ISSN : 0974 - 7435 Volume 12 Issue 4

BioTechnology
An Indian Journal

FULL PAPER

BTAIJ, 12(4), 2016 [182-186]

Epidemiological profil on adverse effects of cannabis: a retrospective study

Belamalem Souad[1]*, Khadmaoui Abderrazak[1], Soulaymani Abdelmajid[1], Mokhtari abdelrhani[1], Benkirane Rajae[2], Soulaymani Bencheick Rachida[2]

[1]Laboratory of Genetics and Biometry, University Ibn Tofail, Kenitra 14000, (MOROCCO)

[2]Moroccan Anti Poison and Pharmacovigilance Center, Rabat 10000, (MOROCCO)

E-mail: Souad-12345@hotmail.fr

ABSTRACT

Cannabis is the illicit drug most used in the world. This study aimed to assess the adverse effects related to the use of cannabis notified at the Moroccan Anti Poison and Pharmacovigilance Center, between 2008 and 2013. This is a retrospective study over a period of 6 years, ranging from 2008 to 2013 cases of adverse reactions by Cannabis reported to the Moroccan Anti Poison and Pharmacovigilance Center.

During the study period, 58 cases have been collected in Moroccan Anti Poison and Pharmacovigilance Center, with a mean of 10 ± 5.18 cases per year. The sex ratio was (M / F) of 3.5 ($p < 0.001$). The mean age was 21.19 ± 1.09 years. The age group most affected age group was that of adults ($p < 0.001$), with 74.1% of cases, followed by adolescents (24.1%) and children with 1.8% of cases.

The most affected systems were: Psychiatric disorders, Central and periphique nervous system disorders in 25,7 % of cases for each of them, Gastro-intestinal system disorders (18,8%). The causal relation imputability method according to the WHO, was possible in 61% of couples, certain in 32%, probable within 6% and 1% was unknown.

KEYWORDS

Cannabis;
Adverse effect
Epidemiology.

INTRODUCTION

Cannabis is an annual herb of the family Cannabacée with one to two meters high, rough-pubescent strong odor, stem erect, stiff and simple with opposite leaves, stalked, palmatiséquées having five seven segment[1].

It can have three non-common: hemp grown hemp or cannabis cultivated[2] and comprising a large number of different compound; more than 420 have been characterized.

Cannabinoids represent more than 60 compounds are the most important class containing the active principle responsible for the psychotropic effects of the plant, Delta 9 tetrahydrocannabinol either (delta 9 THC or THC)[3], that is the principal substance responsible for the pharmacological effects of cannabis in humans.

Marijuana usually has a THC content of between 1% to 15%, against 3% and 6% for hashish. There is also oils of hashish and marijuana. They have a higher concentration of active ingredients, including tetrahydrocannabinol, and their concentration generally varies between 30% and 50%[4]. All parts of the plant comprises the cannabinoids with varying quantity[5].

Cannabis is one of the most consumed drug in the world after alcohol[6], it is often involved in road accidents and criminal assaults.

Soderstrom et al[7] reported in 1988 that 34.7% of patients admitted to trauma center after road accidents, nonmotorized had cannabinoid in the blood.

In another study conducted in 1992[8], it was revealed that 13% of drivers of truck killed in traffic accidents in the United States was the result of THC in blood or urine following an autopsy. Other similar studies have shown a link between accidents and the use of cannabis, but have not established a causal relationship with cannabis[9-10-11].

The present work aims to describe the epidemiological aspects and adverse effects related to Cannabis notified to the Moroccan Anti Poison and Pharmacovigilance Center (MAPC).

PATIENTS AND METHODS

This is a retrospective descriptive study of the adverse effects associated with the consumption or use of the plant Cannabis, reported to the MAPC, on a six year period between from 2008 and 2013.

The statistical methodology adopted was based on the calculation of frequencies or averages of each variable of which allowed us to describe the case of adverse effects.

The variables studied concerning the epidemiological characteristics of patients (age, sex), clinical (symptoms, seriousness, evolution).

The chi-square test with 5% is used to detect the existence of significant differences between the different parameters studied. The correspondence factorial analysis was also used to assess the existence of correlations existed between certain variables.

RESULTS

During the study period, the MAPC had collected 58 cases of adverse reactions due to the use of cannabis. The average age of patients was 21.19 ± 1.09 years. The sex ratio was (M / F) 3.5 ($\chi 2$ = 17.6, p <0.001) (Figure 1).

Adults are the most affected in 74.1% of cases, followed by adolescents (24.1%) then children with 1.8% of cases (figure 2).

The distribution of cases related to adverse effects identified by the MAPC by system organ class is represented in the TABLE 1.

From the results of TABLE 1, the most affected organ system classes are: Psychiatric disorders (25.7%), central and nervous system disorders (25,7%), Gastro-intestinal system disorders (18.8%). These effects were severe in 14% of cases, and hospitalization has been made in 12% of cases. The most adverse effects were dominated by agitation (13%), tachycardia (10%) and vomiting (9%) (TABLE 2).

The relation of cause and effect between cannabis use and the onset of adverse reactions has been well established using the WHO imputability Method, possible in 61% of couples, certain in 32%, probable in 6%, while causality is unknown in 1%.

We have represented in Figure 3, a factorial design from a factorial correspondence analysis exposing the "sex" variable, "age" and "the type of severity".

This results confirm that serious cases are usually represented by the adult male, according to the factor 1 of side (X +). On the opposite side, we remark that female adolescents are correlated with

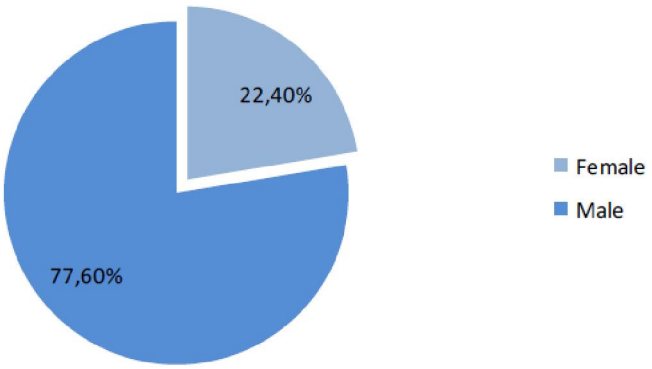
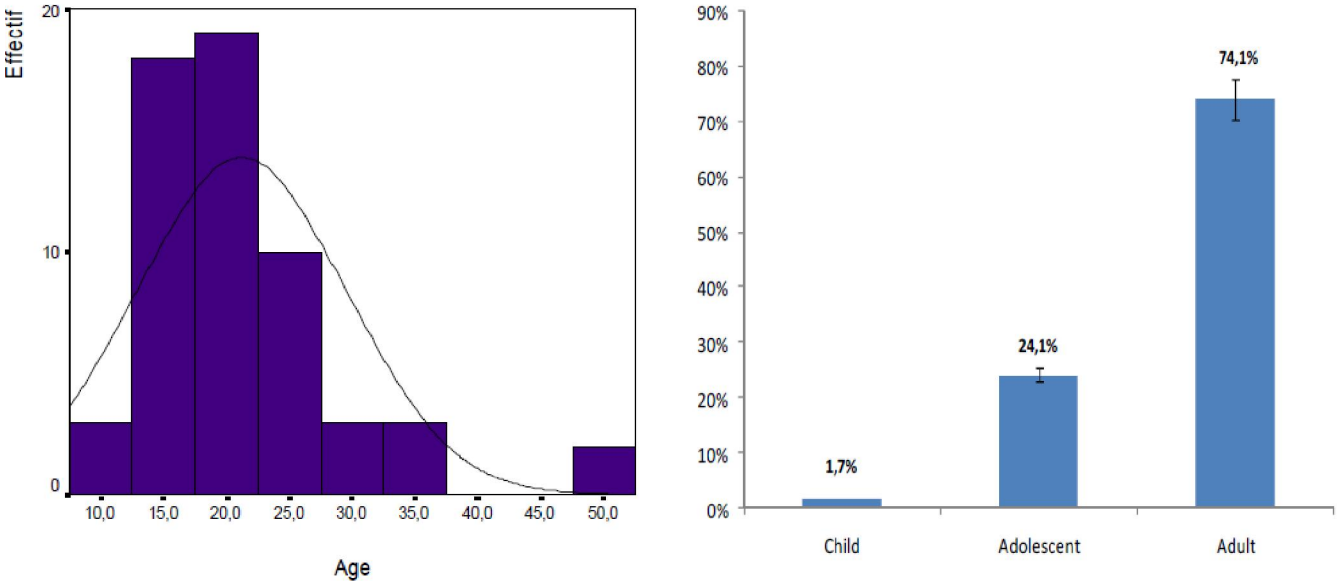


Figure 1 : Distribution of cases by sex

FULL PAPER



Figue 2 : Distribution of cases of adverse effects according to age groups, NB : child [4 to 11 years [; adolescent [11 to16 years]; adult [16 to 69 years]

TABLE 1 : Distribution of cases by system organ class

System Organ Class	n	%
Psychiatric disorders	26	25,7
Central and periphique nervous system disorders	26	25,7
Gastro-intestinal system disorders	19	18,8
Heart rate and rhythm disorders	11	10,9
Cardiovascular disorders, general	9	8,9
Vision disorder	4	4,0
Body as a whole - general disorders	2	2,0
Respiratory system disorders	2	2,0
Musculo-skeletal system disorders	1	1,0
Urinary system disorders	1	1,0
Total	101	100

benign cases.

DISCUSSION

Cannabis remains the illicit psychoactive substance most used in the world. According to the latest report from the United Nations Office (UNO) against drugs and crime, between 119 and 224 million persons aged 15 to 64 had used cannabis in 2010[12]. In France, cannabis is the most frequently used by older persones substance between 11-75 years[13].

In 2008, the UN in its World Drug Report, estimated that there were 166 million cannabis users, the country with the most users left the United States[14].

In Europe, it is widely consumed in both the adult population than among young Europeans under 15 years[15].

The data presented in this study do not reflect the extent of this problem in Morocco, but give an idea of adverse effects caused by this plant, this is the one hand, to under-reporting by health professionals and the public and others involved in banalization of the use of certain drugs especially cannabis[1-9].

In our study we have collected 58 cases of adverse reactions associated with the use of cannabis over a period of 6 years between 2008 and 2013, this number is vastly underestimated.

The study of the characteristics of the patients shows a predominance of male (77.6%)

This result is similar to another study or male presented a frequency of 67.5% and women 32.5%[16].

The age group most affected age was that of adults (74.1%), followed by adolescents in 24.1% of cases then 1.7% in children. The reasons why cannabis use are usually relaxation, wellbeing, curiosity but also the desire to have fun, conviviality.

The effects due to cannabis use appear at 7-10 minutes and last on average 2-3 hours for an inhaled form and 6 to 8 hours when ingested[26].

In our series, the most commonly reported side

TABLE 2 : Classification of adverse effects observed according to WHO ART

Adverse effect	n	%
Agitation	13	13
Tachycardie	10	10
Vomiting	10	10
Nausea	8	8
Hallucin	6	6
Vertigo	6	6
Abdominal pain	5	5
Headache	5	5
Somnolence	5	5
Dyspnoea	4	4
Mydriasis	3	3
Anxiety	2	2
Asthenia	2	2
Convulsion	2	2
Hypotension	2	2
Bradycardia	2	2
Cardio-respiratory failure	1	1
Cephalgia	1	1
Cyanosis	1	1
Delirium	1	1
Dystonia	1	1
Epigastric pain	1	1
Euphoria	1	1
Hypertension	1	1
Hypoaesthesia	1	1
Lacrimation	1	1
Migraine	1	1
Muscle weakness	1	1
Obtundation	1	1
Palpitation	1	1
Renal failure	1	1
Unconsciousness	1	1
Total	101	100

effects are: agitation (13%), tachycardia (10%) Nausea (8%), this result is similar with the literature[27].

According to the classification Who Art, the Psychiatric disorders system Central nervous system disorders and periphique are most involved in 25.7% for each of them, since cannabis is mainly used for its psychoactive effects in a recreational setting[28].

In the literature, a relationship exists between

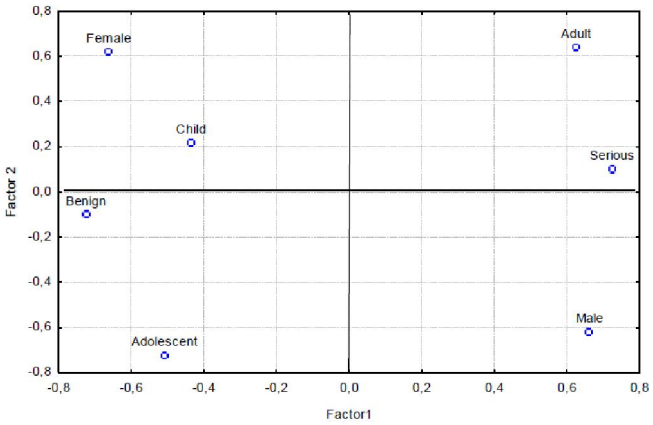


Figure 3 : Projection serious cases, non-serious, age groups and sex on the factorial plan

the dependence on psychoactive substances and various factors, either internal to the subject associated with the personality or external, related to the social environment. As for the internal factors, cannabis dependence was associated with the presence of different trait or related to psychological problems in adolescents and children as: anxiety as a personality trait, a negative affectivity, difficulty to tolerate frustration, perception, negative self-esteem and stress, mood disturbances, depression and suicide, school failure[17, 18,19].

Among the external factors, literature highlighted the stressful life events, family conflicts, divorce of parents, alcoholics, an unfavorable social environment, low school results.[20, 21, 22, 23, 24,25].

No conflict of interest

CONCLUSION

Cannabis remains a highly consumed plant in the world but whose abuse may cause short-term adverse effects and long term that may be dangerous to health. However, alertness, sensitization of the population and education within the education system would be interesting to reduce risk.

REFERENCES

[1] Cannabis sativa L.Téla Botanica, www.tela-botanica.org.

[2] Beck, François, Legleye, Stéphane, et Spilka, Stanislas; Consommation et surconsommation de cannabis: Apports et limites de l'épidémiologie,

Psychotropes, **13(1)**, 9-9 **(2007)**.

[3] Barbara Buston Wheelock; Effets physiologiques et psychologiques du cannabis: Examen des conclusions des travaux de recherche, Bureau du sénateur Eileen Rossiter, Mai, **(2002)**.

[4] M.Ben Amar, Substances psychodysleptiques : Cannabis et hallucinogènes, Université de Montréal, **(2001)**.

[5] Th.Geschwinde, Rauschdrogen; Marktformen und Wirkungsweisen, 3rd Edition, Springer Verlag, Berlin, **(1996)**.

[6] Organisation mondiale de la Santé, Gestion de l'abus de substances: Faits et chiffres, http://www.who.int/substance abuse/facs,2005.

[7] C.A.Soderstrom, A.L.Trifillis, B.S.Shankar, Clark Nous, R.A.Cowley; Marijuana and alcohol use among 1023 traumas patients, Arch Surg., **123(6)**, 733-7 **(1988)**.

[8] D.J.Crouch, M.M.Birky, S.W.Gust, D.E.Rollins, J.M.Walsh, J.V.Moulden, K.E.Quinlan, R.W.Beckel; The prevalence of drugs and alcohol in fatally injured truck drivers, J Forensic Sci., **38(6)**, 1342-53 **(1993)**.

[9] J.G.Ramaekers, H.W.J.Robbe, J.F.O'Hanlon; La marijuana, l'alcool et les performances de conduite réelle, Hum Psychopharmacol, **15**, 551-558 **(2000)**.

[10] J.E.Kurzthaler, M.Hummer, C.Miller, Sperner B.Unterweger, V.Gunther, H.Wechdorn et al.; Effet de la consommation de cannabis sur les fonctions cognitives et la capacité de conduire J Clin Psychiatry, **60**, 395-399 **(1999)**.

[11] G.W.Walsh, R.E.Mann; Sur la grande route: La conduite sous l'influence du cannabis en Ontario, Peut.J.Public Health, **90**, 260 -263 **(1999)**.

[12] UNODC, World drug report, New York, USA: United nations office on drugs and crime (UNODC), United Nations publication, Disponible sur : http://www.unodc.org/documents, **(2012)**.

[13] F.Beck, R.Guignard, M.Tovar, S.Spilka; Les niveaux d'usage des drogues en France en 2010 -Exploitation des données du Baromètre santé, Tendances.OFDT, **76**, 6 **(2011)**.

[14] ONU, rapport mondial sur les drogues, **(2008)**.

[15] OEDT, Rapport européen sur les drogues 2013 : Tendances et évolutions. Luxembourg: Office des publications de l'Union européenne, [cité 1 sept 2013], Disponible sur: http://www.ofdt.fr/BDD/publications/docs/edr2013rap.pdf, 74 **(2013)**.

[16] Merete Nordentoft, Carsten Hjorthøj Department of Psychiatry, Copenhagen; University hospital, Bispebjerg 2400, Copenhagen, Denmark, Cannabis use and risk of psychosis in later life, The Lancet, **370**, 293-4 **(2007)**.

[17] P.Laure, C.Binsinger, M.Aubard, S.Girault; L'estime de soi et l'anxiété sontelles predicteurs de la consommation de substances psychoactives chez les adolescents ? Psychotropes, **11**, 73-90 **(2005)**.

[18] M.E.Bates, E.W.Labouvie; Adolescent risk factors and the prediction of persistent alcohol and drug use into adulthood, Alcoholism: Clinical and Experimental Research, **21(5)**, 944-950 **(1997)**.

[19] B.E.Compas, J.K.Connor, H.Saltzman, A.H.Thomsen; Getting specific about coping : Effortful and involontary responses to stress in development, In M.Lewis, & D.Ramsey (Eds), Soothing and Stress, New York: Cambridge University Press, 229-256 **(1999)**.

[20] J.E.Butters; Understanding adolescent cannabis use: A stress process model application, Doctoral dissertation, Université de Toronto, Canada.

[21] E.Burcu; Alcohol and drug use in youth apprentices: Effect of social control in the family, Journal of Youth and Adolescence, **32(4)**, 291-299 **(2002)**.

[22] M.Choquet; Epidémiologie de la consommation de cannabis parmi les adolescents en France, In P. Huerre, & F. Marty (Eds), Cannabis et Adolescence, Les liaisons dangereuses Paris: Albin Michel, 17-27 **(2004)**.

[23] H.C.Steinhausen; Children of alcoholic parents, A review. European Child and Adolescent Psychiatry, **4(3)**, 143-152 **(1995)**.

[24] D.M.Fergusson, L.J.Horwood, Swain N.R.Campbell; Cannabis use and Psychosocial adjustement in adolescence and young adulthood, Addiction, **97**, 1123-1135 **(2002)**.

[25] M.Choquet; Epidémiologie de la consommation de cannabis parmi les adolescents en France, In P.Huerre, & F.Marty (Eds), Cannabis et Adolescence, Les Liaisons Dangereuses, Paris: Albin Michel, 17-27 **(2004)**..

[26] Coline Lacharme, Cannabis et grossesse, HAL Id: dumas-00632621, http://dumas.ccsd.cnrs.fr/dumas-00632621, **(2011)**.

[27] D.Nora, M.D.Volkow, D.Ruben, Ph.D.Baler, M.Wilson, M.D.Compton, R.B.Susan, Ph.D.Weiss; Adverse Health effects of marijuana use, The New England Journal of Medecine, **370**, 2219-2227 **(2014)**.

[28] W.Salle, L.Degenhardt; Les effets nocifs de la consommation de cannabis non medical, Lancet, **374**, 1383–91 **(2009)**.