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ENTREPRENEURIAL EDUCATION INFLUENCE ON THE DEVELOPMENT OF SELF-EFFICACY AND ENTREPRENEURIAL COMPETENCES

Influência da educação empreendedora no desenvolvimento da autoeficácia e das competências empreendedoras

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ABSTRACT

Purpose: This study aimed to evaluate entrepreneurship classes' influence on entrepreneurial self-efficacy and entrepreneurial competences in health academics.
Design/methodology/approach: The model by De Noble, Jung, and Ehrlich (1999) was used to measure entrepreneurial self-efficacy and the model by Cooley (1990, 1991) to measure entrepreneurial competences. It is a quantitative, descriptive, and survey research. Two hundred sixty-seven undergraduate health students participated in the study. Statistical analysis used descriptive and correlational statistics with comparison tests.
Findings: The results showed that the students who studied entrepreneurship presented higher self-efficacy and entrepreneurial competences, but there were no significant differences between those who studied and those who did not.
Originality/value: This study presents the potential for promoting entrepreneurship in HEI for courses that are not directly associated with business management, especially health science courses. When analyzing the participants' behavioral characteristics, we seek to deepen the discussion on the central themes of the study and promote reflections on the importance of entrepreneurial education for the development of future health professionals.

Keywords: Entrepreneurial Education. Entrepreneurial Self-efficacy. Entrepreneurial Competences.

RESUMO

Objetivo: Este estudo teve como objetivo avaliar a influência das aulas de empreendedorismo na autoeficácia empreendedora e nas competências empreendedoras em acadêmicos da saúde.
Procedimentos metodológicos: O modelo de De Noble, Jung e Ehrlich (1999) foi usado para medir a autoeficácia empresarial e o modelo de Cooley (1990, 1991) para medir as competências empreendedoras. É uma pesquisa quantitativa, descritiva e de levantamento. Duzentos e sessenta e sete estudantes de graduação em saúde participaram do estudo. A análise estatística utilizou estatística descritiva e correlacional com testes de comparação.
Principais Resultados: Os resultados mostraram que os alunos que estudaram empreendedorismo apresentaram maior autoeficácia e competências empreendedoras, mas não houve diferenças significativas entre os que estudaram e os que não estudaram.
Originalidade/valor: Este estudo apresenta o potencial de promoção do empreendedorismo nas IES para cursos que não estejam diretamente associados à gestão empresarial, em especial os cursos de ciências da saúde. Ao analisar as características comportamentais dos participantes, buscamos aprofundar a discussão sobre os temas centrais do estudo e promover reflexões sobre a importância da educação empreendedora para o desenvolvimento dos futuros profissionais da saúde.

Palavras-chave: Educação Empreendedora. Autoeficácia empreendedora. Competências empreendedoras.

1 INTRODUCTION

The recurring multidisciplinarity in the most diverse branches of activity brings challenges for professionals due to the need to move through new topics and remain in the market. Professionals must have the ability to innovate, proposing suggestions that revolutionize the way decisions are managed, thus contributing to the organization's competitiveness (Cualheta, Abad, Faiad, & Borges Jr. 2020; Nabi, Linan, Fayolle, Krueger, & Wamsley, 2017; Neck & Greene, 2011; Schumpeter, 1928, 1934; Shane & Venkataraman, 2000).

Higher Education Institutions (HEI) have the function of producing and socializing knowledge. They must be instruments of renewal and change that contribute to the culture, science, technology, and technical and social innovation. By observing the needs of professionals in the health sciences area, teaching on entrepreneurship was consolidated, becoming a discipline in several undergraduate courses (Bach, Ceretta, & Rocha, 2018).

Rocha and Freitas (2014) identified that teaching entrepreneurship should lead students to understand what entrepreneurship is and develop their creativity and innovation ability. In addition to discovering opportunities, planning new businesses, taking risks, making decisions, working as a team, managing the company, and learning from mistakes (Rocha & Freitas, 2014). A particular theme in economics and management is also essential in other sectors, such as health.

The growing study on entrepreneurship awakens in the researchers a greater diversification on the sub-areas it covers. In the behavioral scope, studies on entrepreneurship gain strength as research advances with looks focused on aspects inherent to human beings, such as self-efficacy. This term, initiated by Bandura in the 1970s, is based on social cognitive theory. Authors such as Chen, Greene, and Crick (1998) have associated it with entrepreneurship studies to show that entrepreneurs must improve their self-efficacy to be more adapted to environments turbulent.

For Miao, Qian, and Ma (2017), entrepreneurial self-efficacy emerged as a key psychological construct in entrepreneurship research, discovering its influence on the motivation, intention, behavior, and performance of entrepreneurship. Teaching-learning can develop entrepreneurial competences (Ferreras, Hernández-Lara, & Serradell-López, 2017).

Collins (2017) states that the development of individual competences, acquired through

learning or experience, represents an essential element for improving companies' performance. Cualheta et al. (2020) emphasize that measuring competences is even more critical in disciplines that adopt entrepreneurship teaching as a method and proposes using a series of strategies with active methodologies capable of stimulating action and creation.

It is rare to find studies that focus on entrepreneurial education for courses that are not in management. On the other hand, health professionals, due to adaptability to the economic scenario and opportunities, have been inserted as entrepreneurs. Therefore, there is a gap in studying the behavioral profile of these future professionals. It was defined as a general objective to evaluate entrepreneurship classes' influence on the relationship between entrepreneurial self-efficacy and entrepreneurial competences in health academics.

This study has mainly empirical contributions. It aims to contribute to the promotion of entrepreneurship in health science courses. Theoretically, when analyzing the behavioral characteristics inherent to future professionals, we seek to deepen the discussion on these topics and present how entrepreneurship can help develop health professionals. Studies of this nature can contribute significantly to pedagogical practices that seek direct actions that encourage the entrepreneurial teacher's presence as an agent of innovation.

2 LITERATURE REVISION

The section begins with an approximation of entrepreneurial education discussions and, subsequently, self-efficacy and entrepreneurial competences.

2.1 Entrepreneurial education

Since its origins in the Medieval Ages, according to Guarany (2010), universities' primary objective was to transfer knowledge from teachers to students to prepare new professionals to meet the market's needs. Etzkowitz (2003) pointed out that universities had undergone two revolutions since their creation in Europe in the 11th century. At the end of the 19th century, the first occurs, prioritizing research as the university's mission. The second began in the middle of the 20th century, adding a new mission focused on economic and social development.

Modern economics defies the 21st-century university, which places it as an engine for the development of innovation. Guerrero, Cunningham, and Urbano (2015) point out that resizing higher education implies rethinking the university as an organization committed to social transformation and revealing its interface with society, seeking to adapt to new realities.

In the World Conference on College Education, promoted by the United Nations Educational, Scientific, and Cultural Organization (Unesco) in 1998, Article 7 refers to strengthening cooperation with the working world and analyzing and forecasting society's needs. Still, in this article, paragraph d highlights the concern with HEI in offering students the spirit of initiative and learning how to undertake to facilitate graduates' employability (UNESCO, 1998, art. 7).

The United Nations Educational, Scientific, and Cultural Organization (Unesco, 2009) promoted a discussion on New Dynamics of Higher Education and Research at the second World Conference on Higher Education. Article 18 states that training offered by HEI must, in addition to addressing social needs, anticipate them (Unesco, 2009). One way highlighted for this to happen is entrepreneurial education (Unesco, 2009, art. 18).

Machado, Lenzi, and Manthey (2017) emphasize that it is not only people who wish to have their own business that demands entrepreneurial education, as other areas also compete for this type of training. Thus, there is a need for universities to become increasingly entrepreneurial

towards students. In this line of thought, Etzkowitz (2013), Audretsch (2014) explains that an entrepreneurial university can carry out entrepreneurial activities to improve economic development and contribute to the commercialization and generation of revenues from technological innovations produced by academic research. Doin and Rosa (2019), in turn, describe the importance of provoking students and providing them with life experience, in which they are encouraged to act and reflect on their actions through entrepreneurial experience.

HEI must transform the knowledge generated into social and economic value. After all, the university is an environment conducive to innovation, and students are a potential source of entrepreneurs. Lima, Hashimoto, Melhado, and Rocha (2014) describe that entrepreneurial education generates positive effects on students' self-efficacy, stimulates entrepreneurial behavior, and different useful competences for entrepreneurship. In this way, the entrepreneurial university can be considered an instrument that not only provides workforce and added value with the creation or transformation of knowledge but also enables the improvement of the individual concerning values and attitudes towards these issues, stimulating their entrepreneurial capacity (Cualheta et al. 2020).

The experience in entrepreneurial education refers to business planning, participation in business games and simulators, experiencing negotiation, developing products, and creating business opportunities (Hashimoto, Krakauer & Cardoso, 2018).

In the sense of Wong, Ho, and Singh (2007), Mok (2015), to be an entrepreneur, a university needs its members' motivation and commitment to reinforce the institutional entrepreneurial culture and develop the ideal that characterizes the institutional identity. Thus, Siegel and Wright (2015) highlight some actions: to elaborate multidisciplinary projects with educational, technological, and financial results; promoting programs aimed at entrepreneurship; providing assistance to new entrepreneurs through business incubators. And, to include, in the curricula of some courses offered, disciplines that aim to disseminate the entrepreneurial culture.

In short, according to studies by Ghobril, Baker, Rokop, and Carlson (2020), entrepreneurial education is much more than the offer of entrepreneurship courses. It requires a strategy and a set of integrated resources that leverage students' involvement in real projects where they can perceive value, moving step by step to create an entrepreneurial mindset and behavior (Ghobril et al., 2020).

2.2 Entrepreneurial self-efficacy

Based on the perspective of self-efficacy from Bandura (1977), Chen, Greene, and Crick (1998) consider self-efficacy to be highly appropriate for the entrepreneur's study. Business self-efficacy must be stable, but not immutable, allowing entrepreneurs to modify and improve their self-efficacy in continuous interaction with the environment.

As highlighted by Bandura (1977) and Schaegel and Koenig (2014), entrepreneurial self-efficacy is one of the aspects of self-knowledge that may have a more considerable influence on people's daily lives, as it expresses the conceptions about our effectiveness. It is by the degree of people's belief in their ability to perform a behavior and that it is possible to do it with their competences.

Entrepreneurial action is often intentional because, according to entrepreneurial behavior characteristics, they aim to enter new markets, take risks, pursue new opportunities, and this process is rarely unintentional (Chell, 2008, Hisrich, Peters, & Shepherd, 2017). McGee, Peterson, Mueller, and Siqueira (2009) relate entrepreneurial self-efficacy to entrepreneurial intentions, which were previously defined by Boyd and Vozikis (1994) as a mental situation that guides the entrepreneur's behavior to develop actions associated with entrepreneurship.

Nascimento (2015) points out that there is a rise in the literature on entrepreneurial self-efficacy. In general, the articles address themes that study the belief in the individual's ability to take

entrepreneurial actions based on management assessment (Nascimento, 2015). That also covers technical and functional competences that the subjects must-have.

Bandura (1977) argues that it is possible to verify the propositions about the origins of self-efficacy with precision. Based on this assumption, Chen, Greene, and Crick (1998) innovated in their study with university students and entrepreneurs from small organizations when elaborating on a scale of business self-efficacy that brought together marketing and innovation management dimensions, risk-taking, and financial control.

De Noble, Jung, and Ehrlich (1999) elaborated their work on Chen, Greene, and Crick (1998) perspective. However, the intention was to create a business context scale. They built a more refined scale in building entrepreneurial self-efficacy, who also complement that this refinement must include entrepreneurial competencies that are, in turn, different from managerial competences, as mentioned more frequently in the literature.

In the study by De Noble, Jung, and Ehrlich (1999), researchers developed a scale based on psychometric properties, whose main objective was to create a reliable and valid measure of business self-efficacy. This scale used in national and international empirical studies: Basol and Karatuna (2017); Lizote, Verdinelli, and Silveira (2013); Moriano, Palací, and Morales (2006); Welsh, Tullar, and Nemati (2016). It consists of 23 items grouped into six dimensions:

1) Development of new products or market opportunities. It relates to a set of competences associated with opportunity recognition, which becomes essential to start an enterprise. They must faithfully believe in the product or market opportunity that has identified it to serve as a solid base for other stakeholders who want to launch an enterprise.

2) Building an innovative environment. It is associated with the subject's ability to experiment with new ideas, have initiative, and take responsibility for the results generated. It refers to the ability to promote innovative activities.

3) Start investor relations. Entrepreneurs sometimes underestimate the demands to maintain this relationship network at the beginning. However, after the venture starts, it can be more time consuming and demanding significant competences and being part of what the entrepreneur needs to sustain the business vision.

4) The central purpose definition. This dimension makes the entrepreneur's vision of his business clearer and more objective to attract investors and key employees, thus becoming essential.

5) Dealing with unexpected challenges. At the beginning of the project, the subjects have to deal with the ambiguity and uncertainty surrounding the environment and tolerate a lack of information, suspicious messages, and rejections that they may face. The authors also point out that these possible challenges may happen with investors' feedback, fluctuations in market conditions, and even in the requirements for cash infusions.

6) Developing human resources. The entrepreneur can attract and retain key individuals for the company. This activity is of great importance for the initial activities of the enterprise.

2.3 Entrepreneurial competences

In a systematic review of the literature on incorporating entrepreneurial competences in higher education by Ferreras, Hernández-Lara, and Serradell-López (2017), the authors found that in the last decade, studies related to entrepreneurial competences and their relationship with the process teaching-learning has shown a considerable increase.

Lenzi, Santos, Casado, and Kuniyoshi (2015), Behling and Lenzi (2019) argue that studies in the management area have sought to incorporate knowledge about the entrepreneurial profile

combined with the context of competencies. The authors state that an entrepreneur can build and adapt his individualities to create an entrepreneurial competence, just as an individual can polish his capabilities. Concomitant, Zarifian (2001) already stated that no one is obliged to be an entrepreneur. Each person can improve their competences, and an entrepreneur can improve and create his entrepreneurial competences.

Snell and Lau (1994) define entrepreneurial competencies as the combination of entrepreneurial competences and actions, which consist on a body of knowledge, area of expertise, motivations or directions, attitudes or visions, personal qualities or characteristics, which can contribute in different ways for practical business thinking or action. For these authors, creating and managing a business is related to the entrepreneur's life plan, values , and personal characteristics, reflected in this definition's breadth.

Mamed and Moreira (2005) state that entrepreneurial competence is the individual's competence related to administrative practice. In this way, Souza and Teixeira (2013) emphasize that entrepreneurial competences reinforce strategic perception, enabling a glimpse of opportunities for innovation, business growth, and better capacities from organizational resources.

Entrepreneurial competences are presented by individuals who start and transform businesses and are usually related to businesses' rising, survival, performance, and growth (Mitchelmore, & Rowley, 2010). Zampier and Takahashi (2011), in turn, define them as a body of knowledge, area or skill, personal qualities or characteristics, attitudes or visions, motivations or directions that can contribute to the practical thinking or action of the business allowing individual print actions and strategies to create value for society.

Brasil, Verdinelli, and Lizote (2016) report that some studies have tried to incorporate the union between entrepreneurial profile characteristics in the competences context when migrating from the entrepreneurship field to entrepreneurial competences. Lenzi et al. (2015) state that the most appropriate setting for the study of entrepreneurial competences is the individual competences model. Accordingly, Mitchelmore and Rowley (2010) state that research on entrepreneurial competences focuses on the entrepreneur's aspects and characteristics, such as knowledge and competences that allow an entrepreneur to conduct business.

Some authors have been concerned about creating typologies that enable researchers to identify the necessary competencies for activities development. Among them, Lenzi (2008) work stands out, which addresses the work developed by Cooley (1990, 1991), highlighting ten characteristics of entrepreneurial behavior, also called entrepreneurial competences, grouped into three categories, as shown in Table 1.

Table 1. Entrepreneurial competences

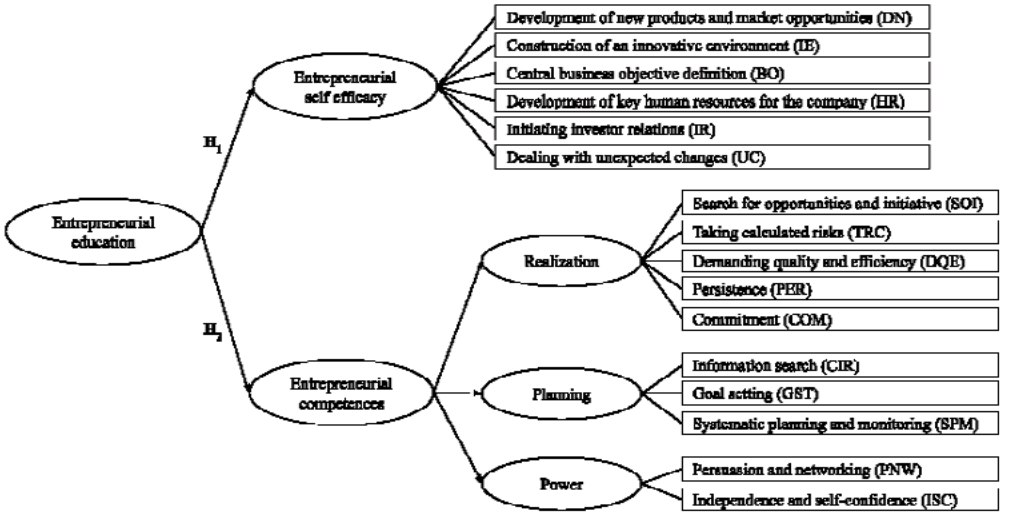
REALIZATION SET	
Search for opportunities and initiatives	Does things before asked or, before forced by circumstances; acts to expand the business to new areas, products or services; takes advantage of unusual opportunities to start a business, obtain financing.
Take calculated risks	Deliberately evaluates alternatives and calculates risks; acts to reduce risks or control results; puts himself in situations that involve moderate challenges or risks.
Quality and efficiency requirements	Find ways to make things better and / faster, or cheaper; acts to do things that meet or exceed standards of excellence; develops or uses procedures to ensure that work is completed on time or that work meets previously agreed quality standards.
Persistence	Acts before an obstacle; acts repeatedly or changes strategy in order to face a challenge or overcome an obstacle; takes personal responsibility for the performance necessary to achieve the goals and objectives.
Commitment	Makes a personal sacrifice or expends an extraordinary effort to complement a task; collaborates with employees or puts themselves in their place, if necessary, to finish a job; strives to keep customers happy and puts long-term goodwill above short-term profit first.
PLANNING SET	
Information search	Is personally dedicated to obtaining information from customers, suppliers and competitors; personally investigates how to manufacture a product or provide a service; consult the experts for technical or commercial advice.
Setting goals	Sets goals and objectives that are challenging and have personal meaning; sets long-term, clear and specific goals; establishes short-term, measurable goals.
Systematic planning and monitoring	Plans to divide large tasks into subtasks with defined deadlines; constantly reviews its plans taking into account the results obtained and circumstantial changes; keeps financial records and uses them to make decisions.
SET OF POWER	
Persuasion and network	Uses deliberate strategies to influence or persuade others; uses key people as agents to achieve its own goals; acts to develop and maintain commercial relationships.
Independence and self-confidence	Seeks autonomy in relation to the rules and controls of others; maintains its point of view, even in the face of opposition or initially discouraging results; expresses confidence in your own ability to complete a difficult task or face a challenge.

This model proposed in Table 1 is by Lenzi (2008) and currently used by the United Nations Development Program and the Small Business Support Service for training programs for entrepreneurs, such as the Program for Entrepreneurs and Future Entrepreneurs, and also served as the basis for this study. Quivy and Campenhoudt (1998) argue that the hypothesis provisionally answers the starting questions of a study, based on theoretical reflection and prior knowledge of the phenomenon studied. In this study, was defined as the following hypotheses:

H_1: Entrepreneurial education in the graduation of health sciences courses influences students' entrepreneurial self-efficacy.

H_2: Entrepreneurial education in undergraduate health science courses influences students' entrepreneurial competences.

Figure 1. Conceptual Model



3 METHODOLOGY

This research is quantitative. Malhotra (2012) highlights that quantitative studies make it possible to apply statistical methods to clarify phenomena, processes, or relationships and generalize the results to the researched population from representative samples' analysis.

As for its nature, this study is descriptive and correlational. It is an association of variables given a predictable pattern for the population under analysis. In the conception of Hair Jr, Black, Babin, Anderson, and Tatham (2009), descriptive research is created and structured in a specific way to measure the peculiarities that are to describe concerning the research question.

To obtain the data, we chose to use the survey research method (Babbie, 1999), about the characteristics, actions, or opinions of a group of respondents indicated as representatives of a target population, using a research instrument, such as the questionnaire (Freitas, Oliveira, Saccol, & Moscarola, 2000).

The researched population consisted of undergraduate students in the courses in the health area of a community-university in the south of Brazil, being distributed as follows, according to the campuses of that HEI: Campus x - only Physical Education course; Campus y - Biomedicine, Physical Education, Physiotherapy, Nutrition, Dentistry, Nursing, Pharmacy, Speech Therapy, Medicine and Psychology, resulting in a sample of 267 respondents.

Regarding the research sample, there are several types of sampling, and it is up to the researcher to choose the best technique according to his study (Cooper & Schindler, 2003). A randomly selected non-probabilistic sample.

The scale of De Noble, Jung, and Ehrlich (1999) measured entrepreneurial self-efficacy. Six subscales support it: development of new products and market opportunities (DN), construction of an innovative environment (IE), the definition of the central business objective (BO), development of key human resources for the company (HR), initiating investor relations (IR) and dealing with unexpected changes (UC). This instrument consists of twenty-three (23) items, in which it uses a 7-point Likert scale, which ranges from "completely incapable" (1) to "completely capable" (7).

The construct of entrepreneurial competences was measured using the instrument derived from Cooley's model (1990, 1991) and used by Lenzi (2008) and Lizote (2013). This scale includes

three sets: a) achievement - covering five entrepreneurial competences, search for opportunities and initiative (SOI), taking calculated risks (TRC), demanding quality and efficiency (DQE), persistence (PER), and commitment (COM); b) planning - composed of information search (CIR), goal setting (GST), and systematic planning and monitoring (SPM); and, c) power - this set involves persuasion and networking (PNW), and independence and self-confidence (ISC).

The questionnaire contains 30 items that allow identifying ten competencies from a summative scale of three questions for each one. The research participant has a score after assigning a rating on a scale of 1 to 5 for each instrument statement. The minimum sum for each competency is three if you assign 1 to all questions, or 15 if you select number 5.

Data collection occurred through the application of questionnaires in loco in the two campi already mentioned. This choice was because it becomes less prone to the deviation of responses and a higher probability of respondents' number. When sent online, surveys are often not answered.

The data collected through a survey for this study was organized in an Excel spreadsheet to perform the pre-treatment following Hair Jr. et al. (2009) recommendations. Initially, it was analyzed if there are missing data and typing errors. The data missing number did not exceed 10%, so the median filled its value.

After the researchers debugged the database, the Statistica® software performed the descriptive calculation of the variables. They were the average, standard deviation, asymmetry, and kurtosis. With the debugged data, exploratory factor analyses define which items comprise the subscales of entrepreneurial self-efficacy. With the sum of the scores of entrepreneurial competences items, exceeding the value of 12, one will know which competence manifested.

4 RESULTS

This chapter presents the research results, starting with the researched sample's characterization and then the correlation between the constructs analyzed.

4.1 Characterization of the researched sample

The students from the year before the mandatory internship participated in the research. To this end, each course coordinators sought information on what times would be available to participate in the study.

With the pre-treatment of data, 78 cells were missing data: 0.55% of the total responses. The missing values were in a percentage well below the maximum allowed of 10% (Hair Jr. et al., 2009). The median replaced the missing data.

After organizing the data, we have the characterization of the sample presented in Tables 1 and 2, which, in turn, is divided by course. The total of valid questionnaires was 267, having only the Physical Education course on campus x, with 33 respondents. In total, 234 respondents completed the survey questionnaires in the Biomedicine, Physical Education, Pharmacy, Physiotherapy, Speech Therapy, Medicine, Nutrition, Dentistry, and Psychology courses. Table 2 presents the characterization of the sample separated by course descriptively.

Table 2. Distribution of students by campus and age.

Course	Campus			Age				
	x	y	Total	Up to 20	21 to 30	31 to 40	41 to 50	50+
Biomedicine		100%	13	8%	85%			8%
Ed. Physics	54%	46%	61	3%	85%	11%		
Drugstore		100%	17	6%	94%			
Physiotherapy		100%	27	11%	85%	4%		
Speech Therapy		100%	17		100%			
Medicine		100%	14	7%	93%			
Nutrition		100%	28	18%	79%	4%		
Dentistry		100%	42	5%	95%			
Psychology		100%	48	4%	79%	8%	6%	2%

Table 3 shows the results regarding the number of students enrolled in each of the courses investigated.

Table 3. Distribution of students by course.

Course	Sex		Period								Studied entrepreneurship	
	F	M	2	4	5	6	7	8	9	10	Yes	No
Biomedicine	62%	38%					85%	15%			77%	23%
Ed. Physics	44%	56%				7%	31%	62%			46%	54%
Drugstore	71%	29%	12%				88%					100%
Physiotherapy	67%	33%				63%	37%					100%
Speech Therapy	82%	18%					100%					100%
Medicine	64%	36%	7%				93%					100%
Nutrition	71%	29%				57%	43%					100%
Dentistry	55%	45%					57%	43%				100%
Psychology	81%	19%		2%	2%	2%	6%	13%	42%	33%		100%

As shown in Table 3, only Biomedical and Physical Education students took the Entrepreneurship discipline. When analyzing Tables 2 and 3, a small portion of students took the entrepreneurship discipline, totaling 45 from 267 respondents, which corresponds to approximately 16.85% of the total number of questionnaires answered. Only two of the nine courses surveyed offer entrepreneurship discipline. Thus, the analyzes that follow consider the total number of participants in the research, with only the t-test performed to compare students who took the entrepreneurship discipline.

4.2 Correlation analysis

Table 4 shows the correlations between the sum of the subscales and shows the Cronbach's alpha values for each subscale of the entrepreneurial self-efficacy construct indicated on the table's diagonal in parentheses. Only the subscale "dealing with unexpected changes" presented a lower value than the suggested one, which is 0.7. However, the full scale shows a Cronbach's alpha of 0.957, demonstrating high reliability of this construct within the researched data.

Table 4. Correlations, mean (m) and standard deviations (sd) of entrepreneurial self-efficacy

Subscales	m	sd	SE1	SE2	SE3	SE4	SE5	SE6
New product development and market opportunities	5,36	1,01	***(0,840)***					
Building an innovative environment	5,41	0,99	0,803	***(0,813)***				
			p=0,00					
Definition of the main business objective	5,51	0,99	0,837	0,809	***(0,762)***			
			p=0,00	p=0,00				
Development of key human resources for the company	5,23	1,11	0,874	0,786	0,790	***(0,779)***		
			p=0,00	p=0,00	p=0,00			
Starting investor relations	5,38	0,95	0,947	0,912	0,923	0,933	***(0,745)***	
			p=0,00	p=0,00	p=0,00	p=0,00		
Dealing with unexpected changes	5,37	0,98	0,923	0,869	0,938	0,950	0,991	***(0,505)***
			p=0,00	p=0,00	p=0,00	p=0,00	p=0,00	

Table 5. Correlations, mean (m) and standard deviations (sd) of entrepreneurial competences

EC	m	sd	Realization Set	Planning Set	Power Set
Realization Set	11,86	1,62	***(0,784)***		
Planning Set	12,07	2,12	0,694	***(0,841)***	
			p=0,00		
Power Set	11,13	2,16	0,531	0,461	***(0,635)***
			p=0,00	p=0,00	

In the entrepreneurial competences construct, only the "power set" has Cronbach's alpha below 0.7. Even so, the constructs are considered valid, and their total reliability, calculated by Cronbach's alpha, is 0.876.

Finally, the results of Bartlett's sphericity test were all significant ($p < 0.05$) and indicated that with the data collected for the constructs, Exploratory Factor Analysis (EFA) could use. EFA sought to validate the instrument constructs, that is, to seek and define the fundamental constructs assumed to be inherent in the original variables (Hair Jr. et al., 2009), to later carry out the hypothesis test.

It is worth mentioning that the purpose of applying the EFA was to investigate whether each dimension of the constructs is related to a single factor that recovers more than 50% variance extracted by it and that the factorial loads were greater than or equal to 0.5.

To assess whether there was a relationship between the subscale items, EFA was performed from the correlation matrix, using the Kaiser criterion to retain factors and factorial loads greater than or equal to 0.5. As a result, item 20 excluded from the scale (determining whether the business is doing well). Finally, the factor loads for the entrepreneurial self-efficacy construct exceeded the value in module 0.5.

The entrepreneurial competences construct measured from the second block of 30 statements. From the calculated data, in the construct of entrepreneurial competences, factor loads also exceed the value in module 0.5, as well as the extracted factor recovers more than 50% of the variance.

In the construct of entrepreneurial self-efficacy, the T-test performed considering the gen-

der of the respondents. However, there was no significant difference at 5%. However, in the students who took the subject of entrepreneurship, the subscale "building an innovative environment" shows a difference between men and women at 10%, with the highest average score for women, with 5.46; and men 4.89.

For respondents who did not take the course, there is a difference of 10% in the subscale "building an innovative environment" with a higher average for women (5.54) compared to men (5.47). These results indicate that women, in general, whether or not they have taken the entrepreneurship subject, are more likely to innovate in their ventures.

To analyze whether there are differences between the self-efficacy and the students' entrepreneurial competences who approved entrepreneurship subjects and those who have not yet participated in that subject, a T-test performed considering 267 respondents. Of these, only 45 had supported entrepreneurship, and 222 had not attended.

The comparisons made first finding the means of each of the six self-efficacy subscales (SE1 to SE6) and the full scale (SE). Next, comparisons of averages made for each set of entrepreneurial competences (RS, PS, and PSO) and the averages of the ten competencies taken together (TT). For each contrast, the variables homoscedasticity evaluated using the Levene test. Verifying that is no case were the variances heteroscedastic ($p > 0.05$).

There was no significant difference between the averages of those who studied entrepreneurship or not (Table 6). However, as there could be influence from the respondent's course, Physical Education students took the same tests. In the Physical education course, entrepreneurship is mandatory and taught for 60 hours.

Table 6. Comparisons of the subscales means, for the sets of entrepreneurial competences, and all of them for students who have taken the entrepreneurship subject or not

Variables	**Mean**		**Value-t**	**g.1**	**Value -p**	**Number of cases**		**Levene Test**	**Value-p**
	Yes	No				Yes	No		
SE1	5,249	5,380	-0,7924	265	0,4288	45	222	0,0321	0,8579
SE2	5,206	5,450	-1,5189	265	0,1300	45	222	1,8081	0,1799
SE3	5,333	5,550	-1,3350	265	0,1830	45	222	0,0512	0,8212
SE4	5,148	5,248	-0,5497	265	0,5830	45	222	0,6277	0,4289
SE5	5,234	5,407	-1,1119	265	0,2672	45	222	0,5385	0,4637
SE6	5,238	5,401	-1,0220	265	0,3077	45	222	0,2657	0,6066
SE	5,235	5,406	-1,0980	265	0,2732	45	222	0,4967	0,4816
RS	11,724	11,889	-0,6236	265	0,5334	45	222	0,5162	0,4731
PS	11,904	12,093	-0,5474	265	0,5846	45	222	0,0783	0,7798
PSO	11,144	11,126	-0,0517	265	0,9588	45	222	1,0765	0,3004
TT	11,591	11,703	-0,4154	265	0,6782	45	222	1,5654	0,2120

There were no significant differences between the 30 Physical Education students' average values who completed the entrepreneurship discipline with the 31 who did not participate. The comparisons results are in Table 7, which shows that the variances of those distributions were all homogeneous, according to the Levene test.

Table 7.
Comparisons of the subscales means, for the sets of entrepreneurial competences, and all of them for Physical Education students who studied or not in entrepreneurship subject.

Variables	Mean		Value-t	g.1	Value-p	Number of cases		Levene test	Value-p
	Yes	No				Yes	No		
SE1	5,153	5,381	0,8890	59	0,3776	30	31	0,3920	0,5337
SE2	5,083	5,387	1,0986	59	0,2764	30	31	0,7599	0,3869
SE3	5,233	5,538	1,1553	59	0,2526	30	31	0,9320	0,3383
SE4	5,078	5,301	0,7648	59	0,4474	30	31	1,3400	0,2517
SE5	5,137	5,402	1,0485	59	0,2987	30	31	0,0006	0,9807
SE6	5,149	5,413	1,0209	59	0,3115	30	31	0,0040	0,9495
SE	5,139	5,404	1,0453	59	0,3001	30	31	0,0002	0,9897
RS	11,473	12,039	1,2439	59	0,2185	30	31	0,0965	0,7572
PS	11,644	11,903	0,4410	59	0,6609	30	31	1,1320	0,2917
PSO	11,400	11,0321	-0,5852	59	0,5606	30	31	0,4047	0,5272
TT	11,506	1,658	0,3137	59	0,7549	30	31	1,3863	0,2438

The results obtained confirm that their knowledge does not influence the students' perception regarding their self-efficacy and entrepreneurial competences in the entrepreneurship subject.

When doing the correlation analysis between the subscales of entrepreneurial self-efficacy, it is clear that they all have a strong linear relationship (greater than 0.7) and is positively correlated. When analyzing the sets of entrepreneurial competences, they are related to each other. However, it is considered a moderate linear relationship. There is a greater dispersion among the answers. Finally, the test verified the relationship between the entrepreneurial self-efficacy subscales and the entrepreneurial skill sets. Table 8 presents the results found.

Table 8. Subscales correlation of and skill sets matrix.

	Realization Set (RS)	Planning Set (PS)	Power Set (PSO)
Development of new products and market opportunities	0,098	0,036	**0,138**
	p=0,111	p=0,554	**p=0,024**
Building an innovative environment	0,099	0,094	0,087
	p=0,108	p=0,126	p=0,155
Definition of the main business objective	0,031	0,017	0,098
	p=0,609	p=0,783	p=0,111
Key human resource development for the company	**0,135**	***0,107***	***0,117***
	p=0,028	***p=0,082***	***p=0,056***
Starting investor relations	0,099	0,070	***0,119***
	p=0,107	p=0,258	***p=0,052***
Dealing with unexpected changes	0,094	0,069	***0,116***
	p=0,126	p=0,263	***p=0,058***

The results above demonstrate that the linear relationship is undefined, for the r values found below 0.2. Thus, the subscales of the entrepreneurial self-efficacy construct and the sets of entrepreneurial competencies have no relation.

Several factors may have influenced the non-confirmation of the study's hypotheses. These factors are related to the conclusions. Entrepreneurship education needs revisions to become entrepreneurial education (Ghobril et al., 2020). Suppose there is a need for the market to train entrepreneurs. In that case, universities need to think about different strategies to meet the demand (Guarany, 2010) and the new realities (Guerrero, Cunningham, & Urbano, 2015).

Although the university shows that it has already awakened to this need, by offering the discipline of entrepreneurship to the health area, it still does not seem sufficient to impact the perception of entrepreneurial behaviors. However, there is a need to develop self-efficacy and entrepreneurial competences and graduate in areas that do not belong to management courses (Machado, Lenzi, & Manthey, 2017).

Expanding the offer of the discipline for a program for the development of behaviors aimed at entrepreneurship can contribute to strengthening the role of the university as a promoter of economic and social development in the region (Audretsch, 2014; Etzkowitz, 2013) through student development Cualheta et al. 2020; Doin & Rosa, 2019; Lima et al., 2014).

Developing educational programs for the development of entrepreneurial behavior refers to providing experiences. As Hashimoto, Krakauer, and Cardoso (2018) stated, entrepreneurial education experience relates to business planning, participation in business games and simulators, negotiation experience, product development, and creation of business opportunities. Siegel and Wright (2015) also highlight actions that encompass strategies aimed at teaching and extension activities. For this, the university needs to have an institutional culture focused on entrepreneurship (Mok, 2015; Wong, Ho, & Singh, 2007).

5 CONCLUSIONS

This research's objective was to evaluate entrepreneurial education's influence in developing self-efficacy and entrepreneurial competences of undergraduate students in the health area. The analysis based on the proposed hypotheses allows us to conclude that all reached will be presented below.

The concept of Chen, Greene, and Crick (1998) for entrepreneurial self-efficacy, was considered for this study. They deem self-efficacy highly appropriate for the entrepreneur's research, when calculating Bartlett's sphericity test, all values shown to be significant, as the values were always with $p < 0.05$ values indicating that the correlation matrix is appropriate to perform the factor analysis.

Exploratory factor analysis (EFA) confirms or refutes the items of a given instrument (Brown, 2006). In this construct, the items were expressed by a specific factor for each subscale. Only in Factor 1, which refers to the "development of new products and market opportunities", a variable with low commonality was found, which is: "determine whether the business is doing well". After excluding this item, the new factor analysis was performed and presented.

The correlation matrix has a strong linear relationship between the subscales; that is, the instrument used has validity and reliability. Given these results, it can say that the H1 hypothesis that comprises. In essence, based on the result of the t-test, entrepreneurial education in the graduation of health sciences courses does not influence students' entrepreneurial self-efficacy.

In the construct of entrepreneurial competences, all statements remained, as they all showed high similarity within the factors, which in turn, segmented according to the skill sets. This

construct presents statistically lower numbers than the entrepreneurial self-efficacy construct. Therefore, hypothesis H2, entrepreneurial education in the graduation of health science courses, influences students' entrepreneurial competences, was also not supported. The item with the lowest factor load corresponds to the achievement set: search for opportunity and initiative (SOI). With this, undergraduates feel limited concerning having ambitions and seeking new business opportunities.

When making the correlation matrix joining the two constructs, there are those within the analyzed context, and the constructs are not related because they have values of r <0.2. In other words, in this context, entrepreneurial education does not influence undergraduate students' entrepreneurial behavior in the health field. Thus, it can conclude that in health courses, students do not feel prepared to start their own business, based on the premises of self-efficacy and entrepreneurial competences, as they are not related.

As a limitation of this study, few students have taken the discipline of entrepreneurship is pointed out. Also, the ideal would be to test the same students before and after taking the course. For this reason, the insertion of issues related to entrepreneurship in the healthcare area as a promising path for training these professionals (Endeavor, 2016). With this incentive provided by the HEI, new longitudinal research can carry out in which the same questionnaire must be applied before, during, and after the student participates in the discipline of entrepreneurship. Thus, it could have more accurate results and probably different from those found in this study.

The study limitation also includes the difficulty of access to respondents, from the authorization of principals, coordinators, and teachers, to students' collaboration, who sometimes refused to answer. Subsequently, it is also a limitation to research only one university, and thus, the results achieved in this research cannot be generalized to all universities.

The study replication suggested that the constructs and instruments already validated, in other universities, including different country regions. Using research data such as those carried out by Endeavor (2016) can help choose universities considered by them to be "entrepreneurial" and check if there is a difference between the HEI with entrepreneurship education and those that do not. Another suggestion would be to associate the quantitative to the qualitative methodology to understand why these students do not feel ready to undertake.

The theoretical research relevance is to use constructs associated with entrepreneurship in the health area, as few studies have on this theme. In these, there is a need for further research. It is also worth noting that entrepreneurship is increasingly present in interdisciplinarity, being contemplated not only in the area of management.

As a practical relevance, this study presents data that can be used by managers of the researched CEI to promote entrepreneurship teaching in courses that are not directly associated with the management area. It can also serve as a model for other educational institutions that wish to adopt entrepreneurial practices to encourage students before entering the job market.

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1. Definition of research problem	x				
2. Development of hypotheses or research questions (empirical studies)			x	x	
3. Development of theoretical propositions (theoretical work)		x			
4. Theoretical foundation / Literature review	x				
5. Definition of methodological procedures				x	
6. Data collection		x			
7. Statistical analysis				x	
8. Analysis and interpretation of data			x		
9. Critical revision of the manuscript	x	x			x
10. Manuscript writing					x
11. Other (please specify)					