



## ORIGINALES

### Beliefs and attitudes of spanish adolescents regarding waterpipe smoking

Creencias y actitudes de adolescentes españoles hacia el consumo de tabaco en pipa de agua

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#### ABSTRACT:

**Objective:** To identify beliefs and attitudes of high school students in Las Palmas regarding waterpipe smoking. This objective responds to the recent and increasing waterpipe smoking among European adolescents, the lack of data on its determinants and the absence of research on this issue among adolescents in Spain.

**Method:** The sample, which comprised 1770 students of the province of Las Palmas (Canary Islands, Spain), was obtained by stratifying each academic block by geographic areas, grouping the students in as many clusters as existing groups in the school for each year group. An ad hoc questionnaire was used to collect data and a descriptive analysis of the data carried out. Proportions were compared using the  $\chi^2$  test.

**Results:** 70.7% of adolescents considered that waterpipe smoking is less harmful than smoking cigarettes and 71.3% believed it to be less addictive. Students asserted that it is a generally accepted practice among their friends (63.7%) and in society (78.9%). 27.8% of the interviewees perceived that their parents would allow them to smoke waterpipe at home. All of these beliefs and attitudes were more common among smokers ( $p < 0.001$ ).

**Conclusions:** Most students consider waterpipe smoking to be less dangerous and less addictive than cigarette consumption. This belief, the perception of its social acceptance and family tolerance towards it have increased its popularity among adolescents.

**Keywords:** Adolescents; waterpipe smoking; tobacco; beliefs; attitudes

## RESUMEN:

**Objetivo:** Identificar las creencias y actitudes de los estudiantes de educación secundaria obligatoria y bachillerato de la provincia de Las Palmas respecto al consumo de tabaco en pipa de agua. Dicho objetivo responde a la reciente y rápida expansión del consumo de tabaco en pipa de agua entre los adolescentes europeos, la relativa escasez de datos acerca de sus determinantes y la falta de estudios al respecto en los adolescentes de nuestro país.

**Método:** La muestra, constituida por 1770 alumnos de la provincia de Las Palmas, se obtuvo estratificando cada bloque académico por áreas geográficas, agrupando a los alumnos en tantos clusters como grupos había en el centro por cada uno de los cursos. Se utilizó un cuestionario ad hoc para la recogida de datos, realizándose un análisis descriptivo de los mismos. Las proporciones se compararon utilizando el test de la  $\chi^2$ .

**Resultados:** El 70,7% de los adolescentes consideró que fumar en pipa de agua es menos perjudicial que fumar cigarrillos y el 71,3%, menos adictivo. Los estudiantes manifestaron que es una práctica muy aceptada por sus amigos (63,7%) y por la sociedad (78,9%). El 27,8% declaró percibir que sus padres le permitirían fumarla en casa. Todas estas creencias y actitudes fueron más frecuentes entre los fumadores ( $p < 0,001$ ).

**Conclusiones:** La mayoría de los estudiantes considera menos peligroso y adictivo este consumo que el de cigarrillos. Estas creencias, la percepción de la aceptación social y de la tolerancia familiar han aumentado su popularidad entre los adolescentes.

**Palabras clave:** Adolescentes; pipa de agua; tabaco; creencias; actitudes.

## INTRODUCTION

Currently, most of the studies of the prevalence of smoking continue to be based exclusively on the consumption of cigarettes and its possible determining factors, without considering that in recent decades the consumption of tobacco in waterpipes (shishas), a practice originating from the Middle East, has spread worldwide, essentially among adolescents and young people<sup>(1-3)</sup>.

It is estimated that approximately 100 million people daily smoke tobacco in a waterpipe<sup>(1-3)</sup>, which means, therefore, that the incorporation of prevalence data related to this mode of consumption of tobacco should be considered in studies of smoking. Its omission could not only be undervaluing the prevalence of tobacco consumption by adolescents and young people but also overestimating the degree of compliance with the objectives of the World Health Organisation on smoking.

Nevertheless, in spite of the notable lack of research around the consumption of tobacco in waterpipes, various authors have reported a remarkable prevalence of this practice among adolescents and young people in Europe, stating that it has strongly increased in this section of the population<sup>(4,5)</sup>.

Some of these authors have also described certain determining factors which contribute to adolescents and young people adopting this practice, among which are their beliefs in relation to this form of consumption and their attitudes towards it. An understanding of these factors is therefore fundamental for the development by those responsible for public health of health promotion strategies aimed at preventing and reducing this form of tobacco consumption emergent in the younger population.

It should be stressed that in Spain the lack of works, both with respect to the consumption of tobacco in waterpipes among adolescents and young people and with regard to possible determining factors for this practice in this group, is practically total.

Indeed, neither the survey on drug use in secondary education (ESTUDES, 2014), nor the study of health-related behaviour of adolescents, Health Behaviour in School Aged Children <sup>(7)</sup>, make reference to waterpipe smokers.

As a consequence, the objective of this study was to identify the beliefs and attitudes of students in compulsory secondary education and further education <sup>(16-18)</sup> in the province of Las Palmas with respect to the consumption of tobacco in waterpipes.

## MATERIAL AND METHOD

A cross-sectional study was carried out, taking as its reference the population formed by all the students in compulsory secondary education and further education in state schools in the province of Las Palmas. From this population the sample for our study was obtained, made up of 1770 students, 895 from secondary education and 875 from further education. To determine this sample, a stratification was carried out for each academic block by geographic area, grouping the students in as many clusters as existing groups in the school for each year group. The inclusion criteria were being a student in state education, belonging to one of the centres, year and class selected in the province of Las Palmas, independent of age or sex, and agreeing to participate in the study.

The data collection tool was an ad hoc questionnaire designed to be completed by the students, for the purpose of which questionnaires used by other authors were first reviewed to enable a process of selection and adaptation of the questions (8-11). The questionnaire, finally made up of 53 closed questions, was piloted in adolescents of similar age and characteristics.

Once the selection of the sample was made, the objective of the research was made known to the Directorate of Education for Las Palmas, to obtain their authorisation to carry out the study. Then, via e-mail, the directors of the 20 selected secondary schools were informed about the study, and the day and time for the distribution of the questionnaires subsequently arranged by telephone.

The collection of data was carried out in 2011 during which time, once the study had been presented to them and they had been informed that it was voluntary and anonymous, the students completed the questionnaire in the class-room. The time required to complete the questionnaire was approximately 25-30 minutes. For the statistical analysis the software package SPSS 17.0 for Windows was used. A descriptive analysis of the data was performed, consisting of a listing of frequencies of the categorical variables, and the calculation of the measures of central tendency and dispersion of the quantitative variables. The percentages were compared using the  $\chi^2$  test. A hypothesis test was considered statistically significant when the corresponding p-value was less than 0.05.

(...)

## RESULTS

The sociodemographic characteristics and the distribution of the population according to experimental and current consumption of tobacco in a waterpipe is shown in Table 1.

**Table 1:** sociodemographic characteristics and the consumption of tobacco in a waterpipe.

Variables	Total=1770
<b>Age</b>	
(Years) (mean±SD)	15.81±1.82
<b>Gender*</b>	
Male	898 (50.7)
Female	872 (49.3)
<b>Course*</b>	
1st ESO (Secondary)	226 (12.8)
2nd ESO (Secondary)	196 (11.1)
3rd ESO (Secondary)	199 (11.2)
4th ESO (Secondary)	274 (15.5)
1st Bachillerato (Further)	567 (32)
2nd Bachillerato (Further)	308 (17.4)
<b>Experimental consumption in a waterpipe*</b>	
Has once tried tobacco in a waterpipe	868 (49)
Has never tried tobacco in a waterpipe	902 (51)
<b>Current consumption of tobacco in waterpipe*</b>	
Smoker	597 (33.7)
Non-smoker	1173 (66.3)
<b>Age when started consumption</b>	
(Years) (Mean±SD)	14.92±1.67

\*these data are n (%).

Table 2 shows the results relating to the beliefs of the population around the consumption of tobacco in a waterpipe, it being observed that all these erroneous beliefs were more common among the smokers of tobacco in waterpipe than among the non-smokers ( $p < 0.05$ ).

**Table 2:** Beliefs related to the consumption of tobacco in a waterpipe

Variables	Total N=1377	Smoker N=597	Non- smoker N=1173	p*
<b>Beliefs</b>				
Smoking in a waterpipe alleviates stress and tension.	717 (52.1)	318 (59.9)	399 (47.2)	<0.001
The water in a waterpipe acts as a filter for the smoke, which contains less noxious substances	788 (57.2)	346 (65.3)	442 (52.2)	<0.001
Smoking in a waterpipe does not irritate the bronchi since it contains natural flavours and essences	373 (27.1)	159 (29.9)	214 (25.3)	0.05
It is easier to quit smoking a waterpipe than cigarettes	1008 (73.2)	449 (84.6)	559 (66.1)	<0.001
Smoking in a waterpipe causes less addiction than cigarettes	982 (71.3)	426 (80.2)	556 (65.7)	<0.001
A waterpipe is less harmful than smoking cigarettes	974 (70.7)	424 (79.8)	550 (65)	<0.001

People who smoke in a waterpipe are “cool”	141 (10.2)	75 (14.1)	66 (7.8)	<0.001
The fruit flavour in a waterpipe detoxifies the smoke	297 (21.6)	146 (27.5)	151 (17.8)	<0.001

The data are n (%). \* p<0.05

Tables 3 and 4 present the perceptions and attitudes of the students relating to the consumption of tobacco in a waterpipe, and its regulatory policies. It is worth highlighting the fact that 78.9% of the students were in agreement that smoking in a waterpipe is more socially acceptable than consumption of cigarettes, and that 63.7% agreed about the acceptance of the former on the part of their friends, with 40.4% perceiving it as a good opportunity to get together with friends and family. All these perceptions were more common among the smokers (p<0.05), except that the waterpipe smokers had more friends than the non-smokers, which meant that no statistically significant difference was observed between the smokers and the non-smokers.

In terms of attitudes towards regulatory policies for the consumption of tobacco, it was observed that those with a more positive attitude were more frequent among non-smokers (p<0.05), except for the attitude towards high schools as smoke-free zones, in which no statistically significant differences were observed.

However, among smokers a favourable attitude towards the sale of tobacco for waterpipes to minors was more common (p<0.05).

**Table 3:** Perceptions of and attitudes towards consumption of tobacco in a waterpipe.

Variables	Total N=1399	Smoker N=597	Non-smoker N=1173	p*
<b>Perceptions of and attitudes towards consumption of tobacco in a waterpipe</b>				
Smoking in a waterpipe is more accepted by society than smoking cigarettes	1104 (78.9)	448 (84.8)	656 (75.3)	<0.001
Smoking in a waterpipe is a good opportunity to get together with family and friends	565 (40.4)	336 (63.6)	229 (26.3)	<0.001
My parents would allow me to smoke a waterpipe at home, but not cigarettes	389 (27.8)	245 (46.4)	144 (16.5)	<0.001
Smoking a waterpipe is a sign of maturity	72 (5.1)	40 (7.6)	32 (3.7)	<0.001
Waterpipe smokers have more friends than those who don't smoke	151 (10.8)	65 (12.3)	86 (9.9)	0.154
Smoking a waterpipe is very well accepted by my friends	891 (63.7)	425 (80.5)	466 (53.5)	<0.001
I would recommend a waterpipe to other people.	489 (35.5)	369 (70.8)	120 (14)	<0.001

The data are n (%). \* p<0.05

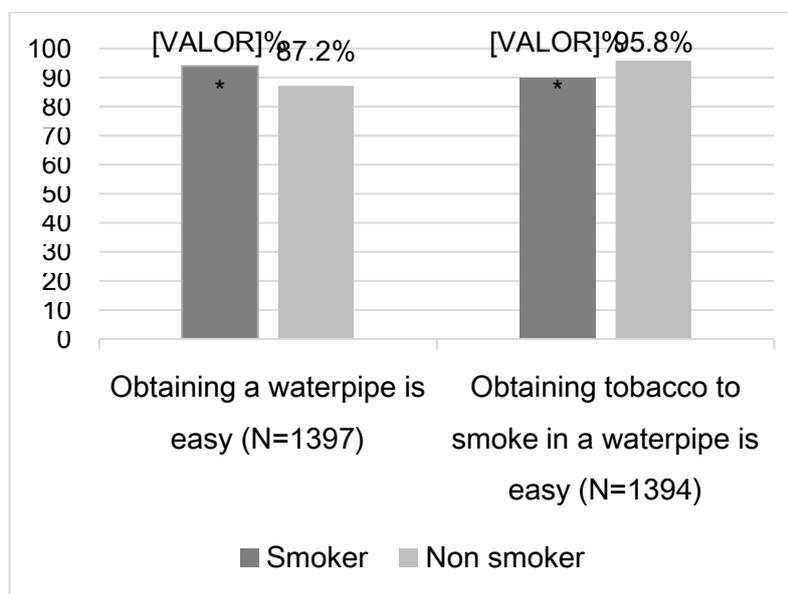
**Table 4:** Attitudes towards regulatory policies for the consumption of tobacco

Variables	Total N=1391	Smoker N=597	Non-smoker N=1173	p*
<b>Attitudes towards regulatory policies for the consumption of tobacco</b>				
Health should be protected by anti-tobacco laws	1188 (85.4)	423 (80.1)	765 (88.6)	<0.001
High schools should be tobacco-free spaces	896 (64.4)	328 (62.1)	568 (65.8)	0.162
Restaurants and other public spaces should be tobacco-free	910 (65.4)	316 (59.8)	594 (68.8)	0.001
Prices of tobacco products and tobacco should be increased	744 (53.5)	212 (40.2)	532 (61.6)	<0.001
Waterpipes should only be permitted in open spaces	832 (59.8)	265 (50.2)	567 (65.7)	<0.001
The sale of tobacco for waterpipes should be permitted to minors	359 (25.8)	218 (41.4)	141 (16.3)	<0.001

The data are n (%). \* p<0.05

Figure 1 shows the perceptions of the students regarding the accessibility of waterpipes and of the products which are consumed using them, there being observed a statistically significant association between the condition of being a smoker and the perception regarding the ease of acquiring both.

**Figure 1:** Perceptions regarding the accessibility of waterpipe and tobacco for use with it.



## DISCUSSION

To date, studies carried out in Spain which analyse in the general population and among adolescents in particular, the consumption of tobacco in waterpipes and factors associated with this are practically non-existent. The data from our study reflect the

fact that almost half (49%) of students in secondary and further education in the province of Las Palmas have smoked tobacco in a waterpipe once, and that approximately a third of them (33.7%) are currently continuing to do so. These data show a prevalence of this form of consumption of tobacco much greater than that found in other studies carried out in similar populations <sup>(12,13)</sup>.

The belief that the consumption of tobacco in a waterpipe is much safer than that consumed in cigarettes has been reported widely in numerous studies <sup>(1,15)</sup>, even though carried out in young university students. In our work more than half the adolescents were shown to have a low perception of the health risk of consumption of tobacco in a waterpipe, manifested through beliefs such as “the water in the pipe acts as a smoke filter, containing fewer noxious substances”, “the fruit flavour detoxifies the smoke”, “smoking with a waterpipe does not irritate the bronchioles, since it contains natural flavours and essences”, or “a waterpipe is less harmful than smoking cigarettes”. All these beliefs, furthermore, have been observed in higher proportions among students who are smokers, a finding also present in other studies consulted <sup>(15-17)</sup>. For some authors <sup>(17,18)</sup>, the origins of these beliefs could be in the association which the smokers make with fruit, due to the aromatics and flavourings which are used in the manufacture of the products used in waterpipes, thereby considering it to be a healthier option for the consumption of tobacco. More than half of our adolescents even perceived beneficial effects such as “alleviation of stress and tension”, this perception being observed more frequently among the smokers. These relaxing properties attributed to the waterpipe have also been seen in other research studies <sup>(14,19)</sup>.

Not only the organoleptic aspects of the smoke, but also its greater smoothness, and the sensation that it is not inhaled in the same way as with cigarettes, could contribute to generating the belief that this smoke is less irritating to the bronchi, as reported by various authors <sup>(20)</sup>.

In our study, it was observed that the low perception of risk to health of this form of consumption is accompanied by the beliefs that it is less addictive than cigarette smoking, and that it is easier to quit smoking a waterpipe, a significant association being found in those who smoke, which coincides with what is published in the literature <sup>(14,15,21,22)</sup>.

All this appears to indicate, on the one hand, that these beliefs spread naturally among waterpipe users, and on the other, that the sensations experienced during this use contribute to its development, generating a favourable attitude towards the use of waterpipes, which is reflected in the high proportion of adolescent smokers who would recommend a waterpipe to other people, data similar to those described in other studies <sup>(10,23)</sup>.

For many authors <sup>(24,25)</sup> the social acceptance of the consumption of tobacco in a waterpipe has been one of the factors which has contributed to its rapid increase among young people and adolescents. Most of the students in our study had the view that smoking tobacco in a waterpipe enjoys more approval in society than smoking cigarettes, the former mode of consumption also being more accepted by friends, views which coincided with those described in other works <sup>(13,19,21)</sup>. Both of these views are also more common among smokers.

To this social acceptance is added the family tolerance which our adolescents perceived by expressing agreement that their parents would allow them to smoke a waterpipe, but not cigarettes, at home, this attitude being more common among the smokers. This tolerance on the part of families is patent in studies which show that a considerable proportion of parents support this behaviour, even encouraging it in family reunions while prohibiting the consumption of cigarettes<sup>(24,26)</sup>. As has been observed in other studies<sup>(21)</sup> this remarkable level of acceptance seen in families and friends may help explain the fact that nearly half of our adolescents considered that smoking a waterpipe constituted a good opportunity to get together with them, an aspect which was perceived to a greater extent among smokers.

Various authors<sup>(21,27)</sup> have shown that many young people associate this form of consumption with having greater popularity and prestige among their peers, also considering it to be a sign of maturity. However, the results of our study show us that there is only a small proportion of adolescents who identify waterpipe smokers as being people who are more popular or more mature, this perception being, nevertheless, more common amongst the smokers.

In terms of attitudes towards regulatory policies for the consumption of tobacco in a waterpipe, what is notable in all cases is the high proportion of adolescents who show positive attitudes towards policies which focus on health and are restrictive of its consumption. A significant association has been observed between being a non-smoker and favourable attitudes towards laws which protect the health of the non-consumer, towards the regulation of the spaces where the use of waterpipes is permitted and towards an increase in the price of these products. These results are in concordance with those of other similar studies<sup>(23,28,29,30)</sup>.

Finally, it must be highlighted that a quarter of our adolescents expressed agreement with the selling of tobacco for waterpipes to minors, this attitude being more frequent among the smokers, in agreement with the studies consulted (29). This positioning on the part of smoking students does not seem at all strange insofar as the majority of adolescents, and significantly the smokers, perceive that it is easy to acquire a waterpipe and the tobacco products to use with it. This shows how easily accessible these items are in our current environment, in spite of many of these students being minors.

Regarding the limitations of this work, it should be pointed out that when assessing its results, in addition to those limitations inherent in cross-sectional studies the fact that the data obtained come solely from the province of Las Palmas should also be taken into account. Nevertheless, the lack of studies on this matter means that this work constitutes a first approach to understanding of the beliefs and attitudes of adolescents in our country towards the consumption of tobacco in waterpipes.

## CONCLUSIONS

We are able to affirm that the data obtained in our study show us that almost half the students in secondary and further education in the province of Las Palmas have experienced the consumption of tobacco in a waterpipe, with a third of them smoking currently. The majority of the students consider the consumption of tobacco in a waterpipe to be less dangerous and less addictive than conventional smoking of cigarettes, even attributing to it beneficial effects. These beliefs have become widespread among smokers, contributing to an increase in its popularity among

adolescents, and manifested in the social acceptance and family tolerance which is perceived by the students in our study. All this suggests the need to develop educative interventions which can contribute to the banishment these erroneous beliefs, together with policies for the control of this form of consumption of tobacco should be put in place, since their absence may be contributing to the accessibility of these products among minors.

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