MEDDOCS Open Access Publisher

ISSN: 2637-4528

Journal of Addiction and Recovery

Open Access | Research Article

Determinants factors of smoking in pregnant women of Tucuman

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Received: Apr 23, 2019

Accepted: Jun 21, 2019

Published Online: June 26, 2019

Journal: Journal of Addiction and Recovery

Publisher: MedDocs Publishers LLC

Online edition: http://meddocsonline.org/

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Keywords: Smoking; Pregnant woman; Chronic diseases

Abstract

Introduction: Smoking is one of the main preventable public health problems in the world. In Tucumán there is no information about smoking in specific groups such as pregnant women. The objective is to estimate the prevalence of smoking in pregnant women, its determining factors and the rate of abandonment in Tucumán.

Methods: A cross-sectional descriptive study was conducted using a primary data source. A total of 593 women from the main maternity wards were surveyed within 24-48 hours after childbirth. The "lme4" library of the R software was used. Bivariate analysis was performed using the Chi-square or Fisher test as appropriate. Logistic regression was used to determine the variables that presented association.

Results: The lifetime prevalence of smoking was 41.5%. 25.3% smoked when they found out they were pregnant, 86.2% of them quit smoking at some point in their pregnancy. Level of education of the pregnant woman and of the couple, norms in the home and not having knowledge of the harm it produces were some of the variables that showed association with being smokers.

Conclusions: This study reports a prevalence of smoking in pregnant women, its associated factors and the rate of abandonment at different stages of pregnancy.

Introduction

Smoking is one of the main preventable public health problems in the world [1]. It is the only product of legal consumption that causes the death of between one third and half of its consumers [2]. In Tucumán there is information on the impact of smoking on mortality but not on the prevalence of this risk factor in certain population groups such as pregnant women [3].

As of 2005, Argentina has data on the prevalence of tobacco consumption based on the National Survey of Irrigation Factors (ENFR 2005, 2009 and 2013) [4-6]. Based on this information, there is a decrease in the prevalence of tobacco consumption in most provinces and there are reports on the impact of the implementation of anti-tobacco legislation and its protective effect at the national and jurisdictional level [7]. One point to keep in mind is that the ENFR is aimed at people over 18 in general, so we can know how much the prevalence of smoking in Tucumán decreased, but does not allow knowing what happens with other specific population groups. An important group are pregnant women because of the vulnerability of their

Cite this article: Gabriel BG, Bastos LS. Determinants factors of smoking in pregnant women of Tucumán. J Addict Recovery. 2019; 2(1): 1013

physiological state. Indeed, pregnancy is a moment of special motivation for women to stop smoking. In fact, around 20% of pregnant women quit smoking spontaneously before contacting the health services and among the women who continue to smoke, most reduce the consumption of cigarettes. However, most women who have quit smoking relapse before a year has passed since childbirth. This could be suggesting that they are not sufficiently informed of the effect of tobacco on themselves and, above all, of the environmental smoke in the child [8].

In Tucumán, anti-smoking legislation has been in place since 2007. The law aims to restrict consumption in enclosed spaces to avoid the damages associated with exposure to second-hand smoke and encourage smokers to stop or reduce tobacco consumption [9].

The effects of smoking in pregnant women are diverse, among them we can mention several negative effects such as intrauterine growth retardation, low birth weight, premature birth, birth of stillbirths, neonatal death, reduction of infant lungs, neurodevelopmental problems in children and Sudden infant death syndrome [10-12]. The effects of exposure to environmental tobacco smoke in pregnant women's environments are also known [13]. This study aims to evaluate not only smoking, but also the effect produced by environmental variables such as economic level, having a partner smoker, educational level, consumption before pregnancy, not believing that tobacco affects the health of the mother or child and what kind of attitude they have within the home of the pregnant woman with respect to smoking [14-17].

The objective of the present study was to estimate the prevalence, the dropout rate and the determinants of smoking in pregnant women of Tucumán in 2015.

Materials and methods

A descriptive cross-sectional study was carried out using a primary data source. Tucumán, is located in the Northwest Argentine region. The province has 17 Departments with a total population of 1,511,516 inhabitants, and an average of 30,000 live births in recent years; approximately on average, 50% are served in the public sub-sector of health, and more than 90% of them are carried out in three maternity wards that were selected for this work. The target population were pregnant women who attended the selected institutions to perform the delivery manoeuvre. This is a convenience sampling, including women who decided to participate voluntarily in the study and signed an informed consent and / or an informed consent in the case of minors. Those women who refused to take the survey did not participate.

Although the sampling was for convenience, a minimum was calculated so that the study has representativeness regarding the prevalence of smoking in pregnant women of Tucumán who attend the public subsector. The calculation of the sample was made assuming that 50% of the pregnant women were smokers at the beginning of pregnancy. A precision of 5% was established with a Confidence Index (CI) of 95% and assuming a 10% loss. This results in a sample of 300 pregnant women. A 50% prevalence of smoking in pregnant women was estimated because there was no reference value of prevalence and this value maximizes the number of surveys to be performed. During the development of the project, 593 pregnant women belonging to three institutions were surveyed.

The questionnaires were applied during the 24-48 hours following delivery while in hospital and a retrospective investigation was made of what happened during pregnancy. Secondary data sources were consulted, such as the Clinical History of the pregnant woman and the Clinical Record of the New-born. Secondary sources were consulted on specific data such as their initial weight, number of prenatal controls, gestational age, weight and height of the new-born, and other variables.

Analysis of data

For the analysis of the data, the "glmer" function of the "lme4" library of the software R 20, 21 was used. Proportions were calculated with their respective CIs (95%) to see the distribution of the response variable in the different groups studied. A bivariate analysis was performed between the dependent variable and selected variables. For this, the Chi square test or Fisher's test was used, as appropriate. Logistic regression was used to determine which variables are associated and were taken into account when formulating the logistic model. To verify the association in the exploratory phase of the variables of interest, a level of significance less than 20% was used as the cut-off point ($p < 0.20$). Finally, because of the variables of binomial distribution, a logistic regression model was constructed. In the tests for the construction of the model a level of significance of 5% was used. All the variables of the model presented at least one significant category.

Definition of variables

Independent variables

Among the independent variables selected to verify association, Age, Level of Instruction (degree of instruction approved by the woman surveyed whose categories were: Without instruction, Complete primary, Secondary and more), Type of union (differentiated into two categories, Stable Union: women married or in concuvial and Non-Stable: women whose marital status was single, divorced or widowed), Level of Instruction of the Couple (degree of instruction approved by the couple or husband of the woman). Without instruction, Complete Primary , Secondary and more), Rules relating to smoking in the home (the rules regarding smoking in the home were consulted, Not Allowed, Not allowed but there are exceptions, There are no Rules, Allowed), Knowledge of the damage produced by the smoking (the reference category was If you have knowledge, followed by Do not Know and finally No); Law of Spaces 100% Smoke Free (three categories In Favor, Do not Know and Against) and the increase in the Price through the increase of cigarette taxes (also three categories For, Do not Know and Against).

To describe the socio-economic conditions of women, the socioeconomic status of pregnant women was assessed through the Multidimensional Poverty Index (MPI), which identifies multiple individual deprivations in terms of education, health and standard of living (dimensions) [22]. Each pregnant woman He was assigned a score according to the deprivations his home experiences in each of the 10 indicators of the component. The maximum score is 100% and each dimension receives the same 1/3 weight (therefore, the maximum score in each dimension is 33.3%). In order to identify the multidimensional poor, the deprivation scores of each household are added to obtain the total deprivation of the household with the Multidimensional Poverty Index, taking into account the following categories:

Vulnerable: percentage of deficiencies between 20 - 32.9%

Poor: Percentage of deficiencies greater than or equal to 33%.

Extreme poverty: percentage of deficiencies greater than 50%.

Dependent variables

Among the dependent variables studied we have:

Smoking: The woman who answered that during her life she had smoked more than 100 cigarettes was considered tobacco or in the thirty days before she found out that she was pregnant she had smoked cigarettes.

Abandonment: The tobacco woman was asked if she found out that she was pregnant, quit smoking or continued smoking.

Among the ethical considerations, the present study was carried out with the approval of the Ethics Committee in Health Research under the Ministry of Public Health of Tucumán, Argentina.

Results

The median age of the women surveyed is 23 years [RI: 20 - 29 years] with a minimum of 13 and a maximum of 47 years. 48.6% of deliveries were by caesarean section and only 8.0% had less than three prenatal controls. The socioeconomic level of the surveyed women was determined using the Multidimensional Poverty Index (MPI). Figure 1 shows the distribution of smokers and non-smokers in each of the MPI levels.

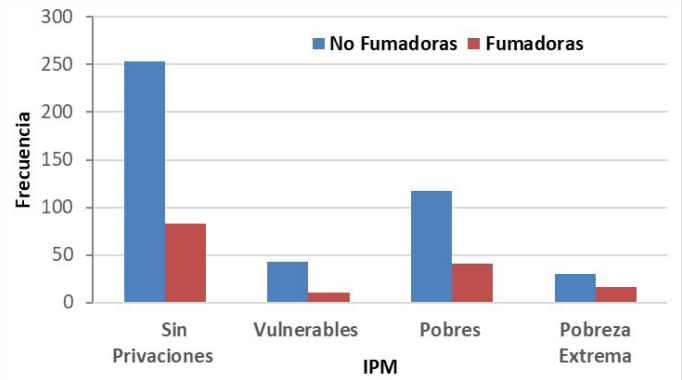

Figure 1: Distribution of women surveyed according to the Multidimensional Poverty Index (MPI). Tucumán, 2015

The majority of the women belonged to the group of women without privations. On the other hand, an increase in the percentage of women smokers is observed as the WPI increases, although this increase was not significant.

The prevalence of smoking life among the women surveyed was 41.5% and the median age of onset was 15 years [IR: 14-17 years]. 25.3% of women smoked when they found out they were pregnant. The median consumption of these women was 4 cigarettes per day [IR: 2 - 10] (min: 1, Max: 30). In those women who continued smoking during pregnancy, the median consumption decreased to 3 cigarettes per day [IR: 2-5] (min: 1, Max: 20).

86.2% of women who smoked at the time they found out they were pregnant, stopped smoking at some point during pregnancy. 32.2% did so when they found out they were pregnant, 42.1% in the first quarter, 9.2% during the second, 2.6% in the third quarter and 13.9% never quit smoking. During pregnancy, the median consumption of pregnant women who never quit was 5 cigarettes per day [IR: 3 - 5] (min: 1, Max: 20).

Table 1 shows the percentage of smoking women according to the variables studied. It shows an increase in the percentage of women smokers as both their level of education and that of the couple decreases. Also, an increase in the proportion of women smokers is seen as the norms regarding smoking within the home are weaker or do not exist where the woman lives.

Table 1: Proportion of female smokers in selected variables

Variables	Categories	Proportion	
		Non Smokers	Smokers
Level of Instruction	Secondary or more	81,00	18,91
	Primary	70,30	29,69
	No Instruction	68,29	31,71
Type of Union	Not stable	67,11	32,89
	Stable	77,30	22,70
Level of Instruction Couple	Secondary or more	81,37	18,63
	Elementary	74,71	25,29
	No Instruction	65,85	34,15
Home Rules	Not allowed	81,36	18,64
	Not allowed but there are exceptions	72,38	27,62
	No rules	64,58	35,42
	Permitido	49,23	50,77
Knowledge of Damage	Allowed	76,89	23,11
	Do not know	76,74	23,26
	No	63,04	36,96
Alcohol Consumption	No	77,02	22,98
	Yes	43,90	56,10
100% Smoke Free	No	22,26	77,74
	Yes	37,84	62,16
	Do not know	57,14	42,86
Increase Taxes on Cigarettes	No	79,73	20,27
	Yes	53,85	46,15
	Do not know	66,67	33,33

Table 2 presents the values of the estimators together with their confidence intervals of those variables that were significant at the individual level.

Logistic model

For the construction of the model, those variables that were individually significant were taken into account. Those who did it were taken in at least one category.

Table 2: Unadjusted OR for the proportion of pregnant smokers according to socio-demographic variables. Tucumán 2015

Variables	Categorías	OR Not Adjusted	IC 95%	
Level of instruction	Secondary or more	...	...	...
	Primary	1,8	1,2	2,7
	No Instruction	2,0	0,9	4,1
Residence Area	Rural	...	...	...
	Urban	1,7	1,1	2,8
Type of Union	Not stable			
	Stable	0,6	0,4	0,9
Level of Instruction Couple	Secondary or more			
	Primary	1,5	0,9	2,4
	No Instruction	2,3	1,0	4,8
Home Rules	Not allowed			
	Not allowed but there are exceptions	1,7	1,0	2,7
	No rules	2,4	1,2	4,5
	Allowed	4,5	2,6	7,9
Knowledge of Damage	Yes			
	Do not know	1,0	0,5	2,0
	No	2,0	1,2	3,1
Alcohol Consumption	No			
	Yes	4,3	2,2	8,3
100% Smoke Free	Yes			
	No	5,7	2,9	11,8
	Do not know	2,6	0,8	7,7
Increase Taxes on Cigarettes	Yes			
	No	3,4	2,1	5,4
	Do not know	2,0	1,0	3,8

Table 3: Adjusted OR for the proportion of women smokers according to socio-demographic variables. Tucumán 2015.

Variables	Categorías	OR Ajustados	IC 95%	
Level of instruction	Secondary or more	...	...	...
	Primary	1,7	1,0	3,0
	No Instruction	0,9	0,3	2,6
Residence Area	Rural	...	...	...
	Urban	1,4	0,6	3,3
Type of Union	Not stable	...	...	...
	Stable	0,7	0,3	1,7
Level of Instruction Couple	Secondary or more	...	...	...
	Primary	1,2	0,7	2,1
	No Instruction	1,2	0,5	3,0
Home Rules	Not allowed	...	...	...
	Not allowed but there are exceptions	1,8	1,0	3,5
	No rules	2,1	0,9	4,6
	Allowed	4,0	2,0	8,4
Knowledge of Damage	Yes	...	...	...
	Do not know	0,8	0,3	2,2
	No	2,1	1,1	3,9
Alcohol Consumption	No	...	...	...
	Yes	3,5	1,5	8,3
100% Smoke Free	Yes	...	...	...
	No	3,2	1,2	8,2
	Do not know	3,4	0,6	20,2
Increase Taxes on Cigarettes	Yes	...	...	...
	No	1,8	0,9	3,7
	Do not know	1,3	0,5	3,5

Discussion

Few works have described with statistical data the reality of smoking in the pregnant women of Argentina. This study determines the prevalence and smoking cessation rate in Tucumán. It also shows that there is a high prevalence of smoking in women at the time of becoming pregnant. Among the factors that increased the chances of smoking during pregnancy are: lower level of education, living in urban areas, not having a partner, less instruction from the couple, not having rules regarding the prohibition of smoking inside the home, not knowing the damage caused by smoking, not agreeing with the regulations of 100% smoke-free spaces or with a measure that increases tobacco taxes. In coincidences with other publications, it was observed that the percentage of pregnant smokers increases in women with the most unfavorable socioeconomic conditions [23].

The prevalence of women smokers of childbearing age in Argentina has been decreasing in recent years. According to the National Survey of Risk Factors the Prevalence of Smoking in women for Tucumán was 20.9%. This study found a prevalence of pregnant women of 25%, a percentage higher than the value of the general prevalence in all age groups reported by the national survey [24]. This would demonstrate the need for this type of studies that report prevalence values of risk factors in specific population niches that are not addressed by more general surveillance studies.

Comparing this work with another study conducted in 15 cities in Argentina, it is observed that the percentage of women who reported having smoked at any time in their life in Tucumán is lower than the one reported for Argentina [25]. On the other hand, the median age of onset is similar to the average reported for Argentina. However, the prevalence of smokers in Tucumán is several points higher than in Argentina and the cessation rate is below the National [26].

The percentage of women smokers in this study is lower than that found in Spain, where 37.3% of Spanish women smoked before becoming pregnant. On the other hand, this study reports a dropout rate of 41.4%, which is considerably lower than that found in Tucumán (86%). In the study mentioned above, the majority did so at the beginning of pregnancy (76.5%), a percentage higher than that reported by the present study (42%). However, the proportion of women who smoked during pregnancy is lower in Tucumán (13.8%) compared to the 18.2% reported in Spain [27].

In another study conducted in Spain report that the prevalence of pregnant women smokers is 30%, higher than that found in this study and also indicate that 40% of pregnant women quit smoking before pregnancy, which would mean an abandonment rate several points lower than in Tucumán [28].

Among the limitations of the study, it could be mentioned that the rate of concealment was not determined when it came to declaring their situation with respect to smoking by pregnant women. Some studies report a rate of 15% [29]. If we extrapolate it to the present study, it would give us a prevalence several points above the 25% found which tells us of the importance and the need to apply policies that produce an impact on this population group specific.

Relevance for public health

The present work shows that the estimation of prevalence obtained is high and the problem of smoking in Argentina and in the population of pregnant women.

Knowing the prevalence of smoking in pregnant women is key when evaluating the impact of policies designed to minimize their effects.

The data obtained indicate that pregnancy, due to the high percentage of spontaneous abandonment, is an unavoidable opportunity to overcome addiction and motivate pregnant women to quit smoking [30].

On the other hand, it should be ensured that professionals provide information on smoking routinely when pregnant women consult the health system in their controls and continue to develop policies that improve access to information on programs and actions at the provincial level.

Acknowledgement

We appreciate the support and all the selfless contributions that allowed us to carry out this project: Leonardo Bastos, PhD; Dr. Melibea Gorrini; Dr. Silvia Frias; Dr. Silvia Centurión; Dr. Jimena Roco; Téc Sebastián Díaz; Dr. Laura Lara.

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