Scientific Research Publishing

Open Journal of Pediatrics, 2018, 8, 293-302
http://www.scirp.org/journal/ojped
ISSN Online: 2160-8776
ISSN Print: 2160-8741

Smoking Addiction and Risk Factors in Teenagers in Abidjan, Cote d'Ivoire

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How to cite this paper: Marie-Hélène, A.-A., Amed, C., François, E.T., Armel, B.K. and Alexandre, B.K. (2018) Smoking Addiction and Risk Factors in Teenagers in Abidjan, Cote d'Ivoire. *Open Journal of Pediatrics*, **8**, 293-302.
https://doi.org/10.4236/ojped.2018.84030

Received: September 19, 2018
Accepted: November 12, 2018
Published: November 15, 2018

Abstract

A prospective cross-sectional descriptive and analytical study was conducted using an individual questionnaire over a four-month period from October 04th, 2013 to February 06th, 2014 in Abidjan. It included teenagers aged from 13 to 17 who are students among which some are not attending school and living in the street for others. The purpose of this study was to describe the socio-demographic characteristics of the teenagers addicted to smoking and to determine the factors associated with smoking addiction. 446 teenagers were recruited. A prospective cross-sectional descriptive and analytical study was conducted over a four-month period from October 4th, 2013 to February 06, 2014 in Abidjan. There were 76% boys versus 26% girls. The prevalence of smoking addiction was 81.9% for teenagers not attending school and living in the street and 18.1% for teenage students. The average age of smoking initiation was 12.9 years. Sources of motivation for tobacco consumption were imitation (31.25%), curiosity (29.46%) and the desire of self-assertiveness (17.85%). Being of male sex, having non-educated parents, being in a single-parent home and in a family with more than five children were the features related to the status of teenagers not attending school and living in the street. Smoking addiction in teenagers was influenced by one of the parents smoking addiction. To address the problem of teenager addicted to smoking in Côte d'Ivoire, tobacco control interventions should be taken into account regarding to the psychosocial characteristics of teenagers, especially those living in the street.

Keywords

Tobacco, Teenagers, School, Street Children, Côte d'Ivoire

1. Introduction

Smoking addiction is a major public health problem as it is responsible for about five million deaths a year, one-third of which occurs in developing countries [1] [2]. While its harmful effects on health have been known for more than half a century, it is clear that tobacco consumption continues to increase worldwide [3].

According to the World Health Organization (WHO), the annual death toll from 2020 to 2030 will reach ten million, 70% of which would come from developing countries. Studies [4] [5] have shown that 90% of people who die as a result of tobacco consumption started smoking before the age of 18.

However, despite the overall increase in tobacco consumption, it should be noted that the trend in developed countries is decreasing while in developing countries, the tobacco epidemic remains galloping. One out of five teenagers between the ages of 13 and 15 are smokes in developing countries [3].

Cote d'Ivoire does not escape this scourge. Teenagers make up a large segment of the Ivorian population among who is a large proportion of smokers [2] [3]. The socio-political crisis that the country experienced from 2002 to 2010, with the consequent disruption of the socio-economic fabric, contributed to a surge in the phenomenon of "street children" [4] [5]; children among whom they are teenagers, abandoned to their fate and were exposed to all vices including smoking addiction. In addition, many tobacco control interventions are aimed at teenagers, without taking into account their specificity.

In order to contribute to the fight against smoking addiction, it seemed appropriate to carry out this study within this segment of the population with the objectives of describing the socio-demographic profile of teenager addicted to smoking and to identify the factors that favor smoking addiction or factors associated with smoking addiction in these teenagers.

2. Methods

2.1. Type and Scope of Study

It was a prospective cross-sectional descriptive and analytical study that took place over a period of four months from October 04th, 2013 to February 06th, 2014 inclusive, in Abidjan, specifically in the municipality of Abobo. This commune is the most populated of the economic capital of Ivory Coast. It has schools, among which 2 public high schools were selected for this study.

2.2. Criteria for Inclusion and Non-Inclusion

We included in the study teenagers aged from 13 to 17, regardless of sex and actually residing in the area of Abobo. On the one hand, these were teenagers who attend school and who regularly attend the High School "lycée moderne d'Abobo 1 and 2" and teenagers who do not attend school and having the status of street children for more than two months at the date of the survey.

Teenage students fulfilling the above criteria but for whom school absenteeism was reported by educators were not included. The same has been true for teenagers not attending school and living in the streets with mental disorders.

2.3. Sampling and Sample

The schools selected for the study were chosen for some reason. This choice was guided by the fact that these schools have the suitable features for our sample vis-à-vis the population of teenagers attending school in the municipality of Abobo. These characteristics are, first of all, gender diversity, these schools welcome students of both sexes, and secondarily they are the two largest schools in terms of the number of students.

Regarding the minimum size of the study sample, it was calculated based on the prevalence of smoking addiction in the Ivorian population. The latest available estimate of this prevalence validated by WHO is 22.1% in 2002. We then applied the prevalence study formula that is $N = \varepsilon^2 p\, q/d^2$, with N = minimum sample size $\varepsilon = 1.96$ for $\alpha = 5\%$, p = 22.1%, q = 1 − p = 77.9%, d = precision set at 5%, N = 265 people at least to be interviewed for our study.

In order to increase the power of the study, and with the means at our disposal, the sample size was increased over the course of the survey to reach a total of 446 teenagers (N = 446).

2.4. Variables Studied and Terms Definition

The variables studied were: 1) Socio-demographic characteristics of the population of study, 2) teenager smoking practices, 3) environmental factors favoring smoking addiction among teenagers, 4) the presence of other addictions in teenagers.

As for the terms definitions, were considered:

- Street children: teenagers not attending school who live and dwell in the street.
- Smokers: teenagers who were smoking cigarettes, drugs etc. during the survey period.
- Former smokers: people who smoked and who stopped smoking permanently before the survey period.
- Non-smoking: people who had never smoked.

2.5. Data Collection and Analysis

The data collection was done with an individual questionnaire. Teenage student were interviewed according to their schedule outside school hours. As for teenagers not attending school living in the street, an intermediary set a time slot during the day to talk to a number of them. We interviewed them as they presented themselves to us. These teenagers were interviewed after obtaining their informed consent.

The collected data were captured and analyzed using the EPI-Data software. The method of descriptive analysis was done by determining averages or pro-

portions. The data are presented in the form of tables and graphs. For descriptive statistical analysis, the CHI 2 test was used to study the statistical significance at an error threshold of 5%. The interpretation of the tests was done according to degree of significance p. The observed difference was statistically significant when p was <0.05, but not when p was >0.05.

3. Results

3.1. Socio-Demographic Characteristics

We enrolled a total of 446 teenagers, including 226 not attending school and living in the street or street children, and 220 teenage students. The socio-demographic characteristics are specified in Table 1.

Table 1. Socio-demographic characteristics of teenagers.

Parameters	Frequency (N = 446)	Percentage (%)
Age		
[13 - 14]	103	23.04
[15 - 16]	167	**37.47**
17	176	**39.46**
Sex		
Female	107	24
Male	339	76
Religion		
Christian	197	44.17
Muslim	200	44.84
Other	49	10.38
Marital status		
In couple	188	42.15
Married	154	34.52
Single or widow	104	23.31
Education level of the father		
Educated	213	47.75
Not educated	233	52.23
Education level of the mother		
Educated	122	27.35
Not educated	324	72.64
Sibling		
≤4	171	38.34
>4	275	61.65

Teenagers were 76% male. It was teenagers aged between 15 and 17 in 76.93% of cases. In 88% of cases, they practiced religion. They came from a large single-parent family (62.45%). The proportion of uneducated mothers was 72.64% and that of uneducated fathers was 52.23% (Table 2).

Some factors were related to the status of teenager not attending school and living in the street. It was the male sex, the non-education of the parents, the fact of being in a single-parent family with siblings more than 5 children.

3.2. Social Status and Addiction

Tobacco and drug consumption was higher among adolescents not attending school and living in the street. In the analysis of Table 3, the differences observed were statistically significant ($p < 0.001$).

3.3. Smoking Characteristics

Regarding smoking addiction status, as shown in Table 4, we found 21% smokers, non-smokers accounted for 74% of the total number and 5% were former smokers.

Teenagers who smoked were 21% and those who used drugs 11%. These children had either a relative smoker (27.80%) or a friend smoker (23.31%) around them. The average age of smoking initiation was 12.9 years. Smokers cited as a source of motivation for smoking by order of frequency, imitation (31.25%), curiosity (29.46%) and desire of self-assertiveness (17.85%). Teenagers had around them a parent (27.80%) or a friend (23.31%) who smoked.

3.4. Smoking Situation and Smoking in the Neighborhood

When reading Table 5, old or current addiction to tobacco of teenagers was influenced by one parent's smoking addiction. Most of non-smokers had neither parents nor friends smokers. The differences observed were statistically significant ($p < 0.001$).

Table 2. Social status classification of teenagers by socio-demographic characteristics.

Parameters	Teenager not attending school and living in the street (N = 226)	Teenage student (N = 220)	p
Male sex	85.9%	65.9%	<0.001
Siblings > 4	37.2%	25%	<0.001
Uneducated father	62.4%	15.5%	<0.001
Uneducated mother	75.2%	32.7%	<0.001
Divorced parents	21.2%	12.3%	<0.001

Table 3. Classification of the social status of adolescents according to addictions.

Parameters	Teenager not attending school and living in the street (N = 226)	Teenage student (N = 220)	p
Tobacco	81.9%	18.1%	<0.001
Alcohol	55.7%	44.3%	=0.064
Drug	89.8%	10.2%	<0.001

Table 4. Smoking characteristics of adolescents.

Parameters	Frequency	Percentage (%)
Smoking addiction situation (N = 446)		
Smoker	94	21
Former smoker	18	5
Non-smoker	334	74
Motivations of smoking (N = 94)		
Imitation	35	31.25
Curiosity	33	29.46
Self-assertiveness	20	17.85
No motivation	15	13.39
Other addictions (N = 446)		
Alcohol	192	43
Drug	49	11
Cohabitation with other smokers		
None	218	48.87
Parent smoker	124	27.80
Friend smoker	104	23.31

Table 5. Smoking status classification of Teenagers by smoking addiction in the circle.

Smoking status	Parent smoker	Friend smoker	Neither Parent nor friend smoker	p
Smoker	40.74%	1.6%	7.7%	<0.001
Non-smoker	22.8%	14.7%	62.6%	<0.001
Former smoker	47.6%	38.1%	12.3%	<0.001

4. Discussion

The overall prevalence of smoking in our study of 21% is comparable to the national prevalence of 22% [3]. The majority of teenagers practiced religion; this is an asset. Worship places would be strategic places to initiate training times and inform the faithful about tobacco. Religious leaders could serve as a relay for

health professionals to convey messages of awareness (prevention or stopping of smoking addiction). Indeed, in Africa especially, these are respected and valued by members of the community. The use of worship places as a place of sensitization of the populations proved its effectiveness in Cote d'Ivoire in the field of vaccination [6].

The prevalence of school smoking was 18.1%. In 2001 and 2003, previous studies in schools in Abidjan found prevalence of 14.1% and 15.9%, respectively [7] [8]. These different works show an increase in the prevalence of smoking. In Burkina Faso, Drabo *et al.* concluded that cigarette smoking was the most common form of smoking among middle and high school [9] students. These different works show an increase in smoking addiction [10]. According to some authors, smoking is a means of socialization for teenagers [11]. Anti-smoking programs should be revised and strengthened to better understand this socialization strategy used by teenagers.

The age of initiation of smoking corroborates data from the literature, in developed countries [10] [11] and even in developing countries [12]. However, taking into account previous Ivorian studies, it is earlier. Indeed, authors in 2003 and 2007 obtained an average age of initiation of 16 years [13] [14]. This situation would be due to the decline in the age of entry to high school which is increasingly in the early puberty period when the teenager presents risky behavior in his quest to assert his personality and to identify himself to a group of friends. In view of the foregoing the strongest actions in the fight against smoking among teenagers would be those relating to the prevention from initiation. These actions should focus on children in pre-adolescence through socio-educational activities [15].

The majority of teenagers were male, had non-educated parents, and were in family with more than five children. A significant proportion came from a single-parent home. These socio-demographic factors listed above influenced the social status of the teenagers interviewed. In fact, the differences observed between the two groups of teenagers were statistically significant. The proportions of boys, non-educated parents, large families and single-parent families were higher in teenagers not attending school and living in the street or street children. Smoking in the girl is a real fact, but culturally little accepted by Africans [9]. These social characteristics in favor of street children are the result of the socio-political instability that the country experienced about 15 years ago.

In our study, current or recent smoking addiction was influenced by one parent's tobacco consumption. He describes in the literature that three factors influence smoking initiation: personal vulnerability, social pressure and access to substance [9]. It is in this way that the tobacco industry is able to transform pre-smokers into apprentices and apprentices into smokers [16]. In Burkina Faso, the inefficiency of the measures applied to regulate the sale of tobacco derivatives and the protection of consumers was criticized [9]. Some authors noted that peer smoking was the best predictor of smoking among youth [15]. Finally,

it is undeniable that in a context of disruption of the social fabric of ours, the management by a single parent of a large family alters the quality of education given to children, disrupts the financial stability of the household and the psychic balance of children, especially adolescents, the ability to make decisions independently is difficult [8] [13].

Apart from smoking, we noted other addictions: drug and alcohol use.

The analysis of the classification according to the social status shows that tobacco and drugs were the privilege of teenagers not attending school and living in the street. This phenomenon is less in teenage students, this, being attributable to the double control they are undergoing; that of parents and that of school educators [15]. As for alcohol consumption, it was similar in both groups. This substance is sold in all forms of representation from the glass bottle to the single dose plastic package, and the prices are affordable for everyone.

The influence of the circle, especially, parents smoking addiction is a factor that should not be overlooked. Parents represent models to imitate. The incentive to smoke is then exerted permanently and repeatedly on the teenager when the parent tends to smoke at home. The children of parents smokers would consider the first cigarettes a little like an initiation rite allowing them to leave the world of childhood to access that of adulthood [17]. Children of parent smokers would consider the first cigarettes a bit like an initiation ritual allowing them to leave the world of childhood to reach that of adulthood [17]. In addition, the negative consequences on the state of health of the circle of passive smoking addiction, which is also a real scourge, should not be overlooked [14] [17]. In Togo, Hatta O *et al.* have demonstrated that prosocial behaviors mediate between psychological difficulties and substance use [16].

The main reasons for the consumption of tobacco in teenagers by order of frequency were imitation, curiosity and the desire of self-assertiveness. These reasons are in line with the adolescence features marked by a transitory psychic derangement where the teenager shows oppositional behaviors towards parents and peer group identification behaviors [17] [18]. In North Africa, the same reasons are raised [10] [19]. In France, however, other reasons were raised: stress, boredom and the improvement of intellectual concentration. Any coming off proposal should take into account these motivations and help to clarify the needs of teenagers [18] [20].

5. Conclusions

Teenagers not attending school and living in the streets or street children were more affected by smoking addiction. However, in schools the prevalence of smoking addiction gradually increases. The age of smoking initiation is early. The reasons for tobacco addiction are imitation, curiosity and desire of self-assertiveness.

To overcome the problem of smoking addiction in teenagers, it would be necessary firstly to strengthen school and university health services (SSSU) as part

of support in school and secondly to provide health care services adapted to teenagers. It would also be necessary to strengthen tobacco control strategies taking into account the psychosocial characteristics of teenagers. To this end, coordinated multi-sectoral actions involving the family unit, social and health workers, educators, sociologists and psychologists should be considered by the National Program for the Fight against Tobacco in Côte d'Ivoire.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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