-up survey of graduates at Faculty of Paramedical Sciences of Shahid Beheshti Medical University (1997-2000) done to apply its results in educational planning and guidance of aptitudes**

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### **ABSTRACT**

The Higher National Council of Medical Sciences Planning (HNCMSP) in Iran compile and approve educational programs by using expert academic staff, considering the country's needs and studying the background of establishment of each major in other countries. Since the employment of graduates in occupations related to their majors is of utmost importance in educational planning, this survey has been done to investigate the graduates' employment and the factors affecting it, using a retrospective study.

This survey is done on 120 graduates of Laboratory Sciences (LS), Medical Records (MR) and Radiology Technology (RT), at Paramedical Faculty of Shahid Beheshti Medical University (1997-2000). The subjects were randomly selected and given a questionnaire and the data was statistically analyzed using one-way ANOVA, Chi-Square, and Exact Fisher's test (SPSS 15). 63.5 percent of the samples were females and the rest were males with an average age of 35. The coordination between their aptitude and major was highest (61%) in LS graduates, but lowest (21%) in MR graduates. Also the coordination between majors and interest was highest in LS graduates (48.4%). The results indicate that 6% of the subjects were post graduate students, 91% were employed and 9% were jobless. 75% of them believed that their jobs were quite related to their majors and interest. They also mentioned the same factors for finding a suitable job ( $P=0.328$ ).

The results show that there is a direct relationship between the students' interest and aptitude on one hand, and their major and interest on the other. Moreover, because of the coordination between the majors and the country's needs, the rate of unemployment has been found to be very low (9%). These findings can be helpful in reevaluation of educational planning, guidance of aptitudes towards the country's economic priorities, and having a study of post graduation status.

**Keywords:** Graduates; Follow-up survey; Paramedical Faculty.

### **INTRODUCTION**

Compilation and approval of educational plans in different majors requires much time and expense as well as the work of many academics and university experts. Regarding the importance of the issue, and through cautious educational development and help of experts, the HNCMSP has established certain regulations concerning compilation of educational programs, sent these regulations to

all medical universities and asked them to answer fourteen questions referring to the necessity of having an approved educational program and its evaluation system.

There is no doubt that the approval of a new educational program is based on the country's needs and its facilities. By sending the approved educational programs to medical universities and entering students, the authorities expect to give a chance to graduates to satisfy a part of

the country's needs using their capabilities, their acquired knowledge and skills in predicted jobs. Apart from timely employment of graduates and the factors affecting it, the entrance of graduates to higher education is an important criterion in the evaluation and validation of educational planning. Surveys show that no purposeful and comprehensive study has been done in this regard, especially in paramedical sciences.

Follow up studies of graduates of different majors have been done in some states in America including Connecticut where the graduates were found to be satisfied with the educational programs in their fields and considered them to be necessary in finding a proper job related to their majors.[1]. In another survey at Lamar State College Orange, 97% of the graduates with different talents stated that the educational programs at their colleges helped them to achieve their main goals such as gaining increased job skills and having preparation for a new job [2]. A graduate follow up survey at the University of Wisconsin also showed that the graduates were successful in acquisition of different skill levels, preparation for employment and having satisfaction with their chosen careers [3].

Since one of the important and main goals of higher education is to train professional experts needed in different fields, and because of the rapid worldwide technological changes in paramedicine [5,6] and the presence of its updated experts, it is important to find out who enters this field and with what level of aptitude and capabilities, how he/she is trained and employed in the corresponding fields and how he/she adjusts himself/herself to the worldwide changes in sciences.

With regard to the role of technology in Iran, its changes and its short-term and long-term effects on the other systems, having exact and comprehensive planning to guide talents in paramedicine to have employment and innovation is indispensable [7]. Since Iran has brilliant talents, western countries including America still need to import these talented graduates of pure, applied and paramedical sciences [8]. The Deputy Minister in Students Affairs in the Ministry of Science, Research, and Technology as well as in the Ministry of

Health, Treatment and Medical Education are the core bodies responsible for following the post graduation status of graduates in and out of the country. But this follow up study has been done only on graduates of Paramedical Faculty at Shahid Beheshti Medical University (SBMU).

In 2002, in the annual gathering of graduates of different majors at Connecticut University, in a preliminary follow up survey the following results were obtained: out of 2888 graduates, 1291 filled out and returned the questionnaires mailed to them. 61% of the graduates were female and 39% were male. Most of them were aged less than 25. These graduates were asked questions about their universities, educational programs and their post graduation activities. Most of them stated that the educational programs were useful and that they were satisfied with their educational experience. This satisfaction was noticeable in graduates of Hygiene, Business, Science of Education, Art, Agriculture, Pharmacy and Nursing, but it was very high (72% and 77%) in graduates of Hygiene and Agriculture respectively. 65% of the graduates were in full time employment, 19% in part time and 16% were self-employed.

Mugabushaka, A. (2002) also performed a follow up study on 8000 graduates in fifteen African countries. The graduates answered questions on educational planning, employment condition, occupational knowledge, job skills, job satisfaction and interest in majors. The result of the study had a significant role in the development of educational goals and guidance of talents.

Lamar State College Orange (LSCO) had a follow up survey of LSCO graduates in 2003. Two months after their graduation, the subjects were given a questionnaire with questions on educational programs, employment conditions, and continuation of their education. 97% of the graduates pointed out that the educational programs were effective in helping them to achieve their goals such as gaining improved job skills and having special preparation for a new job. The data showed that 33.1% of these graduates were employed two months after graduation, 14.6% continued their education and 10.4% were looking for a job.

In a follow up survey by Weber & Miller (1998) at the college of Economics in Oklahoma University, it was pointed out that the increasing number of female graduates in employment has caused females to regard jobs as a practical chance for future success. The results in this study revealed that mothers with higher education and more reputable jobs were more successful in educational and occupational guidance of their daughters. Boys & Kirkland (2002) also wrote a book on the degrees of success, career aspiration and destinations of graduates in Britain.

Johnson & Butts (1993) have examined the relationship between the graduates' achievement, their personal characteristics and engaged time (Engaged time is a period of time in which a person is engaged in a profession and can be observed, conceived or measured by the person himself). The personal characteristics included aptitude, reasoning ability, scientific attitude, and locus of interest of 76 graduates at Georgia University. The instruments used to measure personal characteristics were scholastic Aptitude Test, Test of Logical Thinking, a test of Scientific Attitude, and Leven- Son's Multidimensional View of Locus of Control. Achievement tests were constructed and validated for biology classes and the results were analyzed by multiple regression procedures. The data in this study revealed that the graduates' success was in a positive relationship with their aptitude and reasoning ability, and the students busier with their studies were more successful and scientifically talented. This research had an effective role in educational planning.

National Organization of Educational Testing (NOET), in an article entitled "A survey on the effect of interest in majors on educational and occupational success" (2009), pointed out that students' lack of interest in their majors which was mainly due to their unfamiliarity with the majors caused them many psychological problems and the university not only couldn't improve their character and mentality but also caused them psychological and physical weariness. Affected by these problems, the graduates entered the working world while

psychologically tired and dissatisfied with their jobs.

The present research evaluates the following items: the degree of satisfaction with educational planning, continuation of education, working conditions, application of acquired knowledge in related jobs, the degree of success in applying this knowledge and the graduates' occupational and educational needs.

## **MATERIALS AND METHODS**

This study is a follow up survey and the method is a question technique using a questionnaire. The content validity of the questionnaire has been provided by using researchers' experiences and the relevant references. Later, the questionnaire was sent to the professors and experts for their comment. Finally using the authorities' and professors' comments, the final draft of the questionnaire has been written. The reliability of the questionnaire has also been provided by retesting. That is, it was first given to a sample of 15 graduates of the corresponding majors and after two weeks it was given to the same group to fill it out. The coefficient correlation of the two questionnaires was found to be  $r = 0.86$ .

In order to get the graduates' telephone number and address, a warrant was given by Educational Deputy of Paramedical Faculty to the questioners. Also, a letter of introduction was issued to questioners who directly went to the graduates in Tehran to fill out the questionnaires.

The subjects were 120 graduates with associate and BS degrees (1997-2000) in Lab Sciences, Medical Records and Radiology Technology from Paramedical Faculty at SBMU.

In addition to descriptive statistics indices such as mean, standard deviation and percentage, inferential statistics methods like Chi-Square, Exact Fisher's test, and one-way ANOVA have also been used. Since type one error in this research was equal to 0.05 ( $\alpha = 0.05$ ), the other probability values less than that are considered statistically significant.

Ethically, the graduates were given a full explanation for doing this survey, and they were

assured that their given information was kept confidentially. Only those who agreed took part in this research.

**RESULTS**

In this study, there were 120 graduates with an average age of 35(the oldest and the youngest graduates were 58 & 30 respectively).

79 of them were girls (63.6%) and the rest were boys.27% of them were single but 73% were married. The coordination between the graduates' aptitude and majors was highest in LS students (61%) and lowest in MR students (21%). Also the coordination between their majors and interest was higher in graduates of LS than the other majors(P<0.05).

Table 1.Coordination status between aptitude and majors

Majors	Very little	Little	Average	Much	Very much	Total
Medical Records	N=8 P=24.2	3 9.1	15 45.5	6 18.2	1 3.0	33 100
Lab Sciences	N=1 P=3.2	0 0	11 35.5	15 48.4	4 12.9	31 100
Radiology Technology	N= 4 P= 7.1	4 7.1	21 37.5	16 28.6	11 19.6	56 100
Total	N= 13 P= 10.8	7 5.80	47 39.2	37 30.8	16 13.3	120 100
N= number	P= percent					

As you see in table 1, Exact Fisher's test shows a significant coordination between the graduates' aptitude and majors (P<0.05). The

highest coordination was found in graduates of LS and the lowest in MR graduates.

Table 2: Coordination status between graduates' majors and interest

Majors	Very little	Little	Average	Much	Very much	Total
Medical Records	N=12 P= 36.4	8 24.2	10 30.3	3 9.1	0 0	33 100
Lab Sciences	N=1 P= 3.2	0 0	15 48.4	11 35.5	4 12.9	31 100
Radiology Technology	N=6 P= 10.7	7 12.5	22 39.3	12 21.4	9 16.1	56 100
Total	N= 19 P= 15.8	15 12.5	47 39.2	26 21.7	13 10.8	120 100

Using Exact Fisher's Test, we have found a statistically significant coordination between the graduates' major and their interest (P<0.001). Table 2 shows the highest coordination in LS and lowest in MR. 6% of the graduates were post graduate students, 91% had a job and 9%

were jobless. The effect of education on graduates' employment was economically and qualitatively analyzed and was found to be economically noticeable (25%) and quantitatively effective (77%).

Table 3: The distribution of effect of education on quantitative improvement of working conditions

Majors	Very little	Little	Average	Much	Very much	Total
Medical Records	N=3 P=25	2 16.7	3 25	3 25	1 8.3	12 100
Lab Sciences	N=3 P=12	5 20	8 32	8 32	1 4	25 100
Radiology Technology	N=5 P= 10.6	15 31.9	15 31.9	8 17	4 8.5	47 100
Total	N= 11 P= 13.1	22 26.2	26 31	19 22.6	6 7.1	84 100

Using Exact Fisher's Test, no statistically significant relation was found between the graduates' majors and the effect of education on their economic status (P= 0.735)

Table 4: The distribution of effect of education on qualitative improvement of working conditions

Majors	Very little	Little	Average	Much	Very much	Total
Medical Records	N=1 P=8.3	3 25	3 25	4 33.3	1 8.3	12 100
Lab Sciences	N=1 P= 4.2	1 4.2	7 29.2	13 54.2	2 8.3	24 100
Radiology Technology	N=1 P= 2.1	12 25.5	13 27.7	15 31.9	6 12.8	47 100
Total	N=3 P= 3.6	16 19.3	23 27.7	32 38.6	9 10.8	83 100

37 graduates didn't respond to the question evaluated in this table.

As you see in table 4, using the Exact Fisher's test, no statistically significant relation was found between the graduates' majors and the effect of their education on the improvement of working conditions (P= 0.327). 75% of the graduates mentioned the coordination between their jobs and majors as the reason for choosing their favorite careers, 18% had enough income and 7% chose their jobs because of the society's favorite. In order to compare the three groups of graduates in terms of the factors affecting their proper choice of careers, one-way ANOVA was used and the data showed that all graduates mentioned the same factors for choosing proper careers (P= 0.328).

Regarding their interest in higher education, MR graduates were eager to study Hygiene Information Management (30%), English Language (18%) and Information Technology (15%). LS graduates were interested in Immunology(19%), Biochemistry,

Haematology, and Virology (16%), Bacteriology and Biotechnology (9%). RT graduates were interested in Radiology and MRI (32%), Medical Physics (25%) and Anatomy (15%).

## DISCUSSION

The data revealed that 63.6% of the graduates were females and that they outnumbered the males in medical and paramedical majors. This finding confirms Weber & Miller's findings in which they claimed that the increasing number of employed female graduates makes females believe that having a job is a practical approach to success in future as well as to better occupational and educational guidance of their daughters.

There was also a remarkable relation between their majors on one hand and their interest and aptitude on the other, especially in RT graduates. The researches done by NOET

showed that the students whose major was their first, second or third choice at the university were more eager and serious to continue their education and consequently more successful, but those whose major was their thirtieth choice or more were less interested in their majors and talked about this lack of interest openly. There was also a significant relation between the students' interest and their success at the university. As Mugabushak states (2002), interest in one's major has a significant role in achieving educational goals. The data in our survey confirm Johnson & Butt's findings (1993) in which graduates' success, reasoning and talent were found to be positively related. All these findings can have a significant role in educational planning.

Boys & Kirkland (2002) found the graduates of Engineering, Science and Business to have the highest level of employment and in our survey 91% of the graduates had a job and those who were jobless tended to be self-employed.

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These findings show that lack of coordination between majors and the corresponding jobs, weak coordination between academic education and the society's occupational needs, lack of occupational skills, lack of professional academics, improper teaching methods and education as well as no observation of employment standards are the factors responsible for not having a proper job. All these problems, as Zeng et al (2009) state, can lead highly talented graduates to look for higher education or a proper job in a foreign country. We hope these findings can show the way to better educational planning and guidance of talents.

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