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**Consumo de tabaco entre universitários: uma revisão sistemática**

Tobacco consumption among college students: a systematic review

Consumo de tabaco entre estudantes universitarios: una revisión sistemática

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**Objective:** Identify how tobacco use among college students is discussed in the literature. **Methods:** It was performed a systematic review of January 2004 to December 2013. The survey was conducted in the databases LILACS, MEDLINE and SciELO, using the methodology Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). **Results:** 316 articles were found, 62 met the inclusion criteria, which were most published in Spanish (46.77%). The distribution of publications about the areas of magazines, in national terms, showed that the overall health and medicine had high participation (19.35% both). For international magazines, the area of medicine stood out with 19.35%. **Conclusion:** There are many studies published in the proposed period that address the same issue from different perspectives; however, studies report differences in consumption of these products with regard to gender, protective factors and those that may predispose the emergence of harmful habits.

**Descriptors:** Smoking. University education. Public health. Economic health.

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## RESUMO

**Objetivo:** Identificar como o consumo de tabaco entre universitários é abordado na literatura. **Métodos:** foi realizada uma revisão sistemática de janeiro de 2004 a dezembro de 2013. A pesquisa foi feita nas bases de dados LILACS, MEDLINE e SciELO, utilizando-se a metodologia *Preferred Reporting Items for Systematic Reviews and Meta-Analyses* (PRISMA).

**Resultados:** De 316 artigos encontrados, 62 atenderam os critérios de inclusão, Sendo a maioria publicada em espanhol (46,77%). A distribuição das publicações quanto às áreas das revistas, em termos nacionais, mostrou que a saúde geral e a medicina tiveram maior participação (19,35% ambas). Para as revistas internacionais, a área de medicina se destacou com 19,35%. **Conclusão:** Existem muitos estudos publicados no período proposto que abordam a mesma temática sob diferentes perspectivas; contudo, as pesquisas relatam divergências do consumo desses produtos com relação ao sexo, fatores de proteção e aqueles que podem predispor o surgimento de hábitos nocivos.

**Descritores:** Tabagismo. Educação superior. Saúde pública. Economia da saúde.

## RESUMEN

**Objetivo:** Identificar cómo el consumo de tabaco entre los estudiantes universitarios se discute en la literatura. **Métodos:** Revisión sistemática de enero de 2004 hasta diciembre de 2013. La encuesta se realizó en las bases de datos LILACS, MEDLINE y SciELO, usando la metodología preferida Los productos para los que informaron sistemáticas Reviews and Los meta-análisis (PRISMA). **Resultados:** 316 artículos encontrados, 62 cumplieron los criterios de inclusión. Y, lo más publicado en español (46,77%). La distribución de publicaciones sobre las áreas de revistas, en términos nacionales, mostró que el estado general de salud y la medicina tuvieron mayor participación (19,35% ambos). Para revistas internacionales, el área de la medicina se destacó con 19,35%. **Conclusión:** Hay muchos estudios publicados en el período propuesto que aborda el mismo tema desde diferentes perspectivas; Sin embargo, los estudios informan de diferencias en el consumo de estos productos con respecto al género, los factores de protección y los que pueden predisponer a la aparición de hábitos nocivos.

**Descriptorios:** Fumar. Educación universitaria. Salud pública. Economía de la Salud.

## INTRODUCTION

Smoking is a major cause of avoidable death in Brazil and in the world as a risk factor for several chronic diseases, including: different types of cancer (lung, mouth, larynx, pharynx, esophagus, stomach, pancreas, bladder, kidney, cervix, and acute myeloid leukemia), chronic obstructive pulmonary disease (COPD), coronary heart disease, hypertension and stroke.<sup>1-2-3</sup> Passive exposure to this product also predispose the development of these same diseases.<sup>4-5</sup>

The prevalence of smoking varies with age, gender and geographical, economic and cultural needs of each region.<sup>6</sup> In developing countries, the investment of the tobacco industry aimed mainly women and young adults, because they represent a greater chance of sales expansion of this product.<sup>3,7-8</sup>

In addition to implications for the individual and his/her family, smoking also triggers a high social and economic cost to government agencies of a country in terms of health care expenses, decreased productivity and lost income.<sup>9</sup>

In terms of public policies in Brazil, on December 27, 2000, it was created Law n° 10,167,<sup>10</sup> which prohibits direct tobacco advertising. This fact greatly contributed to reduce their consumption; however, the university students are seen by the tobacco industry as a promising market and is ensuring the maintenance and even expansion of its consumers.<sup>11</sup> This population shows great susceptibility involvement with this product, because it is currently the largest consumers of manufactured cigarettes.<sup>12-13</sup>

In a study<sup>14</sup> performed with the adult population (over 18 years), living in 27 Brazilian cities, in 2012, it was identified that the prevalence of smoking was 12.1%, higher among men (15.5%) than among women (9.2%). However, in both sexes, the frequency of this habit was lowest before 25 years of age or after 65 years.

Brazil is the world's fourth largest tobacco producer and the main exporter of this product leaves.<sup>13</sup> Although this sector stand out in economic terms, the Brazilian government (since 1987), through the Ministry of Health and the National Cancer Institute (INCA), has taken actions to control and prevent smoking in the country, highlighting: informing the public about the harmful effects of smoking, prevent direct advertising of products derived from this product, assign to the tobacco industry actions considered socially responsible, avoid any link of the state and their campaigns sponsored these industries; among other measures.<sup>15</sup>

The tobacco industry, however, continue to demand spaces in the laws with new strategies, such as low prices for their products, tobacco access facility in the market and the use of indirect advertisements.<sup>16</sup> The goal of these companies is to explore the individual and collective vulnerabilities in an attempt to stop the spread of scientific knowledge about the harmful effects of this product.<sup>17</sup>

## OBJETIVE

Given that smoking is the greatest single cause of death preventable among populations<sup>3,8</sup> the objective of this paper was to identify how tobacco use among college students is discussed in the scientific literature, from a systematic review carried out between January 2004 to December 2013.

## METHOD

It is a scientific literature systematic review (national and international), carried out in accordance with the methodological recommendations of the Preferred Reporting Items for Systematic statement Reviews and Meta-Analyses (PRISMA), as Figure 1.<sup>18-19</sup>

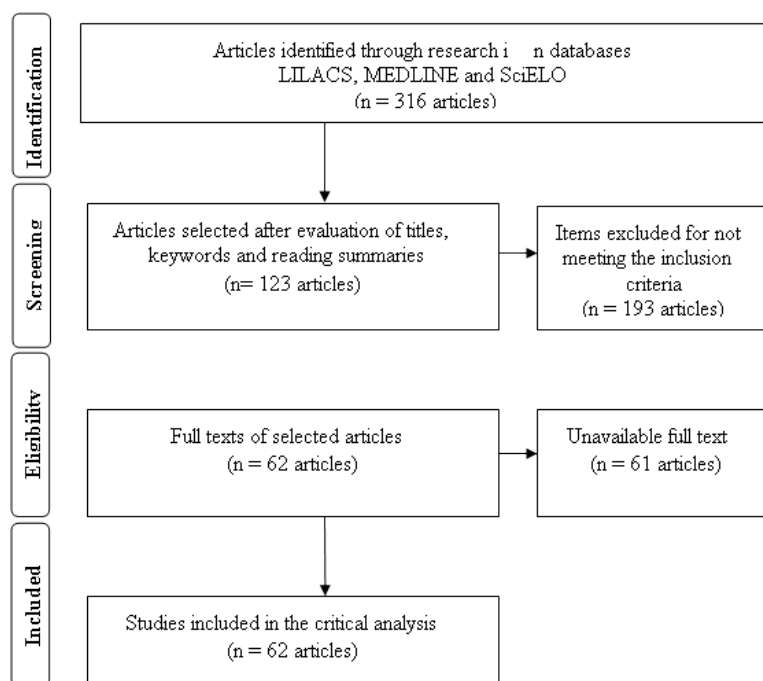
Initially, it sought to define the keywords for the realization of research articles, highlighting smoking and university descriptors in Portuguese and their corresponding English (smoking and university) and Spanish (fumar y universidad).

The search of documents was carried out between May 2013 and January 2014 in the following databases: Latin American and Caribbean Health Sciences (LILACS), International Literature in Health Sciences (MEDLINE) and Scientific Electronic Library Online (SciELO), available on the Virtual Health Library (VHL) through the website <http://www.bireme.br>. On this basis were applied

article and text filters available, identifying 316 scientific papers (Figure 1).

At the stage of screening, the following inclusion criteria were used: articles published between January 2004 and December 2013; It is published in national and international journals; in languages: Portuguese, English or Spanish; with the study population comprised of university students; address the issue prevalence and/or consumption of tobacco and is available in full in electronic databases. Of 326 scientific papers, 123 were selected after evaluation of titles, keywords and reading summaries. This step was carried out independently by the investigators. The studies that did not meet the above inclusion criteria were excluded from the study, making it a total of 193 articles. At the stage of eligibility, 123 articles, 61 of them were unavailable in the version online. So they were included in the analysis 62 studies (Figure 1).

**Figure 1** - Flowchart of the schematic representation of the methods of identification, screening, eligibility and inclusion of articles in the review, adapted from the PRISMA method<sup>18-19</sup>



From this, the materials were organized and summarized in Microsoft Excel 2010 worksheet, considering the following categories: 1) language, 2) year of publication and 3) areas of magazines and category (national and international). At this stage of quantitative analysis it was applied the descriptive statistics, through the distribution of absolute single frequency (n) and relative (%), and calculating the average. In the estimates we used the software Statistical Package for Social Sciences for Windows (SPSS) version 18.

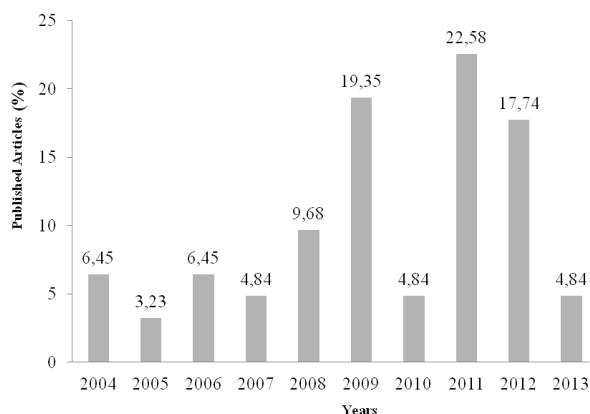
In the qualitative evaluation it was applied the criterion of categorization, being articles organized by smoking in university topic from different perspectives (ie, different research methodologically but interrelated by subject matter hereof). The categories analyzed were: a) tobacco consumption characteristics b) factors influencing tobacco consumption and c) smoking harms and educational measures.

## RESULTS

Regarding the language of the 62 selected articles, 29 (46.77%) were published in Spanish, 26 (41.94%) in Portuguese and seven (11.29%) in English.

In Figure 2, there is a high concentration of articles published in 2009 (19.35%) 2011 (22.58%) and 2012 (17.74%). In the analyzed period, the average number of publications was 6.2 articles.

**Figure 2** - Frequency of articles published in the databases LILACS, MEDLINE and SciELO according to year of publication



Source: Search results (2015). Prepared by the authors.

As shown in Table 1, among domestic journals, the areas of health and general medicine had the highest number of publications (19.35% each), followed by nursing (14.51%). For international magazines, the area of medicine stood out with 19.35% before the others. Secondly, the overall health was to 12.90%.

**Table 1** - Distribution of publications on the category (national and international) and areas of journals 2004-2013

National Journals	N	%
General Health	12	19.35
Medicine	12	19.35
Nursing	9	14.51
Physiotherapy	1	1.61
Nutrition	1	1.61
International Journals		
General Health	8	12.90
Medicine	12	19.35
Nursing	2	3.22
Physiotherapy	0	0.00
Nutrition	1	1.61
Psychology	4	6.45
Total	62	100.00

Source: Search results (2015). Prepared by the authors.

Then, it is carried out a discussion regarding the language aspects, temporal evolution and the main themes (categories) identified in the survey.

## DISCUSSION

The fact that most of the studies on tobacco consumption in university students have been published in Spanish and/or Portuguese can be explained, in part, because in Spain since the late twentieth century, the consumption of tobacco and other drugs by university students have been systematically studied, including taking into account age, gender and enrolled courses.<sup>20</sup>

In Spain, studies of drug use have been conducted by *Observatorio Espanol of Drogodependencias*. In this, alcohol appears as the legal drug most widely used by the general population, showing an increasing rate among individuals aged between 15 and 34 years.<sup>21</sup> Tobacco, in turn, is following this trend among young people, especially in females.<sup>22-23</sup> This finding shows smoking is a public health problem in this country, thus being able to justify the high incidence of articles on this topic.

In Brazil, there is an epidemic chaotic scene in relation to smoking, because, in general, the population under age 30 has a high prevalence of smoking, which can cause various health hazards.<sup>8, 24-25</sup>

The prevalence of tobacco consumption in Brazil can be found in the study of Vigitel,<sup>14</sup> which showed the frequency of adults (over 18) who smoke in the Brazilian regions and states. The highest and lowest scores were shown to Porto Alegre (18.2%) and Salvador (6.3%), respectively.<sup>14</sup> This shows the need for regional public policy actions to combat smoking, which seek to reduce these prevalences.

There was a rise in publications on the subject, with the highest concentration in the years 2009, 2011 and 2012 respectively, thus demonstrating the relevance and topicality. Smoking is classified as a major risk factor for the health of individuals and the leading cause of preventable death worldwide.<sup>3,8</sup> In 2030, it will be responsible for over eight million deaths per year, and at the end of the century, could reach one billion, and more than 75% of these deaths will occur in middle and low income countries.<sup>26</sup>

### Characteristics of Tobacco Use

Among university students of health, it was observed that on average, the prevalence of smoking between 15 and 22%.<sup>27-28-29-30-31-32-33-34-35</sup> In the analysis by gender, Kanicka and collaborators,<sup>29</sup> research done in Poland with 286 students, says that men are more likely in tobacco consumption. However, Menezes et al,<sup>28</sup> that performed a study in Brazil with about 450 university students did not find differences in prevalence between the genders. This can be justified because of smoking depend on the socio-economic, demographic and cultural needs of each country.<sup>6</sup>

Cardoso, Santos e Berardinelli,<sup>31</sup> in qualitative study in Brazil with 13 smokers and Granville-Garcia and collaborators,<sup>34</sup> in survey of about 492 Brazilian university students, note that in general, the health of university students not classify themselves as tobacco dependent. Also, they do not consider nicotine as addictive and classify it as strong stress reducer.<sup>32</sup> However, a study developed with nursing students from a private institution found that tobacco causes great psychological dependence.<sup>35</sup>

Overall, the prevalence of tobacco use among students from other areas is somewhat lower than among the health (ranging between 8.1% and 14.7%), and the industrialized cigarette is most used by these university students.<sup>36-37</sup>

Grazia and collaborators,<sup>38</sup> in a survey conducted in Chile with 490 university students, and Tafur and collaborators,<sup>39</sup> in a study in Colombia with about 1324 university students, reveal that men of social science areas of courses consume more tobacco than women. This was also evidenced by Kanicka and collaborators<sup>29</sup> for students of health. In another study,<sup>40</sup> developed in Colombia with 125 university students, it was found that this may be due to some women suffer migraine, as this would act as an indirect protective factor against smoking. However, this fact contradicts the trend of increased tobacco use by women in developing countries.<sup>7</sup>

Smoking habits in university students may be associated with other illicit drugs, such as alcohol, cannabis and cocaine, as highlighted by the following authors surveyed: a) study of Font-Mayolas, Gras and Planes,<sup>41</sup> conducted in Spain with 580 students; b) Silva and collaborators,<sup>24</sup> in Brazil with 926 students; c) Wagner and Andrade,<sup>42</sup> in Brazil, addressing a literature review of articles about university students and drugs use; d) Cazenave and collaborators,<sup>43</sup> in Chile with 449 students; e) Franco and collaborators,<sup>44</sup> in Spain with 2445 university students; f) Kraýmarová and collaborators,<sup>20</sup> in Italy with 345 students; g) Morales and collaborators,<sup>45</sup> in Chile with 305 university students; h) Ramis and collaborators,<sup>46</sup> in Brazil with 485 students; i) Lucena and collaborators,<sup>47</sup> Spain with 772 students; e j) Pedrosa, Camacho and Passos,<sup>48</sup> in Brazil with 608 students.

In this category, it was observed that university veterans consume more alcohol, tobacco, cannabis and marijuana, than freshmen, especially males.<sup>20, 41-42, 44-45, 48</sup> The level of consumption of these drugs varies according to religion, family income, location, free time and emotional state of students.<sup>24, 47</sup>

However, frequently smoking has beginning before individuals enter the university, that is, in an age where there is a scarcity of self-perception of health, ie the ability to perceive the environment and context that is inserted.<sup>46</sup> This suggests the need for efficient educational measures aimed at this younger population, seeking awareness when they are attending university.

In the studies analyzed, it was observed that physical activity is classified as a protective factor against the prevalence and tobacco consumption. The prevalence of

individuals who are considered physically active ranged from 61% to 80%, especially: the study of Nerín and collaborators<sup>49</sup> conducted in Spain with 406 university students; Rodrigues, Cheik e Mayer<sup>17</sup> in Brazil with 871 students; Mantila-Toloza, Gómez-Conesa e Hidalgo-Montesinos<sup>50</sup> Spain with 548 students e Ratner and collaborators<sup>51</sup> in Chile with 6,823 university students.

In the research of Mantila-Toloza, Gómez-Conesa e Hidalgo-Montesinos,<sup>50</sup> 80% of respondents consider themselves active regarding physical activity, being smoking prevalence of 33% and 58% of alcohol consumption. Overall, no significant differences between the practice of physical activity and consumption of these two substances were found, but it is believed that the cultivation of good habits, supported by physical activity should be encouraged in order to reduce the prevalence of smoking and people who consume alcohol derivatives.

Nerín and collaborators<sup>49</sup> and Rodrigues, Cheik e Mayer<sup>17</sup> also showed no significant differences relate to the physical activity and tobacco consumption, but they share this same perspective to reduce harmful habits rates for this population. Thus, there is the need to encourage university students to cultivate healthy habits, such as the practice of sports.<sup>51-52</sup>

## Factors that influence smoking consumption

In the researched literature, it was observed that the decision to smoke can be influenced by several factors, such as, stress, friends, media (indirectly), family and work.<sup>5, 12, 23, 53-54-55-56-57-58-59-60-61-62-63-64-65-66-67-68-69</sup> Stress is a motivating factor for the onset of smoking and drinking among college students.<sup>32</sup> Tobacco and alcohol, in turn, are used as justification to relieve the symptoms and problems of these students.<sup>12</sup> Therefore, stress can be a predisposing factor for the health risk behavior.

The media (radio, television, film and internet) can be considered as the main factor influencing the act of smoking, both positively and negatively, because young people tend to imitate famous people; family and friends.<sup>69</sup> In this context, this fact should be explored as an effective alternative in the development of prevention campaigns for this population.

In this line, we identified also other reasons that led the university students, especially in the health field, to smoking, highlighting: imitation, curiosity and social acceptance.<sup>33,65</sup> It is important to note that these students have knowledge about the dangers of tobacco, but do not abandon this habit.<sup>27</sup> This may occur by an inadequate curriculum of courses in this area, because students are only informed about the harm, when need be sensitized to thus achieve develop empathy for the sick.<sup>30, 32</sup>

## Harmful effects of smoking and Educational Measures

Smoking can lead to many health hazards of the university students, such as lung cancer, larynx, kidney, bladder, stomach, colon, oral cavity and esophagus,<sup>70</sup> leukemia, chronic bronchitis, chronic obstructive pulmonary disease, ischemic heart disease, stroke, miscarriage and premature birth, birth defects and infertility, among other diseases.<sup>71-72-73</sup>

The harmful effects can also happen to passive smokers, as shown in study<sup>71</sup> which assessed the amount of exhaled carbon monoxide (COex) by university students active smokers, passive smokers, nonsmokers and former smokers, and the amount of COex former smokers and passive smokers was high and almost the same (14.6 14.4 parts per million, respectively).

In terms of educational measures to prevent tobacco consumption there are the research Spiandorello and collaborators;<sup>74</sup> Silva and collaborators<sup>75</sup>; Rodríguez and Londoño;<sup>76</sup> Ribeiro and collaborators;<sup>25</sup> Souza and Campos<sup>77</sup> e Rennó and Leite.<sup>78</sup> These authors show that there are some programs to prevent this problem, for example, the aversive images that are bound on cigarette packs.

It was evident that the knowledge of these images does not guarantee a healthy habit; furthermore, there is distortion between the linked images and content, thus not fully meeting its intentionality.<sup>77</sup> Tobacco users recognize their misdeeds, but show aversion to this kind of warning.<sup>78</sup>

Ribeiro and collaborators<sup>25</sup> conducted a campaign against smoking using as public awareness strategies regarding the prevention of tobacco use and the damage that it causes, thus improving the ability of self-perception of these people and to recognize itself the harmful effects of consumption of this product. The program aimed at the education of public school students in the training of community workers and dissemination of world no tobacco day (May 31). The results were positive, to raise awareness in reducing the prevalence of smoking. They concluded that these actions are necessary and effective, it reached the population of different audiences.

Therefore, the smoking problem is not the lack of knowledge of the university students, as these provide information about the diseases caused by this product. The issue is related to the fact that they can hardly be seen as potential carriers of diseases generated by tobacco consumption.<sup>79</sup>

Considering smoking among young people, Rodríguez and Londoño<sup>76</sup> conducted an experimental study in Colombia with students who wanted to give up this habit. To do this, they set up an intervention program of working level measures of consumer expectations and motivations. After the program, 64% of individuals decided to abandon the habit of smoking. The results were positive, showing that this program a good option for young people who wish to quit.

Many smokers, including university students want to quit smoking when they become aware of the effects of tobacco on health. However, this action is difficult due to

the addictive nature of nicotine, and the influence of the global tobacco industry, which invests millions of dollars in advertising to encourage consumption.<sup>8</sup>

Silva and collaborators,<sup>75</sup> in an exploratory study in Portugal with 63 students, presented some social representations of students about tobacco and health, in which the product has been associated with pleasure, disrespect and bad smell. In turn, they stressed that health is related to happiness, joy and self-esteem. They concluded that even still being related to pleasure, tobacco representations for this population are changing in a promising way.

## CONCLUSION

In this context, it was observed that the subject matter hereof is current and relevant at national and global level. There is a high number of articles published in the proposed period, that address the same issue from different perspectives. However, these studies reported differences consumption of tobacco products by students in referring to gender, and those protective factors that may predispose the appearance of harmful habits.

Therefore, this evidence shows that the studies on this topic have become increasingly important, especially in recent years. The continuation of such research becomes absolutely necessary for the expansion of knowledge of students about smoking and measures of actions against this health problem preventable.

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