Evaluation of Comprehensive Medical Basic Sciences Exams and their Predictive Factors

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ABSTRACT

Comprehensive medical basic sciences exam, held every year at the end of basic sciences section, as a certification for entering the new section. The derivedoutcome's is the base of clinical decision in future. Evaluate the outcomes of eleven courses of these exams and determine its related factors are of significance importance.Descriptive analytical study was performed on 201 medical students were participated in. SPSS software, Pearson's correlation, Chi square and Regression tests were used to analyze the data. The mean score of these exams was 107.6±19.47 related to gender, Quota, being with family, diploma GPA, entrance exam scores of specific lessons (except Geology), number of probation courses, GPAand specific lessons' scores in medical basic sciences course. The highest prediction scores among the associated variables were related to GPA of medical basic sciences' course (R^2=0.529) and the mean score of medical terminology (R^2=0.309) by use of linear regression. Using stepwise regression, the highest coefficient of R^2 (Adjusted R square), 0.579 was obtained for physics, GPA of medical basic sciences courses and Immunology, nutrition and parasitological lessons scores. The score of this exam tests with highly validity is predictable. So prosperity percent for this exam can be predicted.

Key words: Exam, medical basic sciences, evaluation, prediction, medical student.

INTRODUCTION

Medical trainers always needthe best methods in order to evaluate apprentices in this fieldconstructively[1]. Quick and broad changes were done on medical evaluation's methods from the second half of the 20th century. During this time, several evaluation methods are created and applied[2].These methods were concentrated at skill assays such as clinical (getting patient history and doing physical examination), communicational, processing and professional skills[3]. Although clinical experiences have priority over theoretical trainings in medicine, fewer actions were doneto evaluate the clinicalbackground[4]. There are great differences between students in their amount and range of experiences and knowledge[5,6], even after graduation[7,8]. To eliminate the inadequacies, recognition of effective elements on these differences in spite of the same training systems, are essential. Totally different exams in different levels of medicine faculty present a weak prediction for student success in universities[9]. The educational systems of our medical faculties are assessed in two stagesin the form of training and pervasive processes with comprehensive basic sciences and pre-internship exams. Students are allowed to continue their education and enter the next level, if they are accepted in the centralized exams which ideally have adequate authority and reliance for measurements.

Although multiple choice questions have efficient lasting, this method evaluates just one dimension of student capacity that is course information[10, 11].

It is clear that each assessment regard to the reasons for prosperity or failure to achieve the expectedsuccess, needs exact scientific research. And also all effective factors related to the students, teachers and educational groups, curriculumand especially Basic Sciences Exams, should be studied.

Similar studies investigate only a part of these variables, but universality and the number of variables are unique properties of this scheme and according to most of experts, higher education has entered a new era in which "competition" and "quality" are the main elements[12].

So what if the output of Medicine Schools, physiciansengage in"practicing"or "administration" procedures they are forced to compete and to present qualities acquired during education, even though input elements are related to the students and are of great importance. In this study, the aims arechecking student status (Inputs), training process (Process) consists of master status, department and curriculum and the result of comprehensive basic sciences exam (Output).

Now, in some countries such as Iran, Comprehensive Basic Sciences exams held after passingBasic Sciences Courses and student enters physiopathology term after being accepted in this exam. These multiple-choice tests consist of 210 questions according to the volume and courses offered. Minimum passing scoreis gaining at least 70% of the mean grades achieved by nation's top 5 percent.. Until now 48 exams have been heldbutperforming a few assessments made the process of predicting the exam exact score stringent. In comparison with the whole accessible researches in this field,this study is the most comprehensive and complete study based on the number of variables and possible factors. Therefore, this study was done with the aim of determining the result of Comprehensive Basic Sciences Exams of Shahed University' students during 11 courses and defining mathematical model to predict the score test.

MATERIALS AND METHODS

This descriptive – analytical study is a documental and in other words,a cross-sectional one, which has the aim of checking Basic Sciences exam and prediction factors. The society of this study is medicine students of Shahed University during 10 years entering to the university. They were attending to the 11 courses of this exam, after passing related courses.

The main entrance criteria is being student in medicine faculty and participating in one of the courses of basic sciences exams. Students who have not participated in any of the exam, or canceled their education or expelled, have been excluded from this study. The other group of omitted students only passed their exams in this university but their courses in other universities.

Thus, 201 medicine studentsparticipated in the test in 11 consecutive courses constructed checking society during 262 alternations. Sampling method regarding to all cases study, is census.

Required variable data such as diploma GPA, different lesson grades in entrance exam (the mean percentage of correct answers in specific courses), probation history, how to pass the courses (normal semester, martyr committee, introduced to the lecturer, visiting single course, summer semester), passed courses in a semester, lecturer employment type (invited, not invited), lecturer scientific position (professor, associate professor, assistant professor, lecturer), basic sciences courses scores, rejection percentfor each course, average of basic sciences duration (the average of 68 units of specific and general lessons in medical basic sciences terms), the number of attendance in each comprehensive exam, time of participating in exam, number of participations, the raw score of basic sciences, the score of each subject in exam and other demographic data such as age, gender, type of quota (martyr families, location and oborigines), living status (in dormitories, with family and other), were collected and entered to the data forms with reference to Assessment Organization and Ministry of Health and Medical Education. In order to preserve individual status in survey, no name

were mentioned either in positive or negative state and each individual was determined with a code and a number in the forms. Data were analyzed by using SPSS version 16. In order to describe them, central and distributional indexes and tableswere utilized. According to their analysis, the statistical t-test, correlation, chi-square and linear regression were used.

RESULTS AND DISCUSSION

Totally 201 students who attended in 262 turns of exam, were studied; 58.39% of them were related to the January turns and the others were related to the September ones. 52.2% were men (105) and 47.8% were women (96). The average age in the time of entering to the university was 19.52 ± 2 (17-29 ages). 60.7% (122) were accepted in university by using martyr families quota, 71.6% (144) were living in dormitories and 78.1% of students lived alone and far from their families.

The average of diploma GPA was 14.46 ± 2.55. The mean percentage of correct answers in entrance exam's course were 52.36 ± 21.8 in Chemistry, 47.46 ± 21.8 in Biology, 45.22 ± 32.3 in English, 30.46 ± 27.1 in Physics, 26.39 ± 23.2 in Mathematics and 17.14 ± 19.5 in Geology.

Based on data, 66.7% of students finished Basic Sciences section without any probation and the others were accepted conditionally 1 to 6 times. 92.6% passed their lessons in normal term, 1.02% as introduced by professor, 4.3% as visiting single course and 3.4% as summer semester. 124 teachers(59.67% = 74) were working in the university during the test period and most of them were not fixed staffs According to the scientific positions, 4% professor, 16.1% associate professor, 50% assistant professor and 29% were lecturers.

According to the accepted and not accepted scores, the highest mean was related to

Table 1: Frequency distribution of indices based distributional scores sciences students

Row	courses	Average	Standard Deviation	Median	Mode	lowest	Highest
1	Biochemistry	12.30	2	11.94	11	3.67	18.5
2	Histology	13.90	2.51	13.5	12	0	20
3	Organ Anatomy	13.51	2.54	13.5	13	7.75	20
4	Body Anatomy	12.43	2.24	12	10	5.91	18.50
5	Head & Neck Anatomyý	13.08	2.72	12.8	10	5.23	20
6	Hygienics 1	16.01	1.85	16	17	11.5	20
7	Hygienics 2	14.45	2.45	14.5	14.5	10	19.5
8	Hygienics 3	15.97	1.81	16	16	10	20
9	Genetics	14.51	2.77	14	17	6	20
10	Medical Physics	12.77	2.00	12.8	13.5	1	19.75
11	Embryology	12.84	2.12	12.5	11	5	17.5
12	Physiology 1	12.62	1.92	12.5	12	8.75	18
13	Physiology 2	12.76	2.15	12.7	13	0	18
14	Specialized Language 1	15.12	2.67	15	17	9	20
15	Specialize Language 2	14.77	2.77	15	15	7.5	20
16	Psychology	14.30	2.30	14	13	0	20
17	Immunology	14.38	2047	14.25	14	7.5	19.75
18	Pathology	14.62	2.36	14.8	15	7.5	20
19	Microbiology	14.33	2.36	14.5	16	8.9	20
20	Parasitology	13.82	2.14	14	14	5.30	18.50
21	Nutrition	13.89	2.51	14	13	5.5	19.5

the Hygienic1, Hygienic 3 and Specialized Language 1, and the lowest was related to the Biochemistry, Body Anatomy and Physiology 1. The highest scores lower than 10 were related to the Body and Head and Neck Anatomy (6.5%) and then Biochemistry and Medical Physics (4.5%). The highest scores in level A (17-20) was related to the Hygienic1, Hygienic 3 and Specialized Language 1.

The highest mean corresponds to Hygienics1, the highest median is related to Hygienics1 andHygienics 3, the lowest average distinguished in Biochemistry and the lowest median was at Biochemistry and Body Anatomy (Table 1).

The average of GPA in Basic Sciences Section was 13.78 ± 1.37 (11.12 – 17.37). The norm of passing during studied periods was 74.18%. 77.6% (156) in the first and the others accepted in the exams in the second to fourth times.

Regarding to the exam's score in the first attending, the most abundance is related toless than 100 levels (34.8%). Only 5.5% has acquired the score higher than 140. The scores average was 107.60 ± 19.47, the median was 107 and the mode was 89. The raw and lessons' scores of Basic Sciences Exams are listed in Tables 2 and 3.

Based on the achieved results, there is not a meaningful relation between sexuality and exam's results (P=0.969), but there is a relation between entrance quota and the results, in other words, the most proportion of students with martyr families quota were rejected in the exam. Age had not any meaningful relation with the result of exam (acceptation – rejection) (P > 0.05). Chi-square

test did not show significant relationship between individual locality and the results (P + 0.61), though it seems the most proportions of dormitories residence were rejected. Chi – square test showed a meaningful relation between the outcomes and status of student life, living with or without family (P = 0.000); the most proportion of individuals that lived with their families, were accepted.

T test showed the relationbetween diploma GPA and success in exam, meaningfully(P = 0.000), in other words, prosperous individuals had a higher diploma GPA, in amount of two scores. Also there is a significant differences in diploma GPA in accepted students with martyr and free quota with T test (P= 0.000). Diploma GPA average in martyr students were 2.30 points lower than free students. This test showed significant relations between exam's result and point of English (p=0.000), Mathematics (p=0.025), Biology (p=0.000), Physics (p=0.000) and Chemistry (p=0.000), except Geology (P = 0.055).

Chi-square displayed a meaningful relationship between the number of conditional terms and the exam's result, the higher the conditional terms, the higher the rejection chance.

T test demonstrated significant relationships between the whole 21 courses in Basic Sciences section and the result of comprehensive exam (acceptation- rejection) (Table 4). Even if the scores of rejected student are omitted, the average of scores in two groups of accepted and rejected hada meaningful relationship.

T test was used to check the relation of student quota and their scores in units of Basic

**Table 2: Distribution of raw scores on the
Comprehensive Test of Basic Science Students**

Scores of comprehensive test	abundance	Percentage
Lower than 100	70	34.8
100-109	39	19.4
110-119	37	18.4
120-129	27	13.5
130-140	17	8.4
Higher than 140	11	5.5
Total	201	100

Table 3: The mean, standard deviation, median, mode, minimum and maximum scores in comprehensive basic sciences exam

Row	Courses	Number of Questions	Mean	Standard Deviation	Median	Mode	Minimum questioA Manswerd	AquestionsmaximuM answered	average in the scale of 0 - 20
1	Genetics	6	3.09	1.28	3	3	0	6	10.3
2	Embryology	6	2.69	1.34	3	2	0	6	9.96
3	Psychology	6	3.36	1.32	3	3	0	6	12.1
4	Nutrition	6	3.24	1.36	3	3	0	6	10.8
5	Medical Physics	6	2.49	1.28	3	3	0	6	8.3
6	Immunology	9	5.78	1.55	6	5	2	9	12.84
7	Islamic Education	10	4.78	1.89	5	5	1	9	9.56
8	Histology	12	7.51	1.95	8	9	1	12	12.51
9	pParasitology	12	6.15	1.94	6	7	0	11	10.25
10	Language	14	5.22	2.54	5	4	0	14	7.45
11	Microbiology	15	8.74	2.35	9	9	1	14	11.65
12	Pathology	15	8.01	2.22	8	9	2	12	10.68
13	biochemistry	18	9.83	2.84	10	9	0	16	10.92
14	Hygiene	18	11.38	2.87	11	11	4	17	12.64
15	Phisiology	27	13.04	3.53	13	12	3	23	9.65
16	Anatomy	30	14.35	4.66	14	13	4	25	9.56

Sciences that showed a meaningful differences unless Genetics, Parasitologyand Hygienics 2. Thistest approved a significant difference in scores of students living in dormitories and the others in Physiology 1, Physiology 2, Microbiology, Hygienics 2, Specialized Language 1 and 2. In all cases the mean points of students in dormitories is lower than others. There was a significant correlation (P<0.05), based on correlation test of Basic Sciences scores and diploma GPA, unless Genetics, Medical Physics, Biochemistry and Psychology.

There is a meaningful relation between Basic Sciences mean and result of exam (acceptation – rejection) with T test (P = 0.000). Individuals were accepted in the exam, hada higher average score, at least two points. Correlation factor of the average of Basic Sciences section and diploma GPA was 0.629 (P = 0.000). The higher the diploma GPA is,

the higher average of Basic Sciences sections is achieved.

ANOVA showed meaningful relation between average of Basic Sciences scores and the number of attendance in this exam (P= 0.000). Chi-square test did not show any relation between time of exam (January – September) and prosperity (P = 0.385). There is not a meaningful relation between gender and raw scores of Basic Sciences (P > 0.05).

T-test demonstratedmeaningful relation between living status of students (with or without family) (P = 0.000) and their living location (P = 0.000). Pierson test showed meaningful correlation between raw scores of exam with diploma GPA (P = 0.000 and r = 0.511) and the average of scores in Basic Sciences Sections (P = 0.000 and r = 0.729).

**Table 4: Relation between students' scores in different
courses of basic sciences with comprehensive exams result**

Courses	Scores with respect to time of rejection (mean) based on a comprehensive test			Passing grades in turn based on acomprehensive test		
	Approved	**Rejected**	**P.V**	**approved**	**Rejected**	**P.V**
Biochemistry	2.05 ± 12.66	1.33 ± 11.22	0.000	1.96 ± 12.92	1.46 ± 11.58	0.000
Histology	2.48 ± 14.41	1.89 ± 12.34	0.000	2.48 ± 14.56	1.99 ± 13.04	0.000
Organ Anatomy	2.49 ± 13.88	2.09 ± 12.97	0.000	2.43 ± 13.89	1.97 ± 12.77	0.004
Body Anatomy	2.20 ± 12.84	1.89 ± 11.19	0.000	2.13 ± 13.07	1.54 ± 11.8	0.000
Head & Neck Anatomy	2.63 ± 13.66	2.14 ± 1.30	0.000	2.50 ± 13.99	2.01 + 11.95	0.000
Hygiene 1	1.87 ± 16.28	1.54 ± 15.20	0.000	1.88 ± 16.27	1.5 ± 15.16	0.000
Hygiene 2	2.45 ± 14.74	2.26 ± 13.55	0.003	2.45 ± 14.64	2.20 ± 13.80	0.032
Hygiene 3	1.68 ± 16.26	1.91 ± 15.09	0.000	1.68 ± 16.22	1.91 ± 15.10	0.000
Genetics	2.79 ± 14.75	2.61 ± 13.78	0.033	2.68 ± 14.88	2.52 ± 13.97	0.035
Medical Physics	1.90 ± 13.13	1.92 ± 11.66	0.000	1.98 ± 13.22	1.58 ± 12.28	0.003
Embryology	1.95 ± 13.25	2.14 ± 11.60	0.000	1.88 ± 13.34	1.89 ± 12	0.000
Physiology 1	1.97 ± 12.90	1.51 ± 11.78	0.000	1.86 ± 12.97	1.57 ± 12.09	0.003
Physiology 2	2.15 ± 13.21	1.47 ± 11.40	0.000	2.15 ± 13.21	1.47 ± 11.40	0.000
English 1	2.58 ± 15.69	2.21 ± 13.40	0.000	2.59 ± 15.65	2.07 ± 13.68	0.000
English 2	2.60 ± 15.37	2.51 ± 12.96	0.000	2.52 ± 15.39	2.39 ± 13.15	0.000
Psychology	2.28 ± 14.65	2.15 ± 13.23	0.000	2.16 ± 14.79	1.83 ± 13.74	0.002
Immunology	2.39 ± 14.39	1.91 ± 12.71	0.000	2.29 ± 15.01	2.24 ± 13.16	0.000
Pathology	2.27 ± 15.08	2.06 ± 13.22	0.000	2.19 ± 15.14	2.01 ± 13.26	0.000
Microbiology	2.26 ± 14.81	2.05 ± 12.89	0.000	2.20 ± 14.64	2.01 ± 13.02	0.000
þParasitology	2.05 ± 14.26	1.8 ± 12.89	0.000	2.05 ± 14.41	1.90 ± 12.72	0.000
Nutrition	2.57 ± 14.20	2.09 ± 12.97	0.003	2.44 ± 14.41	2.18 ± 13.39	0.009

T-test illustrated strong difference between the average of raw scores in exams between attendance in January and September (P = 0.000).

Pierson test evaluated the relation between the score of each lesson in Comprehensive Exam and in Basic Sciences sections. The most correlation was at Specialized Language, Microbiology and Anatomy and the least was at psychology (P > 0.05) and Genetics.

To investigate the relationship and correlation of student scores in each topic in Comprehensive Exam with the average of their scores in Basic Sciences Section, Pierson correlation was used that the most correlation was with Islamic Education, Physiology and Anatomy. The average correlation of Basic Sciences with the scores of Pathology, Hygienics and Medical Physics demonstrated meaningless correlation.

In order to determine relation of different factors with exam scores, Regression analysis was used, in that dependent variable Y is the score of Basic Sciences exam and independent variables are Xs. Below equation shows Regression line.

Table 5: The regression line

R^2	Variable	Regression equation
$R^2 = 0/0.259$	Diploma GPA = X_1	$Y = 3.90 + 51.109 (X_1)$
$R^2 = 0.174$	English score in entrance exam = X_2	$Y = 0.254 + 96.112 (X_2)$
$R^2 = 0.219$	Physic score in entrance exam = X_3	$Y = 0.339 + 97.290 (X_3)$
$R^2 = 0.162$	Chemistry score in entrance exam = X_4	$Y = 0.364 + 88.529 (X_4)$
$R^2 = 0.082$	Mathematics score in entrance exam = X_5	$Y = 0.264 + 101.101 (X_5)$
$R^2 = 0.189$	Biology score in entrance exam = X_6	$Y = 0.395 + 88.865 (X_6)$
$2R = 0.006$	Geology score in entrance exam = X_7	$Y = 0.105 + 105.805 (X_7)$
$R^2 = 0.529$	GPA of basic sciences = X_8	$Y = 10.317 + 34.715 (X_8)$
$R^2 = 0.243$	Biochemistry score = X_9	$Y = 4.83 + 48.176 (X_9)$
$R^2 = 0.257$	Histology score = X_{10}	$Y = 103.950 + 52.701 (X)$
$R^2 = 0.139$	Organ Anatomy score = X_{12}	$Y = 2.898 + 68.430 (X_{11})$
$R^2 = 0.162$	Body Anatomy score = X_{12}	$Y = 3.537 + 63.620 (X_{12})$
$R^2 = 0.197$	Head & Neck Anatomy score = X_{13}	$Y = 3.211 + 65.609 (X_{13})$
$R^2 = 0.091$	Hygiene 1 score = X_{14}	$Y = 3.252 + 55.509 (X_{14})$
$R^2 = 0.029$	Hygiene 2 score = X_{15}	$Y = 1.467 + 86.405 (X_{15})$
$R^2 = 0.079$	Hygiene 3 score = X_{16}	$Y = 3.111 = 57.911 (X_{16})$
$R^2 = 0.022$	Genetics score = X_{17}	$Y = 1.145 + 90.992 (X_{17})$
$R^2 = 0.098$	Medical Physics score = X_{18}	$Y = 3.111 + 67.87 (X)$
$R^2 = 0.202$	Embryology Score = X_{19}	$Y = 4.166 + 54.097 (X_{19})$
$R^2 = 0.136$	Physiology 1 score = X_{20}	$Y = 3.792 + 59.71 (X_{20})$
$R^2 = 0.220$	Physiology 2 Score = X_{21}	$Y = 4.283 + 52.927 (X_{21})$
$R^2 = 0.312$	English 1 score = X_{22}	$Y = 4.084 + 45.835 (X_{22})$
$R^2 = 0.161$	English 2 score = X_{23}	$Y = 2.85 + 65.491 (X_{23})$
$R^2 = 0.071$	Psychology score = X_{24}	$Y = 2.336 + 74.183 (X_{24})$
$R^2 = 0.339$	Immunology score = X_{25}	$Y = 4.613 + 41.213 (X_{25})$
$R^2 = 0.309$	Pathology score = X_{26}	$Y = 4.607 + 40.224 (X_{26})$
$R^2 = 0.297$	Microbiology score = X_{27}	$Y = 4.518 + 42.826 (X)$
$R^2 = 0.217$	Parasitology score = X_{28}	$Y = 4.273 + 48.540 (X_{28})$
$R^2 = 0.118$	Nutrition score = X_{29}	$Y = 2.710 + 69.949 (X_{29})$
$R^2 = 0.227$	Mean of Anatomy courses = X_{30}	$Y = 5.294 + 38.839 (X_{30})$
$R^2 = 0.264$	Mean of Physiology 1 & 2 = X_{31}	$Y = 6.016 + 31.194 (X_{31})$
$R^2 = 0.309$	Mean of specialized Language 1 & 2 = X_{32}	$Y = 5.234 + 29.838 (X_{32})$
$R^2 = 0.130$	Mean of Hygiene 1 & 2 & 3 = X_{33}	$Y = 4.914 + 31.751 (X_{33})$
$R^2 = 0.134$	Number of conditional terms = X_{34}	$Y = 7.89 + 113.06 (X)$

$$Y = b + b + b\ X + ... + b\ X_n$$

By entering the variable separately, the regression line was obtained according to table 5:

In all cases P = 0.000, except X_6 with P = 0.137, X_{15} with P = 0.009 and X_{17} with P = 0.021.

It is clear that the highest coefficient R^2 obtained for the average of Basic Sciences scores, Immunology, Specialized Language 1, the average of scores for Specialized Language 1 and 2, Pathology and Bacteriology scores. Among the entrance exam lessons, the highest coefficient R^2 was related to the Physics and then Biology.

By use of step by step Regression, the highest R^2 coefficient (Adjusted R square) obtained 0.579 with Physics score in entrance exam, the average of Basic Sciences section, Immunology, Nutrition and Parasitology score. The coefficient of regression line is: = -18.24 + 0.16 (Physics score in entrance exam) + 1.32 (Immunology score) + 1.3 (Parasitology score) – 0.9 (Nutrition scores) + 7 (Average of Basic Sciences Section) Y (Basic Sciences exam's score)

If the only considered variables were the ones before entering university, the Backward regression coefficient R^2 equal to 0.315 and the variables Diploma GPA, mathematics, physics and biology scores in entrance exam, that equation of the following is:
= 60.2 + 2.68 (Diploma GPA) -0.18 (Mathematics Score) + 0.14 (Biology score) + 0.21 (Physics score) Y (Basic Sciences exam scores)

DISCUSSION

In comparison with all studied researches in this field, according to the number of variables and probable related factors, this study is the most comprehensive. The sample size of such studies like Khaksari[13], Nanbakhsh[14], Yousefi[15], Pahlavian[16] Javadi[17], Shams[18] and Saberi[19] are similar to this study, and the rests surveyed the lower samples[12, 20-27].

There is not any relation between sexuality and prosperity in comprehensive exam, similar to the study of Mohammadi[21]. In Fergusen[28], Yousefi[15], Zahediasl[29] and based on Kadkhodaei[30], educational status of females were better.

Although in this research there is not a relation between age and prosperity, in Yousefi study[15] the younger people were more successful. In ZahediAsl's survey[29], educational status had not any relation with age, but in Kadkhodaei's study[30], age had a revers relation with courses' mean.

The results of this study says students with martyr quota in comparison with regional quota students were weaker that is asserted in other studies[13, 15, 16, 24, 27, 30].

A meaningful difference in diploma GPA, between successful and unsuccessful students, is one of the results of this study, which can predict the risk of students for exam. There is a positive correlation between the exam result and diploma GPA in Khaksari[13], Mohammadi[21] and Dehbozorgi[31] studies too.

There is a meaningful relation between the number of conditional terms and prosperity in comprehensive exam. Difference scores between accepted and rejected individuals were significant in all specific courses in basic sciences sections (21 courses). In Roudbari survey[24], this relation can be seen only with Histology, Immunology, Hygiene, Microbiology, Physiology and Embryology.

Significant different in attaining scores in basic sciences courses is one of the other results for this research. In all cases students with martyr quota got lower scores like as similar studies[13, 14, 16, 19, 24, 29, 31].

In all courses, female students had a higher average in comparison with male students. In Fergusen[28], Yousefi[15], Zahediasl[29] and Kadkhodaei[30], females had a better educational status. According to the results, emphasis on living with family and in an environment except dormitory elevates the chance for getting better marks that is confirmed in other studies[13, 24, 30, 31].

Significant difference of GPA in basic sciences section, between approved and rejected

individuals in comprehensive basic science, emphasis in importance and prediction power of this GPA for success in the exam.

The average of approval percent for studied period is about 75% and resemble to the Najafi[22] in Shahrekord and Javadi[17] in Qazvin Universities.

In this study, there is a meaningful relation between the number of rejection in exams and quota that is verified with similar studies[13, 14, 16, 19, 24, 29, 31]. Also there is a significant difference between students with and without martyr quota according to acquired raw score in comprehensive exam that approved with Khaksari[13] study. These results are renewed emphasis in functional and effective planning to strengthen students with martyr quota. This subject that the number of students with martyr quota in this university is noticeable higher in comparison with other universities should be notices by related experts in Health Ministry. Unless toget the rank that is not ideal during last years, in comparisons with other universities, if they have this proportion of martyr quota students, they could not get such this rank such as Shahed University.
GPA of basic sciences and the number of conditional terms show the meaningful relation with the number of attending to the exam. So it can recognize highly risked individuals to achieving prosperity. Planning is useful for these students.

Such as Khaksari[13], in this study, there is a positive correlation between diploma GPA, scores of specific courses and English and the obtained scores of comprehensive exam. The highest correlations got with Physics, Biology, English, chemistry and mathematics in order. In Hajian's study[25], the highest correlation got with chemistry, Mathematics, Biology and English. The mainly difference in these two surveys according to the correlation coefficient is in Mathematics. Since Hajian's study[25] was on one year entering and this study was done on six years entering, it can be concluded that the result of this study is more comprehensive.

The highest correlation of comprehensive exam, similar to khaksari[13], was obtained in basic sciences courses. The highest correlation of comprehensive basic sciences exams have shown with Immunology, Pathology and Microbiology courses. An interesting point is the average of scores of triple courses in anatomy sciences has higher correlation to the single course. These subjects can be seen in Physiology and English. Also the mean of scores in special Language 1 and 2 had the highest and strongest correlation. These subjects can be used to predict and model the score of comprehensive basic sciences.

By obtained results, students attended the exams in January, got a higher scores. The reason is accepting student is in fall semester each year, so they can attend the exam in January and rejected people or lost ground ones with any reasons attend in September.

Nutrition, Parasitology, Pathology, Immunology, Psychology, Genetics and Hygines had a better status and got in average group. Biochemistry, Embryology, Microbiology was acceptable and Histology, Anatomy, Medical Physics, Physiology and Special Language were not acceptable. Regarding to these results, more attention to the weak courses, elevate the quality of teacher's quality, using of educational assistance devices, amplifying class, especially before the exam is highly recommended.

Regression test showed that with such variables like Physics score in entrance exam, GPA in basic sciences section, Immunology, Parasitology, and Nutrition Scores, the comprehensive basic sciences can be predicted about 60%, that is appropriate. Also recognition of student exposure to the risk, regarding to this criteria, and effective planning for them can be effective. If there is a tendency to predict the exam scores at the entering to the university, Regression equation can predict the conclusion only in 0.31 % in the best manner.

In Rudbary study[25], regression equation got $R^2 = 0.56$ that scores in Histology, Embryology, Physiology2, Microbiology, Psychology and quota are inserted. Since this study was done only on attendance on one course, the results of present study has a higher validity.

CONCLUSION

The result of basic sciences with gender, quota, living status, diploma GPA, the score of

specificcoursesin entrance exam (except Geology) and English, the number of conditional terms, basic sciences GPA and the scores of all specific courses in basic sciences section had a meaningful relation. According to this study, the score of this exam with the high validity is predictable with suitable variables. According to the equation to predict the basic sciences exam, it is recommended highly risked students recognized and worked for strengthen them. It is essential to elevate the scientific level of students, especially in serious courses. Also the factors related to the successfully or unsuccessfully is recognized, then the appropriate planning to get the better results is beneficial. It is recommended from authority of basic sciences using to evaluate the students in Physiopathology and Clinical stages.

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