Working on a Standard Joint Unit: A Pilot Test

Estableciendo la unidad de porro estándar: estudio piloto

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Abstract

Introduction. Assessing cannabis consumption remains complex due to no reliable registration systems. We tested the likelihood of establishing a Standard Joint Unit (SJU) which considers the main cannabinoids with implication on health through a naturalistic approach.

Methodology. Pilot study with current cannabis users of four areas of Barcelona: universities, nightclubs, out-patient mental health service, and cannabis associations. We designed and administered a questionnaire on cannabis use-patterns and determined the willingness to donate a joint for analysis. Descriptive statistics were used to analyze the data.

Results. Forty volunteers answered the questionnaire (response rate 95%); most of them were men (72.5%) and young adults (median age 24.5 years; IQR 8.75 years) who consume daily or nearly daily (70%). Most participants consume marihuana (85%) and roll their joints with a median of 0.25 gr of marihuana. Two out of three (67.5%) stated they were willing to donate a joint.

Conclusion. Obtaining an SJU with the planned methodology has proved to be feasible. Pre-testing resulted in an improvement of the questionnaire and retribution to incentivize donations. Establishing an SJU is essential to improve our knowledge on cannabis-related outcomes.

Keywords: Cannabis; 9-Tetrahydrocannabinol; standard unit; pilot study.

Resumen

Introducción. Explorar el consumo de cánnabis sigue siendo complejo debido a la falta de sistemas de registro. Se evaluó la factibilidad de obtener una Unidad de Porro Estándar (UPE) que considere los principales cannabinoides con implicación clínica mediante un estudio naturalístico.

Metodología. Estudio piloto con consumidores actuales de cánnabis de cuatro áreas (universidades, ocio nocturno, servicio ambulatorio de salud mental y asociaciones cannábicas) en Barcelona. Se diseñó y administró un cuestionario sobre patrones de consumo y se determinó la predisposición a donar un porro para análisis. Se utilizaron estadísticos descriptivos para analizar los datos.

Resultados. Cuarenta consumidores de cannabis respondieron a la encuesta (tasa de respuesta 95%), siendo la mayoría hombres (72,5%) y jóvenes adultos (mediana de edad 24,5 años; RIQ 8,75 años) que consumen a diario o casi diariamente (70%). La marihuana es el derivado más consumido (85%), habiendo de mediana 0,25 gr de marihuana por porro. Un 67,5% de los participantes se mostraron predispuestos a donar un porro para análisis.

Conclusión. La obtención de la UPE con la metodología prevista es factible. Tras el piloto el cuestionario ha sido adaptado y se ha introducido un incentivo para estimular la donación de muestras. Establecer la UPE permitirá avanzar en el conocimiento de las consecuencias del consumo de cannabis.

Palabras clave: Cannabis; 9-Tetrahidrocannabinol; unidad estándar; estudio piloto.

Cannabis is the most abused illicit drug worldwide (United Nations Office on Drugs and Crime, 2015). In 2013, 30% of the Spanish population between 15-64 years declared to have consumed cannabis once in their lives (Delegación del Gobierno para Plan Nacional sobre Drogas, 2015). Little is known on which consumption patterns increase the possibility of suffering cannabis-related consequences. Evaluating cannabis health outcomes faces several difficulties, as for example dealing with its variable composition or different quantities consumed. As a result, although doses have shown to be essential to evaluate drug-related outcomes, cannabis use is often only described by the frequency of use (Mariani, Brooks, Haney, & Levin, 2011; Norberg, Mackenzie, & Copeland, 2012; van der Pol et al., 2013; Walden & Earleywine, 2008). One example are characterizations of risky cannabis use, as for example daily use (Coffey, Lynskey, Wolfe, & Patton, 2000). However, specific information on the type of cannabis and its potency (concentration of 9-Tetrahydrocannabinol) is often missing, ignoring its importance when evaluating related health outcomes (Di Forti et al., 2009).

With alcohol, which is also characterized by a huge variability between types of beverages, similar difficulties were tackled establishing a standard unit (Miller, Heather, & Hall, 1991; Rodríguez-Martos Dauer, Gual Solé, & Llopis Llácer, 1999; Stockwell, Blaze-Temple, & Walker, 1991). Nowadays the "standard drink" is widely used in alcohol assessment and has contributed to the characterization of risky users, enabling public health recommendations.

Working on a homogenization of cannabis assessment could lead to equivalent benefits. A standard unit for cannabis would allow describing cannabis use patterns not only using frequency but also quantity. Few attempts to develop cannabis units have been published (Norberg et al., 2012; Zeisser et al., 2012). However, they show several weaknesses. For example, units base on grams of cannabis and do not consider that cannabis can have a high variability in its composition (EMCDDA, 2008). Meanwhile, quantity of cannabis' main psychoactive cannabinoid - 9-Tetrahydrocannabinol (9-THC) (Mechoulam & Gaoni, 1964) - present in the proposed units remains unknown. As well as the "standard drink" accounts for grams of alcohol, a standardized unit for cannabis should consider the quantity of its main psychoactive constituent with implication on health (Hall & Degenhardt, 2009; Hall, 2015). In addition, standard units should be based on the most used administration form. For cannabis, smoking a rolled cigarette in form of a joint, is the most common administration form (U.S. Department of Health and Human Services, 2014).

The Spanish Ministry of Health, through its National Plan on Drugs, recently approved a project to establish a "Standard Joint Unit" (SJU). This unit will consider the quantity of 9-THC in donated joints. In order to check the likelihood of obtaining a SJU through a naturalistic study, a pilot test was conducted. The present paper reports its main results and analyzes preliminary data.

Material and methods

Sample

During September to December 2014 forty cannabis users were recruited by convenience in four different settings of Barcelona (Spain): universities, cannabis associations, one out-patient mental health service and nightclubs (N=10 in every setting). For the pilot study, the sample size was adjusted to 10% of the expected final study sample. Participant's eligibility criteria were (1) having consumed cannabis at least once in the last 60 days, (2) being able to decide to participate and 3) being adult.

Procedure

Participants were informed about the study objective, anonymity and confidentiality of their data. Once accepted, they were administered a questionnaire. For the out-patient mental health service recruitment proceeded indirectly via informed psychiatrist who invited their patients to participate.

Instruments

Questionnaires previously used in similar contexts were reviewed for suitable questions (Ministerio de Sanidad, Servicios Sociales e Igualdad, 2015; Ministerio de Sanidad, Servicios Sociales e Igualdad, 2013; Villalbí, Suelves, Saltó, & Cabezas, 2011). Finally the pilot questionnaire included 15 questions, which can be divided into four groups: 1) Socio-demographical variables (sex, age, marital status, highest educational level achieved and current employment status); 2) Patterns of cannabis use (type of cannabis derivate used, tobacco proportion used in joints, preparation of joints, frequency of cannabis consumption in the last 30 days, mean joints smoked on one typical occasion in the previous 30 days, joint sharing); 3) Preliminary data on the SJU (specified below) and predisposition to donate a joint for analysis; 4) Main reason for cannabis use and the Cannabis Abuse Screening Test (CAST) (Cuenca-Royo et al., 2012; Legleye, Karila, Beck, & Reynaud, 2007).

CAST screens for risk of problematic cannabis use, and consists of six questions, which can be answered with the options "never", "rarely", "from time to time", "fairly often" and "very often". Using the binary CAST option, final scores can be matched to either non problematic use (0-1), low risk of having cannabis-related problems (2-3) or high risk of having cannabis related problems (4-6). (Delegación del Gobierno para el Plan Nacional sobre Drogas, 2009).

The construction of the SJU is based on the following data: type of derivate consumed, weekly expenditure on cannabis, weekly amount of grams consumed, weekly number of joints consumed and frequency of acquisition. During the pilot-test, no joints were collected for analysis.

For the final study joints will be analyzed using HPLC-UV, according to the recommended methods for the identification and analysis of cannabis and cannabis products by the United Nations Office on Drugs and Crime using HPLC-UV (United Nations Office on Drug and Crime, 2009).

Data Analysis

Descriptive statistical analyses were made using SPSS version 19. Percentages were used for categorical data and median, range and interquartile range for quantitative data.

Ethics statement

The study protocol was approved by the Committee on Ethics of the Hospital Clínic (HCB/2014/0770). No informed consent was necessary due to anonymous participation. Study procedures were planned according to the Declaration of Helsinki (World Medical Association Declaration of Helsinki, 2013).

Results

Procedure and questionnaire

Recruitment proceeded without incidents and with a response rate of 95%. The designed questionnaire needed minimal changes like some additional response options. Only the question on the frequency of cannabis consumption in the last 12 months had to be reviewed due to incorrect formulation.

Sample description and preliminary data

a) Socio-demographical data

Participants (N=40) were mostly men (72.5%), young adults (median 24.5 years, range 18-47) and single (72.5%). At the moment of the survey, 40% had finished their secondary studies and 42.5% were working (Table 1).

b) Consumption patterns

Our sample consumed marihuana (85%), hashish (10%) and hashish oil (5%). Home-grown marihuana was the first supply in 34% of the marihuana users, who occasionally also acquired cannabis if their plants were not productive. The majority (70%) affirmed to smoke on more than 20 days in the last month, 55% declared to smoke 2 to 4 joints per smoking occasion and 68.5% usually do not share their joints. 85% stated to roll their joints similarly every time and 90% smoked cannabis with tobacco (Table 2).

c) Preliminary data on SJU and predisposition to donate a joint

Participants declared to roll 4 joints (median value) with 1 gram of cannabis (0.25 gr of cannabis/ joint). This

Table 1. *Socio-demographical characteristics of the sample recruited for the pilot study (N=40).*

Socio-demographical data	Values N (%)
Gender	
Men	29 (72.5)
Women	11 (27.5)
Age	
Median (IQR)	24 (8.75 years)
Range (years)	18 – 47 years
Marital status	
Single	29 (72.5)
Married	4 (10.0)
Separated/ Divorced	2 (2.0)
Widow/er	0 (0.0)
Others	5 (12.5)
Highest educational level achieved	
Primary school (6 years of school completed)	1 (2.5)
4 years of secondary school completed	9 (22.5)
5 or more years of secondary school competed	14 (35.0)
University degree	16 (40.0)
Working situation	
Working	17 (42.5)
Unemployed	13 (32.5)
Currently absent from work	5 (12.5)
Receiving a disability pension	3 (7.5%)
Other situations without earning money	2 (5.0%)

Table 2. *Description of consumption patterns and CAST scores of the recruited sample (N=40).*

Item asked	N (%)
Type of derivate consumed	
Marihuana obtained in a cannabis association	18 (45.0%)
Home-gown marihuana	12 (30.0%)
Marihuana obtained in the illicit market	2 (5.0%)
Hashish	4 (10.5%)
Hashish oil	2 (5.0%)
Missing (several types of cannabis)	2 (5.0%)
Tobacco use to roll the joint	36 (90.0%)
Prepares the joints similarly	34 (85.0%)
Frequency of consumption in the last 30 days	
More than 20 days	28 (70.0%)
Between 10 and 19 days	4 (10.0%)
Up to 9 days	8 (20.0%)
Number of joints consumed in one typical occasion	
1 joint	8 (20.0%)
2-4 joints	22 (55.0%)
6-8 joints	5 (12.5%)
More than 9 joints	2 (5.0%)
Missing (consumed less than one joint per occasion)	3 (7.5%)
Shares the joint in most of the cases	13 (32.5%)
a CAST scores	
0-1 (non-problematic use)	2 (5.0%)
2-3 (low risk use)	15 (37.5%)
4 or more (high risk use)	23 (57.5%)

Note. [a] CAST: Cannabis Abuse Screening Test

proportion was similar for marihuana and hashish (Marihuana IQR=1.92; Hashish IQR=2.25). Preliminary data suggests that one joint costs on average less than 2 € (data not shown in tables). Two out of three participants stated that they would donate a joint without receiving any retribution (67.5%). Thirteen individuals denied (6 at nightclubs, 4 at universities, 2 in out-mental health service and 1 in the cannabis association). Main reasons were not receiving retribution and wanting to smoke their joints.

d) Main reasons for consumption and CAST scores

Main reasons for cannabis consumption were seeking for positive feelings as for example pleasure (70%), avoid negative feelings as for example anxiety (20%) and neutral reasons as for example habit (10%). CAST scores were in 57.5% higher than 4 points (high-risk use).

Discussion

Planned methodology to establish a SJU was tested. Participant's predisposition to donate a joint indicates that working on a SJU obtained through a naturalistic study approach is feasible. Additional data related to cannabis use could be retrieved with a questionnaire which needed minimal changes.

Study procedure and questionnaire

One out of three participants affirmed not to be predisposed to donate a joint, often due to no retribution. In order to incentivize joints donations, non-economical retribution options were studied. Finally for the donation the participant will receive a USB with preventive information on cannabis. Minimal changes were done to adapt the questionnaire. One example is the question on the type of derivate consumed, which was adapted to retrieve more than one option of consumption. This change was especially necessary for home-grown marihuana users, which occasionally also acquire cannabis. For the final study, these users will be asked to estimate the value (price) of their own cultivated cannabis.

Preliminary data on the Standard Joint Unit

To optimize our study resources, for the SJU only joints of the most prevalent types (marihuana and hashish) will be considered. Few donations of other joints are expected and might be discouraged due to higher prices.

The numbers of joints rolled with one gram of cannabis were comparable within marihuana and hashish (approximately 4 joints with 1gr of cannabis). This data is consistent with previous studies (van der Pol et al., 2013; van der Pol et al., 2014). Other comparable studies like the published by Norberg et al (2012) stated that a *Standard Cannabis Unit* accounted for 0.25gr of cannabis (Norberg et al., 2012), which is similar to our results. In our larger study, these data will be

analyzed considering amounts of tobacco (%) and concentrations of the main cannabinoids (9-THC and CBD). The analytical procedure to quantify the cannabinoids was validated and will proceed following the recommendations of the UNODC (United Nations Office on Drug and Crime, 2009).

Most of our sample declared to roll their joints similarly every time (85%) and not sharing it (68.5%). Considering that most of our participants are nearly daily smokers of 2 to 4 joints per day, consuming up to 1gr of cannabis daily or nearly daily may not be uncommon among these cannabis users of Barcelona.

Information retrieved is believed to be consistent due to the high proportion of frequent users, who mostly roll their joints similarly every time and do not share them. These data include prices, grams acquired per occasion and number joints resulting from a specific cannabis amount. In consequence, proceeding to analyze the joints donated by the participants in the real study was decided.

Associations between quantity consumed and CAST results will be analyzed in the larger study. Preliminary data obtained through the pre-test indicate a significant prevalence of users having a high risk of suffering cannabis related problems. According to the definition of the European Monitoring Centre for Drugs and Drug Addiction, users consuming at least 20 days in the last month are high-risk users (EMCDDA, 2004). In our sample 70% declared to use cannabis on more than 20 days in the last month. With the CAST, 58% were categorized as high-risk users (CAST>4). The last edition of the Spanish National Survey on Drugs found that beyond cannabis users in the last year, prevalence of problematic cannabis use was 25% (Delegación del Gobierno para Plan Nacional sobre Drogas, 2015). Associations with reasons for consumption will be explored and may reveal important data on personal risks as suggested in previous studies (Aleixandre, Río, & Pol, 2004; González, Sáiz, Quirós, & López, 2000).

Strengths and limitations

Reporting all phases of the study will contribute to the understanding of the SJU. Working on a SJU which considers quantity of 9-THC is innovative and to our knowledge no other feasibility reports have been published. With the pilot test we have been able to explore crucial aspects of the study, as for example the donation of joints. The pilot test has helped to improve our methodology and to avoid unnecessary costs.

The hetero-administered questionnaire may potentially have induced an information bias. Bivariate statistical analyses were not performed as variable categories were in some cases too infrequent. Nevertheless, pilot studies are meant to explore feasibility and adequacy of the study procedure.

Conclusions

The pilot test contributed to optimize our methodology, enhancing the likelihood of establishing a SJU. Standardized

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cannabis assessment which considers quantity is essential to explore which patterns of cannabis use increase the risk of suffering negative consequences. Due to cannabis high prevalence of use and its implications for public health, improving evidence-based knowledge on cannabis risks is highly needed.

Contributions

Cristina Casajuana Kögel, Hugo López-Pelayo, María Mercedes Balcells and Antoni Gual designed the study. Cristina Casajuana wrote the first draft of the manuscript. All other authors contributed to the editing and final review of the manuscript. All authors approved the final paper.

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Conflict of interest

Hugo López-Pelayo has received honoraria and travel grants from Lundbeck, Lilly, Janssen, Pfizer, Rovi, Esteve. Laia Miquel and María Mercedes Balcells have received honoraria from Lundbeck. Lídia Teixidó has received honoraria from Pfizer. Antoni Gual has received honoraria, research grants, and travel grants from Lundbeck, Janssen, Pfizer, Lilly, Abbvie D&A Pharma and Servier. All other authors declare no potential conflict of interest. Previous stated honoraria had no influence on this article.

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