

# Attitudes of health science students on English learning

(Actitudes de estudiantes de ciencias de la salud en el aprendizaje del inglés)

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## RESUMEN

**Introducción:** El aprendizaje del idioma inglés es una herramienta básica para la permanente actualización profesional y científica, con mayor razón, en las ciencias de la salud. **Objetivo:** Evaluar las actitudes de estudiantes de ciencias de la salud en relación al aprendizaje del idioma inglés. **Métodos:** Estudio transversal n = 400 estudiantes de carreras de salud (Medicina, Nutrición y Dietética, Gastronomía, Promoción, Cuidados para la salud, Bioquímica y Farmacia). Se recopiló sobre la comprensión del idioma, las cuatro habilidades del inglés (escuchar, leer, escribir, hablar) y el ambiente pedagógico. Se consideró como variables independientes al sexo, el nivel de estudio de los estudiantes y la última calificación obtenida, se realizó un análisis utilizando la prueba Chi2 elaborada usando Stata 14.0. **Resultados:** 57.5% de la muestra de estudio fueron mujeres, edad promedio 23.4 ± 11.5 años y el 46.75% de los sujetos fueron de la escuela de medicina. Las actitudes de los estudiantes hacia el aprendizaje del inglés fueron estadísticamente diferentes en las distintas dimensiones del aprendizaje del inglés respecto al sexo (los hombres presentan actitudes más positivas que las mujeres), el nivel de estudio (los estudiantes de niveles superiores tienen un auto concepto académico de hablar en nivel medio-alto mayor que los de niveles inferiores) y la última calificación (los estudiantes que tenían mejores calificaciones tenían mejor auto percepción de sus habilidades para entender, escribir, hablar y leer en inglés). **Conclusiones:** Las actitudes hacia el aprendizaje del inglés pueden variar dependiendo de factores como sexo, nivel de estudio y calificaciones obtenidas.

**Palabras clave:** Estudiantes de ciencias de la salud, aprendizaje de inglés, actitudes de aprendizaje

## ABSTRACT

**Introduction:** Learning the English language is a basic tool for permanent professional and scientific updating, even more so, in the health sciences. **Objective:** To evaluate the attitudes of students of health sciences in relation to learning the English language. **Methods:** Cross-sectional study n = 400 students from health careers (Medicine, Nutrition and Dietetics, Gastronomy, Promotion, Healthcare, Biochemistry and Pharmacy). It was collected on the understanding of the language, the four skills of English (listening, reading, writing, and speaking) and the pedagogical environment, it was considered as independent variables to sex, the level of study of the students and the last qualification obtained, it was carried out an analysis using the Chi2 test developed in Stata 14.0 statistical software. **Results:** 57.5% of the study sample were women, mean age 23.4 ± 11.5 years and 46.75% of the subjects were of the School of Medicine. The attitudes of students towards learning English were statistically different in the different dimensions of learning English with respect to sex (men present more positive attitudes than women), level of study (students at higher levels have a self-concept higher than those of lower levels) and the last grade (students who had better grades had better self-perception of their abilities to understand, write, speak and read in English). **Conclusions:** Attitudes towards learning English can vary depending on factors such as: gender, level of study and grades obtained.

**Key words:** Health students; learning in English, learning attitudes

## 1.INTRODUCTION

English is a worldwide language that is spoken in most countries. Being proficient in English is mandatory due to globalization. Today more people choose to learn English for various reasons including commerce, education, and communication.(1) In this regard, the importance being attached to English in health science is no exception, mainly because being proficient in English is fundamental for health professionals as they need to maintain and further their professional learning and development by following the changes in their field which requires them to reach extensive medical or health literature mostly written in English.(2) Therefore, learning English guarantees the comprehensive training of the future specialist in health sciences.

The English language not only plays an academic role in the curriculum but is an essential instrument in all health science careers for the professional work and scientific development of health professionals.(3). In Ecuador, English is taught as a foreign language to reach a level of proficiency according to the Common European Framework, which is B2 at higher education. However, medical students have different needs and interests, so the teaching of English for specific purposes has to be taken into consideration. Therefore, it is necessary to find out first what is specifically appropriate, available and applicable for the target situation and target language learners in terms of their medical language development (4).

Learning English is a determinant of professional inclusion both inside and outside the country (4). For this reason, it allows the health professional to acquire an idiomatic preparation so that they can provide medical assistance in countries where English is used as their mother tongue, the official language or lingua franca and keep themselves updated on the advances in science and technology.(3) Likewise, the academic world requires the medical professional for the scientific and critical development of their skills. So we say that English opens more job opportunities including different fields, such as teaching and research. (5)

Health professionals need to be up to date about every trend regarding their field. In Latin American countries, the percentage of command of both written and verbal English is low, as evidenced by the recent EF EPI study of English language proficiency, 2019, which considered Argentina one of the countries with the highest score, 58.38.(6) On the other hand, Ecuador has been ranked with 46.57 and in the 19/19 position in Latin America. According to Sierra-Galan, 2016 (7), health professionals have a deficiency mainly in the scope of updated information, which is very restricted to elite workgroups and the rest of the national health professionals have no possibility of access it. This situation causes those who are not fluent in English to prefer access to literature in Spanish that is not completely up-to-date and are only local contributions since they do not reach the highest level and do not include the opinion of international consensus.

In Latin America, the education system is simply not generating students with the necessary levels of English proficiency to enter universities. In addition to this, learning opportunities outside the educational system, although increasingly available, fail to compensate for the deficiencies that the learners have. Most students are not satisfied with their English skills after studying it for several years.(1) In Ecuador, although English is a compulsory subject in primary, secondary, and elementary school, there are a lot of weaknesses and barriers to overcome. Besides, poor English teaching practices are related to low levels of the language, these flaws point to outdated and monotonous practices that usually occur in the classroom, English teaching must be connected to a discipline.(8) In other words, English teachers must apply different approaches based on the student's needs, learning styles, interests, and also taste new methodologies, techniques, and strategies that help to improve learners' knowledge. In this way, teachers will be conscious about which methodology works well with each class and select it to have a meaningful result.(9)

The objective of this project was to evaluate the attitudes of health science students towards learning the English language (in its four skills: speaking, listening, reading and writing, as well as in their general understanding) considering the gender of the students, the level of studies they are currently studying and the last grade obtained in the English subject.

## 2. METHODS

### 2.1 Subjects

A cross-sectional study was carried out with 400 students of health sciences careers, specifically: Medicine, Nutrition and Dietetics, Promotion and care for health and gastronomic Management, belonging to the Faculty of Public Health and the School of Biochemistry and Pharmacy of the Faculty of Sciences of the Superior Polytechnic School of Chimborazo.

Students who were in the corridors or bars of their careers were recruited, and who wanted to answer the survey anonymously and voluntarily. The data was taken from October 2019 to February 2020. Adolescents under 18 years of age were excluded from the study because they are a vulnerable group that requires approval from their representative legal or guardian.

### 2.2 Calculation of the sample size

For the calculation of the sample size, the universe of ESPOCH health science students (see subjects) was used. Simple sampling was used. Once the amount was established, the calculation was made using the Epi Info version 7 software with a 95% confidence level, precision 0.04 (4%) and expected frequency of 0.5 (50%); being 400 individuals ( $n = 400$ ). The selection of subjects was carried out by assignment by convenience, that is, the subjects were asked to voluntarily answer the survey.

### 2.3 Preparation of the data collection instrument

To develop the data collection instrument, the 4 English language learning skills were first selected: listening, speaking, reading, writing. Based on this, the authors elaborated a series of questions, which were first tested by a pilot sample of 25 ( $n = 25$ ) students.

### 2.4 Determination of general characteristics of health science students

The first section of the data collection instrument or survey was made up of a series of general questions which included: Sex, Age, and Semester of study, Career, Faculty and last grade obtained in the English language.

### 2.5 Determination of the attitudes of health science students in the teaching of the English language.

For this study, the attitude of the students regarding the teaching of the English language was selected as a response variable. In the design of the research project, a series of variables that intervene in the attitude of health science students towards the teaching of the English language were recognized, therefore, the questions asked in the data collection instrument were divided according to the following attitudinal dimensions of the subjects:

a) Academic self-concept: Papalia 2001 (10) defines self-concept as the sense of self, that is, the descriptive and evaluative mental image of the capacities and traits of oneself. In this sense, the questions were asked: 1. Currently, what level do you consider to be fluent in English: General understanding of English, English spoken; Written English; English reading, English listening. b) Attitude towards learning English: The question was asked: 2. Do you consider that learning the English language is important in your training as a health professional? c) Attitude towards the use of different environments as a means of learning the English language: 3. Do you consider that the best environment for learning the English language is based on the classroom with its set of audio-visual or other didactic techniques? All the answers were indicated based on the Likert scale (see statistical analysis).

### 2.6 Statistical analysis

The statistical analysis was performed in the STATA statistical package in its version 14.0.(11) Statistical data were presented in numbers and percentages for qualitative variables and in mean and standard deviation for quantitative variables. Statistical significance for all tests was assumed when the  $p$  value was  $< 0.05$ . Two

Variables		Minimum	Maximum	Media	Standard deviation
	Age (years)*	18	34	23.4	11.5
		<b>N</b>			<b>%</b>
Sex	Woman	230			57.5
	Man	170			42.5
Career	Medicine	187			46.75
	Nutrition and Dietetics	64			16.00
	Promotion and health care	35			8.75
	Gastronomy	58			14.50
	Biochemistry and pharmacy	56			14.00
	Biochemistry and pharmacy	56			14.00
	Level of study	First to Third Semester	226		
	Fourth to Sixth Semester	174			43.50
Last qualification obtained in the professional training of the English language	Score from 0 to 15 points / 20	188			47.00
	Score of 16 to 20 points / 20	122			53.00

**Table 1. General characteristics of the study population.**

techniques were used to perform the normality analysis of the variables: a) graphical technique using histograms on the quantitative variables and b) using normality tests: Kolmogorov-Smirnov, assuming normality when the value was  $p > 0.05$ .

The instrument used in this research was a Likert Scale (11), in which a set of items presented in the form of judgments or statements was developed, and based on them, the reaction of the participants was requested, who chose one of the five points of the scale, with a pre-established value in the following sense: for question 1 a different scale was used depending on the English language skills including general comprehension, English speaking skill, writing skill and reading English, for the general comprehension skill : (Very low-low, half, high-very high), while for the spoken English

skill, written, listened to and read English, the scale was: Very bad-bad, half, high-very high (For questions 2 and 3: Strongly agree-agree, neutral, in disagree).

The variables study level and last grade obtained were dichotomized, thus, together with the sex variable, they were used to make comparisons with the students' attitudes towards teaching and learning the English language. A Chi2 test was used to establish differences between the groups.

### 3. RESULTS

#### 3.1 General characteristics of the study sample

The general characteristics of the group are presented in Table 1, where a minimum age value was also found in the population of 18 years and

DIMENSION AND QUESTION	DETAIL	Female (n = 230)		Male (n = 170)		p
		n	%	n	%	
Academic Self-Concept: Understanding the English Language	Very low -low	186	80.87	98	57.65	0.025
	Half	24	10.43	52	30.58	
	High-very high	20	8.70	10	11.76	
Academic self-concept: English speaking skill	Very bad -bad	150	65.22	10	5.88	0.056
	Half	45	19.56	55	32.35	
	High-very high	35	15.22	20	11.76	
Academic Self-Concept: English writing skill	Very bad	179	77.83	55	32.35	0.012
	Half	32	13.91	80	47.05	
	High-very high	19	8.26	35	20.58	
Academic self-concept: English Reading skill	Very bad-bad	125	54.35	17	10.00	0.016
	Half	100	43.47	69	40.58	
	High-very high	5	2.17	64	37.65	
Academic self-concept: English listening skill	Very bad-bad	10	4.34	25	14.70	0.453
	Half	99	43.04	65	38.23	
	High-very high	11	4.78	15	8.82	
Attitude towards learning English: Do you consider that learning the English language is important in your training as a health professional?	Strongly agree-agree	159	69.13	0	0	<0.001
	Neutral	51	22.17	0	0	
	In disagreement	20	8.69	170	100	
Attitude: use of different environments for learning the English language: 1. Do you consider that the best environment for learning the English language is based on the classroom with its set of audio-visual or other didactic techniques?	Strongly agree-agree	99	62.61	127	74.71	<0.001
	Neutral	36	15.65	33	19.41	
	In disagreement	50	21.74	10	5.88	

Table 2. Attitude analysis of health science students according to sex.

DIMENSION AND QUESTION		Group 1: First to Third semester (n=226)		Group 2: Fourth to Sixth semester (n=174)		<i>p</i>
Academic Self-Concept: Understanding the English Language	Very low-low	60	26.54	40	22.98	0.345
	Half	54	23.89	40	22.98	
	High-very high	112	49.58	94	54.02	
Academic self-concept: English speaking skill	Very low-low	158	69.91	32	18.39	0.031
	Half	34	15.04	50	28.73	
	High very high	34	15.04	92	52.87	
Academic self-concept: English writing skill	Very low-low	137	60.62	20	11.49	0.016
	Half	57	25.22	30	17.24	
	High very high	32	14.16	124	71.2	
Academic self-concept: English reading skill	Very low-low	160	70.79	19	10.91	0.017
	Half	27	11.94	41	23.56	
	High-very high	40	17.69	114	65.51	
Academic self-concept: English listening skills	Very low-low	70	30.97	54	31.03	0.364
	Half	90	39.82	54	31.03	
	High-very high	66	29.20	66	37.93	
Attitude towards learning English: Do you consider that learning the English language is important in your training as a health professional?	Strongly agree	106	46.90	102	58.62	0.165
	Agree	85	37.61	45	25.86	
	Neutral	35	15.48	27	15.52	
Attitude: use of different environments for learning the English language: 1. Do you consider that the best environment for learning the English language is based on the classroom with its set of audio-visual or other didactic techniques?	Strongly agree-agree	193	85.39	100	57.47	0.278
	Neutral	33	13.27	10	5.74	
	In disagreement	0	0	64	36.78	

Table 3. Attitude analysis of health science students according to level of study.



DIMENSION AND QUESTION	Level	Group 1: Score less than 15/20 points (n = 188)		Group 2: Score equal to or greater than 16/20 points (n = 212)		p
		n	%	n	%	
Academic Self-Concept: Understanding the English Language	Very low-low	158	84.04	121	57.07	0.035
	Half	10	5.31	12	5.66	
	High-very high	20	10.64	79	37.26	
Academic self-concept: English speaking skill	Very low-low	90	47.87	55	25.94	0.023
	Half	42	22.34	109	51.42	
	High-very high	56	29.78	48	22.64	
Academic self-concept: English writing skill	Very low-low	119	63.29	54	25.47	<0.001
	Half	17	9.04	110	51.89	
	High-very high	52	27.65	48	22.64	
Academic self-concept: English reading skill	Very low-low	113	60.10	133	62.73	0.032
	Half	37	19.68	34	16.04	
	High-very high	40	21.27	45	21.22	
Academic self-concept: English listening skills	Very low-low	60	31.91	50	22.58	0.321
	Half	80	42.55	120	56.6	
	High-very high	48	25.53	42	19.81	
Attitude towards learning English: Do you consider that learning the English language is important in your training as a health professional?	Strongly agree-Agree	68	36.17	98	46.22	0.031
	Neutral	0	0	0	0	
	In disagreement	120	63.82	114	53.77	
Attitude: use of different environments for learning the English language: 1. Do you consider that the best environment for learning the English language is based on the classroom with its set of audio-visual or other didactic techniques?	Strongly agree-Agree	102	54.25	112	52.83	0.367
	Neutral	0	0	0	0	
	In disagreement	86	45.74	100	47.17	

**Table 4. Attitude analysis of health science students according to the last grade obtained.**

a maximum of 34 years. The distribution by sex was 57.5% for women and 42.5% for men. The career with the highest student participation was the medical career with 46.75%, followed by the Nutrition and Dietetics career with 16%, the gastronomy career with 14.5%, the Biochemistry and Pharmacy career with 14.00% and finally the Promotion and health care career with 8.75%.

### *3.2 Analysis of the attitude of health science students to learning and academic self-concept of English and sex*

Once the data was collected, the analysis of the students' responses according to sex was performed (Table 2), finding statistically significant differences with the academic self-concept: understanding of the English language between men and women: women consider that they present an understanding very low-low, at 80.87% while men present an academic self-concept of understanding English very low-low at 57.65% ( $p = 0.025$ ). Subsequently, the dimension of academic self-concept was analyzed depending on the 4 skills of the English language, finding statistically significant differences according to sex in English writing skill ( $p = 0.012$ ) with a higher percentage of average self-concept (19.56%) in women compared to 32.35 % in men; in the case of English writing skill: it was found that men considered having an average academic self-concept in 47.02% while women presented a self-concept of 13.91% ( $p = 0.012$ ); in the case of English reading skill: it was found that men considered having an average academic self-concept in 38.23% while women presented a self-concept of 43.04% ( $p = 0.016$ ). Speaking and listening English skills did not show statistically significant differences between men and women. On the other hand, differences were found between the attitude towards the importance of the English language within the training as health professionals between men and women, thus, women disagreed with this statement in 21.74%, while self-reported men strongly agreed 74.71% ( $p < 0.001$ ). Post-hoc analysis can be observed in Annex 1.

### *3.3 Analysis of the attitude of students of health sciences to learning and academic self-concept of English and level of study.*

Within this scientific article, it was considered important to know the differences in the attitudes of the health science students with respect to the semester they were studying, for which a dichotomization was carried out: group 1: first to third semester; group 2: fourth to sixth semester (Table 3) No statistically significant differences were found between the attitude towards understanding English between the groups ( $p = 0.345$ ), nor with the attitude of the academic self-concept of the English heard ( $p = 0.364$ ). Statistically significant differences were found between English speaking skill ( $p = 0.031$ ), English writing skill ( $p = 0.016$ ) and English reading skill ( $p = 0.017$ ), where students of group 2 presented a higher percentage in the language self-concept English between high and very high (52.87% English speaking skill; 71.2%, English writing skill; 65.51% English reading skill) with respect to the Group 1 students (15.04% English speaking skill; 14.16% English writing skill; 17.69%, English reading skill) (Table 3). On the other hand, no differences were found between the attitude towards the importance of learning English in the training of health professionals ( $p = 0.165$ ), nor were there differences with the learning environment and the level of study ( $p = 0.278$ ). Post-hoc analysis can be observed in Annex 1.

### *3.4 Analysis of the attitude of health science students towards learning the English language according to the last grade obtained.*

In this scientific article, the differences between the attitude of health science students according to the last grade they obtained in the English subject were analyzed, grouped into: group 1: grade between 15 and 20 points; group 2: score between 16 and 20 points (Table 4). Differences were found between the academic self-concept and the level of English comprehension in students with scores greater than 15 points, very high 37.26% compared to students with scores less than 15 (10.64%) ( $p = 0.035$ ). Within English language skills, it was found that 51.42% of students self-refer to an average English speaking skill of 51.42% in group 2, while only 22.34% of students report having this same level in group 1 ( $p = 0.023$ ). Regarding English writing skill, 51.89% of students in group 2 self-report a medium level while only 9.04% of students in group 1 report having this same level ( $p < 0.001$ ).



In English reading skill, 19.68% of students in group 1 self-report having a half level of the language, while only 16.04% of students in group 2 self-report having this same level ( $p = 0.032$ ). In the case of the English listening skill, no statistically significant differences were found. Finally, differences were found regarding group 1 and 2 regarding the importance of the English language in the training of the health professional, where clearly group 2 (46.22%) reported agreeing, while group 1 agreed. by 36.17% ( $p = 0.031$ ). The differences between attitude in the learning environment by study level were not significant. Post-hoc analysis can be observed in Annex 1.

#### 4. Discussion

A study was carried out in which the knowledge that students possess in the English language of the ESPOCH public health faculty was evaluated, in which 4 very important skills were evaluated; listening, speaking, reading and writing, through a cross-sectional study with 400 students of careers in Medicine, Nutrition and Dietetics, Health promotion and care, and Gastronomic management. The survey was carried out on students who were in different places of their faculty. The first section of the data or survey was made up of a series of general questions which included: Sex, Age, Semester of the course, Career, Faculty and last qualification obtained in the English language. This came to identify that students who crossed higher levels had a greater knowledge of the language, while lower level students had greater complications in responding to the survey.

Few studies in Ecuador have evaluated the attitudes that health science students have towards learning the English language. This study aims to contribute to a more detailed understanding of this topic in order to analyze the main attitudes and their relationship with characteristics such as the sex of the students, the level of study and the grade obtained.

First, an analysis of general characteristics was carried out, finding a somewhat higher percentage of women compared to men (57.5% and 42.5% respectively) while almost half of the students corresponded to a medical degree, as they

were also one of the races with the greatest acceptance and attendance of students at the Escuela Superior Politécnica de Chimborazo.

The attitudes of health science students regarding the academic self-concept dimension were also analyzed, Papalia (10) mentions that it is a dimension that is formed from the experiences and comments and support that it receives from people from their environment, therefore, the attitude towards learning the English language is strongly conditioned both by teachers (13), through the motivation they exercise in students and by members of society: friends and family. (14) Additionally, the data was analyzed depending on 3 factors that are detailed below.

##### *4.1 Differences between sex or men and women and the attitude towards learning the English language*

The analysis of the responses of the students according to sex was carried out, finding statistically significant differences with the academic self-concept: of understanding the English language between men and women, where women consider that they present a very low comprehension in 47.82% while men present an academic self-concept of comprehension of English that is low in 40.58% ( $p = 0.025$ ), which agrees with the study by Pastor et 2006 (14) who carry out an extensive study of the social and cultural aspects of women in learning English compared to men, since the female group may present greater shyness or fear when learning a new language, however, it should be noted that in this study statistically significant differences were found according to sex also in English writing skill ( $p = 0.012$ ) with a higher percentage of mean self-concept (47.05%) in women compared to 13.91% in men, which could lead to the hypothesis that women present a more positive attitude towards the academic self-concept of the English language than men, but in the university context. This situation was similar in the English reading skill, where it was found that men considered having an average academic self-concept in 40.58% while women presented a self-concept of 43.47% ( $p = 0.016$ ). Finally, it was identified that: it is men who consider a higher percentage of English to be an important branch of training as health professionals than

women, for which the authors of this study recommend conducting an analysis of objective academic performance. between both sexes in subsequent studies in order to better clarify this issue.

#### *4.2 Differences between the level students are studying and the attitude towards learning the English language*

Statistically significant differences were found between English speaking skill ( $p = 0.031$ ), English writing skill ( $p = 0.016$ ) and English reading skill ( $p = 0.017$ ), where students from those more advanced semesters (fourth to sixth semester) presented a higher percentage in the self-concept of the English language between high and very high of the three language skills described above, compared to the students of the lower semesters (first to third), which, for the authors of this study, represents a fairly logical datum, because as English language learning progresses, people observe progress in their language skills, feel better about themselves and a positive attitude can be increased. In this regard, Blázquez (2010) (15) mentions that teachers who receive university students in their classrooms seem to have beliefs about the process of teaching English, basically framed in a traditionalist and structural vision of language, which can make learning difficult of the English language.

Additionally, Ruíz 2009 (16) mentions that the integrated learning of content and foreign language refers to any educational context in which a foreign language is used. This process involves using the foreign language as a vehicle for teaching curricular content and, at the same time, developing the necessary competence of the language in question, that is, the importance of handling English in professional training is comprehensive, and with greater reason. even in health science careers, where professionals must be constantly updated.

#### *4.3 Differences between students' academic performance and attitude towards learning the English language: it is constantly updated*

According to López 2010 (17) Most of the information that teachers have on the learning process of students and therefore the teaching

process, comes from the evaluations that are done in the classroom, therefore the objective evaluation or through a student's grades, they respond to a valuable tool to assess student progress or difficulties. Thus, in this scientific article, an analysis was carried out on the attitude of learning the English language of the students with the last grade obtained.

Differences were found between the academic self-concept or the level of English comprehension in students with scores greater than 15 points, very high 26.89% compared to students with scores less than 15 (5.31%) ( $p = 0.035$ ). Which agrees with a common sense analysis, in which the students with better academic performance also present a female attitude regarding their academic self-concept.

#### *4.4 Learning environments in: English language learning*

In this study, no statistically significant relationships were found between the use of learning environments and the independent variables: sex, level of study and last grade obtained. In this regard, Hernández 2011 (18) mentions that the inadequate didactics used in the classroom can discourage students and lead them away from scientific work. It is important to consider that students should identify the natural environment as a didactic element, in such a way that it generates a more positive attitude towards learning the English language.(19,20)

Within this scientific article, differences in academic performance or student grades were not analyzed, therefore, the main objective was to identify the attitudes of students of health sciences careers with regard to teaching the English language.

### **Conclusions**

Positive attitudes towards learning the English language are determining factors in achieving success or failure in English language proficiency. In this study it was found that attitudes towards learning English can be determined by the sex of the person, gender (men present more positive attitudes than women), level of study (students of higher levels have an academic self-concept of speaking at a medium-

high level greater than those of lower levels) and the last grade (students who had better grades had better self-perception of their abilities to understand, write, speak and read in English).

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#### Liability limitations

The information, data and points of view of this article are the sole responsibility of the authors of this scientific article and not of the Language Center of the Escuela Superior Politécnica de Chimborazo.

#### Conflict of interest

The authors declare that they have no conflict of interest in carrying out this work.

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**Anexo 1. Pos hoc analysis for Table 2**

Understanding the English Language in relation to sex

Chi2  
Df = 2, p = 0.025  
Posthoc (Holm)  
1-2 p <0.001  
1-3 p= 0. 013  
2-3 p= 0.029

Academic self-concept: English speaking skill

Chi2  
Df = 2, p = 0.056

Academic Self-Concept: English writing skill

Chi2  
Df = 2, p = 0.012  
Posthoc (Holm)  
1-2 p <0.001  
1-3 p= 0. 013  
2-3 p= 0.029

Academic self-concept: English Reading skill

Chi2  
Df = 2, p = 0.016  
Posthoc (Holm)  
1-2 p =0.012  
1-3 p <0.001  
2-3 p= 0.032

Academic self-concept: English listening skill

Chi2  
Df = 2, p = 0.453

Attitude towards learning English: Do you consider that learning the English language is important in your training as a health professional?

Df = 2, p <0.001  
Posthoc (Holm)  
1-2 p < 0.001  
1-3 p <0.001  
2-3 p= 0.014

Attitude: use of different environments for learning the English language: 1. Do you consider that the best environment for learning the English language is based on the classroom with its set of audio-visual or other didactic techniques?

Df = 2, p <0.001  
Posthoc (Holm)  
1-2 p = 0.014  
1-3 p = 0.024  
2-3 p= 0.001

**Anexo 1. Pos hoc analysis for Table 3**

Academic Self-Concept: Understanding the English Language

Chi2  
Df = 2, p = 0.345

Academic self-concept: English speaking skill

Df = 2, p = 0.031  
Posthoc (Holm)  
1-2 p = 0.045  
1-3 p = 0.021  
2-3 p = 0.036

Academic self-concept: English writing skill

Df = 2, p = 0.016  
Posthoc (Holm)  
1-2 p = 0.019  
1-3 p < 0.001  
2-3 p < 0.011

Academic self-concept: English reading skill

Df = 2, p = 0.017  
Posthoc (Holm)  
1-2 p < 0.001  
1-3 p = 0.016  
2-3 p = 0.017

Academic self-concept: English listening skills

Chi2  
Df = 2, p = 0.365

Attitude towards learning English: Do you consider that learning the English language is important in your training as a health professional?

Chi2  
Df = 2, p = 0.165

Attitude: use of different environments for learning the English language: 1. Do you consider that the best environment for learning the English language is based on the classroom with its set of audio-visual or other didactic techniques?

Chi2  
Df = 2, p = 0.278



**Anexo 1. Pos hoc analysis for Table 4**

Academic Self-Concept: Understanding the English Language

Df = 2, p = 0.035

Posthoc (Holm)

1-2 p < 0.001

1-3 p < 0.001

2-3 p = 0.027

Academic self-concept: English speaking skill

Df = 2, p = 0.023

Posthoc (Holm)

1-2 p = 0.046

1-3 p = 0.035

2-3 p = 0.001

Academic self-concept: English writing skill

Df = 2, p < 0.001

Posthoc (Holm)

1-2 p < 0.001

1-3 p = 0.047

2-3 p = 0.039

Academic self-concept: English reading skill

Df = 2, p = 0.032

Posthoc (Holm)

1-2 p = 0.001

1-3 p = 0.021

2-3 p = 0.367

Academic self-concept: English listening skills

Chi2

Df = 2, p = 0.321

Attitude towards learning English: Do you consider that learning the English language is important in your training as a health professional?

Df = 2, p = 0.031

Posthoc (Holm)

1-2 p < 0.001

1-3 p = 0.456

2-3 p < 0.001

Attitude: use of different environments for learning the English language: 1. Do you consider that the best environment for learning the English language is based on the classroom with its set of audio-visual or other didactic techniques?

Chi2

Df = 2, p = 0.367