Elderly substance abuse: an integrative review

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Abstract: This is an integrative review of the literature with the objective of analyzing the scientific production on psychoactive substance use in the elderly, with a specific focus on socio-demographic and clinical characteristics. The systematic research was performed on the Scopus, Web of Knowledge, Academic Search Premier, PubMed and ScienceDirect databases. After considering the criteria for inclusion and exclusion, 13 studies were selected, with no restriction on the period of time. Elderly users of psychoactive substances are predominantly men with low levels of education and income, who are unemployed, unmarried and living alone, besides presenting organic and psychological comorbidities. Alcohol is the most common drug used in this age group, followed by abuse of medication, although the use of illicit substances has increased progressively. Despite evidence being limited, studies indicate lower rates of high-risk behavior to health in the elderly. The literature is consensual about the need for more studies in order to fill gaps in the knowledge and to facilitate early identification of these users.

Keywords: elderly; drug users; substance-related disorders; prescription drug misuse; evidence-based practice.

USO DE SUBSTÂNCIAS PSICOATIVAS EM IDOSOS: UMA REVISÃO INTEGRATIVA

Resumo: Trata-se de uma revisão integrativa da literatura, que teve por objetivo analisar a produção científica sobre o uso de substâncias psicoativas em idosos, focalizando suas condições sociodemográficas e clínicas. Foi realizada uma busca sistemática utilizando-se as bases Scopus, Web of Knowledge, Academic Search Premier, PubMed e ScienceDirect. Considerando os critérios de inclusão e exclusão, foram selecionados 13 estudos, sem restrição de período de tempo. Os idosos usuários de substâncias psicoativas caracterizam-se, predominantemente, por serem homens, com baixos níveis

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de escolaridade e renda, desocupação laboral, não casados e a habitar isoladamente, além de apresentarem comorbilidades orgânicas e psíquicas. O álcool é a droga mais comum nessa faixa etária, seguido do abuso de medicamentos; no entanto, o uso de substâncias ilícitas tem aumentado progressivamente. Ainda que as evidências sejam limitadas, estudos indicam menores taxas de comportamentos de alto risco para saúde em idosos. A literatura é consensual sobre a necessidade de mais estudos, de modo a preencher as lacunas do conhecimento e facilitar a identificação precoce desses utentes.

Palavras-chave: idosos; usuários de drogas; transtornos relacionados ao uso de substâncias; uso indevido de medicamentos sob prescrição; prática baseada em evidência.

EL ABUSO DE SUSTANCIAS EN LOS ANCIANOS: UNA REVISIÓN INTEGRADORA

Resumen: Este trabajo es una revisión integradora de la literatura, con el objetivo de analizar la producción científica sobre el uso de sustancias psicoactivas, así como las características demográficas y clínicas de los ancianos que utilizan estas sustancias. Se ha realizado una búsqueda sistemática utilizando las bases Scopus, Web of Knowledge, Academic Search Premier, PubMed y ScienceDirect, sin restricción de tiempo. Teniendo en cuenta los criterios de inclusión y exclusión, se seleccionaron 13 estudios, sin restricción del periodo de tiempo. Las personas mayores que utilizan sustancias psicoactivas se caracterizan por ser predominantemente hombres, con bajos niveles de educación e ingresos, desempleo laboral, no casados y viviendo solos. Muestran comorbilidades orgánicas y psicológicas. El alcohol es la droga más común a esta edad, seguido por el abuso de medicamentos, sin embargo, el uso de sustancias ilícitas ha aumentado incrementalmente. Aunque las evidencias sean limitadas, los estudios indican menores porcentajes de conductas de alto riesgo para la salud en las personas mayores. La literatura es consensual sobre la necesidad de más estudios a fin de colmar las lagunas de conocimiento y facilitar la identificación de dichos usuarios.

Palabras clave: personas mayores; consumidores de drogas; trastornos relacionados con el consumo de sustancias; mal uso de medicamentos de venta con receta; práctica basada en la evidencia.

Introduction

The planet is going through a demographic and epidemiological transition which results in an increasing number of elderly people in the world population. Future predictions indicate that this increase will continue and that, by 2050, a quarter of the population will be 65 or more. Europe is the continent with the oldest population (EMCDDA, 2010). Between 2001 and 2011 Portugal increased its aging index, from 103 to 128 elderly persons for every 100 young persons, due to its low birth rate and improved life expectancy. In the same period, Portuguese population with 65 years or more grew from 16.6% to 19% (INE, 2013). This change in the demographic profile brings new challenges to public health; not only through increasing demand but also through the way each generation's behavior patterns have changed (Fahmy, Hatch, Hotopf, & Stewart, 2012).

The use of illegal drugs by the elderly, associated with the acceleration of chronic conditions in this age group, characterizes as a serious problem for public health. This fact is generating a high social cost for healthcare, as well as a substancial financial burden on contributors and government agencies (EMCDDA, 2010; Schlaerth, Splawn, Ong, & Smith, 2004).

There is still an idea that drug use is restricted to the young, especially those who frequent nightclubs (EMCDDA, 2010). However, there is increasing evidence that age is no guarantee against drug abuse (Fahmy *et al.*, 2012; Schlaerth *et al.*, 2004; Lofwall, Schuster, & Strain, 2008; Sacco, Kuerbis, Goge, & Bucholz, 2013; Beynon, Roe, Duffy, & Pickering, 2009). The consumption of alcohol, nicotine and prescription drugs among the elderly is regarded as preferential in this population, although little is known about the epidemiology of psychoactive drug use in this age group (Simoni-Wastila & Yang, 2006). According to EMCDDA (2010, p. 7), the definition of the problematic use of drugs is "the use of injection drugs or long-term regular use of opiates, cocaine and/or amphetamines".

Defining "older drug users" among consumers of psychoactive substances is a challenging task (Lofwall *et al.*, 2008) as there is no exact definition and there are variations in understanding of the terms "older" or "elderly" even in the general population (EMCDDA, 2010). The retirement age in Europe generally begins at 60, but for administrative and legislative purposes it is more common to consider the age of 65 (EMCDDA, 2010), this being the cut off age used in Portugal to define elderly (INE, 2013). Nevertheless, when dealing with substance dependence, the cutoff point for older individuals is normally much lower. In some cases it is as low as 35; some studies have used 40 (EMCDDA, 2010), and others have adopted 50 or more (Beynon *et al.*, 2009; Lofwall, Brooner, Bigelow, Kindbom, & Strain, 2005). Using 40 as a cutoff point may be due to the fact that individuals at this age generally have a long history of problematic drug use, which may exacerbate or accelerate conditions associated with age, prematurely leading to metabolic aging and complications such as atherosclerosis or cardiopulmonary ailments. Furthermore, in this population, it is estimated that the aging process is accelerated by at least 15 years (EMCDDA, 2010). Studies that adopt 50 as the cutoff recognize that this is not a chronically old age, but consider it as such, due to elderly patients dependent on substances having higher levels of medical morbidities, when compared to younger people (Lofwall *et al.*, 2005).

Alcohol, nicotine, and drugs consumed under medical prescription have been the most referred substances in use by older adults. However, it has long been predicted that the consumption of illegal drugs by this population, would increase (Simoni-Wastila & Yang, 2006). In the United States (USA), the elderly have been increasingly seeking help due to problems related to drug use (Sacco *et al.*, 2013). In England, the use of some illicit drugs has increased rapidly among the middle-aged and the elderly (Fahmy *et al.*, 2012). Also in relation to Europe, the available evidence indicates that the levels of illicit drugs being used among elderly Europeans are growing significantly and that Portugal had, in 2008, the highest percentage of people between 40 and 49 years old in treatment among European countries (EMCDDA, 2010). With aging, the population that uses injection drugs has also reached more advanced ages, according to studies carried out in Australia (Horyniak *et al.*, 2013) and the USA (Armstrong, 2007).

There are various reasons for this phenomenon, including the baby boom. Baby boomers are considered to be all those born between 1946 and 1964. This generation,

besides being numerically significant, had greater exposure to psychoactive substances. A study in the USA on the consumption of people aged 50 or over, estimates that, by the year 2020, the use of cannabis in the "last year" will have increased from 1% (719 thousand) to 2.9% (around 3.3 million). It also estimates that consumption of any illicit drug will grow from 2.2% (1.6 million) to 3.1% (3.5 million), between 1999-2001 and 2020 (Colliver, Compton, Gfroerer, & Condon, 2006). In regard to the diagnosis of disorders resulting from the use of psychoactive substances, an increase from 2.8 million to 5.7 million is predicted from 2002-2006 to 2020 (Han, Gfroerer, Colliver, & Penne, 2009). It is also estimated that the necessity for treatment among the elderly population will increase from 1.7 million in 2000-2001 to 4.4 million in 2020 (Gfroerer, Penne, Pemberton, & Folsom, 2003). Moreover, the data shows a significant increase in the lifespan of consumers in contact with drug treatment services (Beynon, McVeigh, Hurst, & Marr, 2010). Thus, these consumers remain under treatment for many years, or even decades, continually or with interruptions, reaching old age during treatment (EMCDDA, 2010). Finally, it is expected a greater involvement of the judicial system in the increase of treatments for drug abuse at these ages (Lofwall *et al*., 2008), as there would be many more referrals to health services and treatment services issued by courts.

Gossop & Moos (2008) reported that older consumers of substances can be classified into two categories: "*survivors*", these being people that began in their youth and have a long history of consumption, and "*reactives*", who are those that began using drugs late on, probably due to problems experienced in the course of life. Regardless of classification, the aging process can trigger psychological, social or health problems that enhance the probability of, and susceptibility to, substance abuse, which, in turn, aggravates pre-existing problems (Gossop & Moos, 2008). Risk factors, such as lack of personal resources (low labor skills, low emotional intelligence, lack of belief in personal prospects, poor self-concept and a sensation of incapacity in conducting one's own life), as well as a progressive rupture of social ties (family, work and friendship), also contribute to increasing chronic psychic deterioration, reinforcing the necessity to promote a high level of specific healthcare (Roibás, Melendro, & Montes, 2010).

On the other hand, the acceleration of medical morbidities and the progression in organic deterioration of these individuals means that this population has unique treatment necessities (Lofwall *et al*., 2008; Roibás *et al*., 2010). It is known that advancing age alters the functioning and composition of the human body, which makes it crucial to adjust the type of medicine and its dosage. The excretory function of the kidneys diminishes, particularly in mal-nourished or debilitated individuals, and there is a gradual reduction of homeostasis mechanisms, which lead to stronger reactions in the course of drug use, increasing the rate, intensity and adverse effects (Turnheim, 2003). These factors, together with the decrease in body water content, mean that the elderly can maintain levels of substances in the blood for longer after consumption. This physical susceptibility affects motor and cognitive functions, increasing the risk of accidents, falls and injury or increasing the difficulty of conducting

activities of daily living (ADL). ADL can be understood as personal tasks concerning self-care, as well as other abilities pertinent to the individual's day to day life.

The elderly have increased sensitivity, which makes them feel the effects induced by the use of psychoactive substances whilst consuming lower quantities, with tolerance also being diminished, which means they don't need to use as much as they used to in order to obtain the same effect. Furthermore, many of the prescription drugs used by this population interact adversely with the consumption of psychoactive substances (Han, Gfroerer, & Colliver, 2009), be it negating or enhancing their effects. Drug users continue dying younger than the general population and the types of death not related to the use of more common substances are hepatic and neoplastic diseases, chronic inferior respiratory infections and hepatitis. Despite these morbid conditions not being classified as such, they may be associated with harmful substance use (Beynon *et al.*, 2010).

However, drug users are not always identified as people that have a problem related to substance use. There is a lack of knowledge of healthcare professionals about this phenomenon, due to the lack of technical training or the erroneous belief that consumption only affects young people. This lack of knowledge, along with the scarcity of elderly people reporting consumption during consultations with healthcare professionals – due to embarrassment, fear, dementia or social isolation – may be among the causes of difficulty in detection (Pillon, Cardoso, Pereira, & Mello, 2010). In a study performed at an emergency room, only two out of 18 drug users over 60, in whose urine cocaine metabolites were found, were identified by the doctors as drug users presenting a problem related to chronic cocaine use (Rivers *et al.*, 2004).

The interaction between the effects of consumption and the aging process are still not well understood (Beynon *et al.*, 2009), which contributes to the underreporting of these users (Pillon *et al.*, 2010), who may present characteristics specific to the level of consumption effects and consequent treatment (Lofwall *et al.*, 2005). It is, therefore, necessary to understand the needs of this age group (Pillon *et al.*, 2010). Thus, this study had the objective of analyzing the scientific production on the use of psychoactive substances among the elderly, with a specific focus on socio-demographic and clinical characteristics (consumption history, current consumption and physical and mental health).

Method

This study is an integrative review of scientific production retrieved from the following databases: Web of Knowledge, PubMed, Scopus, Academic Search Premier, and ScienceDirect. The bibliographic research was carried out combining the following terms: elderly, older, old age, older adult or aging with drug addict, illicit drug dependence, addicts, illicit drug use, heroin, opiate, cocaine, junkie, methadone or injection drug.

This review was based on the following guiding question: "What are the socio-demographic and clinical characteristics of elderly users of psychoactive substances?" Data collection was carried out between January and February 2014.

The criteria for inclusion were: articles published in Portuguese, English or Spanish; with no restriction on a period of time. Articles involving themes such as tobacco consumption, use of medicine, experiments with animals, opioids prescribed to relieve pain were excluded, as well as studies focusing exclusively on alcohol use or young age groups, besides review studies. Theses, dissertations, monographs, books, and chapters were also excluded.

Firstly, all the titles and abstracts were read, enabling the exclusion of studies that were outside the scope of the review, in accordance with the adopted inclusion/exclusion criteria. Through the preliminary reading of the documents, 53 articles were selected. The remaining studies from this preliminary stage subsequently had their full texts located and recovered. Then, the complete texts were read in full, once more applying the established inclusion/exclusion criteria. After detailed reading of all the material, the final sample consisted of 13 articles. These stages were carried out independently by two researchers who later discussed any doubts which emerged during the process. Occasional disagreements as to the inclusion/exclusion of an article were resolved by the two researchers reaching a consensus.

The same procedure was used to classify the Level of Evidence (LE) of each article. In evidence based practice, LE is an indicator enabling classification of the methodological quality of the published research, from the perspective of the contribution they offer to the incorporation of modifications to professional practice which result in improved care (Valdanha, Scorsolini-Comin, Peres, & Santos, 2013). This indicator has been used as a universal evaluation criterion in various areas of knowledge, based on an appreciation of the chosen methodological design (Solomons & Spross, 2011).

LE is categorized at six levels, in accordance with the classification proposed by the Agency for Healthcare Research and Quality (AHRQ). LE 1 corresponds to meta-analyses conducted based on various controlled studies. LE 2 involves studies with experimental design. LE 3 covers research with quasi-experimental design, such as studies conducted without randomization with one group pre and post-test, longitudinal studies or case-control studies. LE 4 refers to non-experimental studies, such as descriptive correctional or qualitative research, or case studies. LE 5 corresponds to case reports or program evaluations. LE 6 applies to opinions of specialists or respected authorities in the area, including information not based on research (Hughes, 2008).

Results

As a result, the following occurrences of studies were found in each consulted databases: Web of Knowledge (1170), PubMed (395), Scopus (208), Academic Search Premier (853) and ScienceDirect (976). Through the preliminary reading of the documents, which involved careful analysis of the titles and abstracts, 53 articles were selected. A detailed reading of all the material, which involved the complete reading of all the texts, based on the established inclusion/exclusion criteria, provided a selection of 13 articles.

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Table 1. Information extracted from articles compiled in the integrative review.

Author(s)/ Article reference	Year/ Location	Age (years)	Sample	Data collection	Objectives	Level of Evidence
Fahmy et al.	2012 / London, England	≥ 50-64 & ≥ 65	4296	1993, 2000 and 2007: Adult Psychiatric Morbidity Surveys 2008-2010: South East London Community Health (SeLCoH)	To evaluate the prevalence of illicit drug use in people aged 50 or over.	3
Schlaerth et al.	2004 / Los Angeles, USA	>50	3417	Users that underwent a urine test at emergency rooms	To investigate the use of illicit drugs in elderly people seeking out emergency services in a 10 month period.	4
Lofwall et al.	2008 / USA	50-54 & ≥ 55	In 1992: 47,361 admissions aged 50-54 and 55,344 aged ≥ 55. In 2005: 108,453 admissions aged between 50 and 54 and 75,899 ≥ 55.	1992 and 2005 Public files on Treatment Episode Data Set (TEDS)	To evaluate if the admission rates for treatment of illicit drug abuse in elderly people increased after an interval of 14 years	3
Sacco et al.	2013 / USA	>18 & < 50 & ≥ 50	53,024	Individuals that participated in studies: National Longitudinal Alcohol Epidemiologic Survey (1991-1992) e National Epidemiological Survey on Alcohol and Related Conditions (2001-2002)	To analyze the data extracted from two national *surveys*, carried out at an interval of 10 years, and explore the changes related to the use of alcohol and/or other drugs in adults aged over 50.	3
Beynon et al.	2009 / United Kingdom	>50	10	Elderly people recruited at drug treatment services in 2008, submitted to semi-structured interviews.	To identify the use of substances (alcohol and/or other drugs) and evaluate self-reporting of state of health in elderly people undergoing treatment at general and specialized health services.	4

(to be continued)

Table 1. Information extracted from articles compiled in the integrative review.

Author(s)/ Article reference	Year/ Location	Age (years)	Sample	Data collection	Objectives	Level of Evidence
Lofwall *et al.*	2005 / USA	25-34 (n = 26) & 50-66 (n = 41)	67	Users in an opioid maintenance program	To compare two age groups in opioid maintenance programs through standardized instruments.	4
Horyniak *et al.*	2013 / Australia	< 20; 20-24; 25-29; 30-34; & ≥ 35	6,795	The Australian Illicit Drug Reporting System (2001-2011).	To better understand the relationship between age, high-risk behavior and the use of injection drugs.	3
Armstrong	2007 / USA	≥ 12	452,567	National Household Survey on Drug Abuse	To evaluate the prevalence of lifelong injection drug use and use in the last year.	3
Roibás et al.	2010 / San Blas, Spain	>50	103	Analysis of clinical histories of drug users at a Center for the care of drug addicts.	To identify the principal necessities and shortages in different vital, health, formative and labor areas of the group, in order to develop suitable treatment strategies.	4
Han et al.	2009 / USA	50-59	16,656	2002-2007 National Surveys on Drug Use and Health (NSDUH)	To evaluate tendencies, patterns and characteristics of illicit drug use in people aged between 50 and 59.	3
Pillon et al.	2010 Ribeirão Preto, SP, Brazil	60	191	Socio-demographic questionnaire and types of drugs consumed by users at a Center for Psychosocial Care for Alcohol and Drugs (1996-2009)	To identify the profile of elderly people that use psychoactive substances, attended at a treatment center.	4
Rivers et al.	2004 / USA	≥ 60	5,677	Users were subject to routine urine analysis at an emergency room	To evaluate the prevalence of cocaine use in a population of elderly patients attended at a university emergency service over a period of six months.	3

(to be continued)

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Table 1. Information extracted from articles compiled in the integrative review.

Author(s)/ Article reference	Year/ Location	Age (years)	Sample	Data collection	Objectives	Level of Evidence
Blazer & Wu	2009 / USA	50-64 & ≥ 65	10,953	2005-2006 NSDUH	To estimate the prevalence and distribution, as well as correlate, the use of drugs in middle aged and elderly people and compare the use of alcohol in these age groups.	3

Source: The authors.

The Table 1 presents a synthesis of the information contained in the articles compiled in this review, whereby eight come from studies carried out in the United States (USA), two from the United Kingdom and one each from Brazil, Spain, and Australia. Of these, seven refer to data extracted from epidemiological studies, carried out to monitor the population (Armstrong, 2007; Blazer & Wu, 2009; Fahmy *et al*., 2012; Han *et al*., 2009; Horyniak *et al*., 2013; Lofwall *et al*., 2008; Sacco *et al*., 2013), based on large samples – between 3417 and 452,567 individuals. Four studies reported on data obtained through the application of questionnaires, evaluations or analysis of clinical histories of users of treatment services for problems related to drug use (Beynon *et al*., 2009; Lofwall *et al*., 2005; Pillon *et al*., 2010; Roibás *et al*., 2010). Two articles reported on data related to urine analyses at emergency services (Rivers *et al*., 2004; Schlaerth *et al*., 2004).

To evaluate the LE of the studies, the scientific methodology that was the basis of each selected article was analyzed. Table 1 shows that the recovered studies fit into levels of evidence 3 and 4. They are well designed, developed in temporal series (level 3), besides presenting the non-experimental methodological design, performed at more than one research center or group (level 4).

The studies showed that the use of some illicit drugs, such as cocaine, crack, cannabis, opiates, mushrooms and amphetamines, has increased rapidly among the middle aged and the elderly (Beynon *et al*., 2009; Fahmy *et al*., 2012; Sacco *et al*., 2013; Schlaerth *et al*., 2004). Users over 60 represent 3.2% of a service attending drug users (Pillon *et al*., 2010) with 11.7% of the consultations carried out being directed at people aged 50 or over (Roibás *et al*., 2010). At emergency services, 3.1% of the users over 50 presented metabolites in a urine test for drugs (Schlaerth *et al*., 2004) and 2% tested positive for cocaine (60 or over) (Rivers *et al*., 2004).

In all the studies making reference to gender, there was a much higher number of male consumers compared to female consumers, representing 90.6% (Pillon *et al*.,

2010) and 87.6% (Roibás *et al*., 2010) of the populations at specialized services with more than 60 and 50 years, respectively, and 69.2% (Schlaerth *et al*., 2004) and 88.9% (Rivers *et al*., 2004) of positive tests at hospital emergency rooms for illicit drugs and cocaine, respectively. In epidemiological studies, the male sex also remained prevalent (Blazer & Wu, 2009; Han *et al*., 2009). In a study that compared samples collected with a 10-year interval, the men remained at a higher number in both samples (Sacco *et al*., 2013). Another study confirmed that admissions for drug or alcohol abuse, or a combination of the two; were predominantly men, although it should be noted that this percentage decreased between 1992 and 2005 for all drugs (Lofwall *et al*., 2008).

In relation to schooling, low levels of education are found among the population that consumes psychoactive substances (Han *et al*., 2009); 78.5% had only completed the 9th grade and 12.6% were illiterate (Pillon *et al*., 2010); with less than 15% having reached higher education (Roibás *et al*., 2010). However, another investigation did not find an association between illicit drug use and education, but significantly associated the consumption of alcohol with more educated elderly people (Blazer & Wu, 2009). Nevertheless, educational levels increased between 1991-1992 and 2001-2002 (Sacco *et al*., 2013), as did the percentage of elderly people with, at least, 12th-grade study, in the period from 1992 to 2005 for all drugs (Lofwall *et al*., 2008). Regarding the professional situation, unemployment has been associated with the consumption of illicit drugs (Han *et al*., 2009); and it has also been found that 45% of the elderly in treatment were retired and 34% unemployed (Pillon *et al*., 2010). Another study showed that 61.7% were out of work (61.7%) (Roibás *et al*., 2010), and between 1992 and 2005 the percentage of unemployment increased (Lofwall *et al*., 2008). In turn, low incomes and economic problems are very common (Han *et al*., 2009; Roibás *et al*., 2010), such that in 2001-2002 the elderly that sought help were more likely to have lower incomes in comparison to 1991-1992 (Sacco *et al*., 2013).

In contrast to what happens with alcohol consumption (Blazer & Wu, 2009), the use of illicit drugs is more common among unmarried individuals (Blazer & Wu, 2009; Han *et al*., 2009), with disorganization and lack of family support often found. In one specialized treatment center, only 34.5% of the users were married and living with their partners, while 65.4% lived alone (Roibás *et al*., 2010). In regard to users that had frequented services related to the abusive use of drugs "in the last year", in 1991-1992, 56.9% were married, while in 2001-2002 this number decreased to 49.4%. It is worth highlighting that this date is even earlier than the studies that refer to these users as predominantly unmarried, which were from 2009 and 2010. These users have also been associated with high rates of prevalence of organic pathologies and psychological disturbances, whereby 64.2% have been diagnosed with somatic diseases and 58% with associated psychiatric pathologies (Roibás *et al*., 2010).

Major depression disorder is common, in both the young and the elderly (Lofwall *et al*., 2005) and in this population, it was associated with higher prevalence of cannabis consumption and lower use of alcohol (Blazer & Wu, 2009). It was also found

that the elderly had had more major depressive episodes "in the last year" (Han *et al*., 2009). High levels of general physical morbidity are also found in the studied population (Beynon *et al*., 2009; Lofwall *et al*., 2005), especially high erythrocyte sedimentation rate (ESR) (Beynon *et al*., 2009) and cardiovascular illnesses (Schlaerth *et al*., 2004); when compared to young people. The users also present a higher amount of prescription medicine use and significantly lower average quality of life-related to health. However, both the young and the elderly present high levels of psychiatric problems "during life" and generally poor health, compared to norms of the general population (Lofwall *et al*., 2005).

At treatment centers for users with problems related to the use of psychoactive substances, the most commonly consumed substance by the elderly was alcohol, with prevalences of 83.8% (Pillon *et al*., 2010), 72.9% (Roibás *et al*., 2010) and 75.6% (Lofwall *et al*., 2005). In the first study (Pillon *et al*., 2010) this was followed by abuse of medication (2.6%) and alcohol together with cocaine or crack (2.6%), and then cannabis (2.1%). In the second study (Roibás *et al*., 2010), it was heroin (43.2%) and cocaine (34.6%) and, in the third study (Lofwall *et al*., 2005), it was cocaine (73.2%), followed by cannabis (41.5%) and sedatives/hypnotics (36.6%).

Regarding admissions to treatment services specialized in drug abuse, alcohol was also the most commonly used drug in this age group. However, it was the only drug for which the rate of admission decreased between 1992 and 2005. Nevertheless, the admissions related to the abusive use of heroin, cocaine, prescription opioids, cannabis, and methamphetamines increased during this period. It should be highlighted that the admissions for heroin use decreased significantly, but only in the period between 2002 and 2005, in people in the 50-54 age group. The most commonly used illicit drugs in this age group were heroin and cocaine (Lofwall *et al*., 2008). The consumption of alcohol maintained the highest rates, with almost 60% "in the last year", followed by the use of cannabis (2.6%) and cocaine (0.41%). For 15% of the individuals that had used two or more drugs "in the last year", the percentage of diagnosed disorders in these age groups related to substance use, is lower for alcohol (3%), cocaine (0.18%) and cannabis (0.12%) (Blazer & Wu, 2009).

Another study also reports a decrease (between 1991-1992 e 2001-2002) in disorders from alcohol use "in the last year", in the "lifelong" consumption of alcohol and in teetotalers, who also figured in smaller numbers. However, the consumption of alcohol without a diagnosed disorder "in the last year" increased; as did disturbances from the "lifelong" use of alcohol and those who "currently consume" at least 12 units of liquor in a year. The consumption of illicit drugs increased, be it "lifelong" (but not "in the last year"), or "current use", as did disorders through the use of drugs "in the last year" and "lifelong"; while the number of people that never consumed drugs diminished (Sacco *et al*., 2013). The use of substances "in the last year" increased between 2002 and 2007 for illicit drugs, including cannabis, and abuse of medication; with these users also being considered alcohol consumers. The majority of users (90%) began consuming before the

age of 30 (Han *et al.*, 2009) and presented lower than the average age for their first use of drugs, compared to most young people (Lofwall *et al.*, 2005). Among the population that resorted to emergency services, the drug that was mostly found was cocaine (62.6%), such that in 85% of the cases cocaine was the only positive result; followed by opiates (15.9%), with 64.7% of these users only consuming opiates and, lastly, cannabis (14%), of which 40% had only consumed this substance. In the same population, of the positive users, 42% had also consumed alcohol (Schlaerth *et al.*, 2004).

Cannabis use has also increased among this population, as has the prevalence of illicit drugs, especially among the urban population. More specifically, the "lifelong" use of cannabis, amphetamines, cocaine, and LSD, in people between 50 and 54 years old, increased 10 times more from 1993 (Fahmy *et al.*, 2012). Despite the sick not considering nicotine a drug of abuse and, as such, they not always reporting it to professionals, or not always being asked by the professionals (Pillon *et al.*, 2010), the "lifelong" use of drugs is related to the consumption of tobacco (Han *et al.*, 2009), whereby 49.5% of drug users that presented a positive drugs test were smokers (Schlaerth *et al.*, 2004). However, this consumption "in the last year" and "lifelong" consumption decreased between 1991-1992 and 2001-2002 (Sacco *et al.*, 2013). Voluntary admissions in this age group have diminished, whether for illicit drugs or for illicit drugs and alcohol, although admissions by criminal justice services increased between 1992 and 2005 (Lofwall *et al.*, 2008).

In a study related to clinical maintenance programs, the elderly presented significantly less positive urine tests than young people for opiates, which were also at lower levels, albeit without reaching statistical significance, for cocaine, cannabis, and benzodiazepines (Lofwall *et al.*, 2005).

A study related to injection drug use history reported that, between 1979 and 2002, the average age of injection use "in the last year" increased from 21 to 36 and "lifelong" use from 36 to 42. Between 2000 and 2002, 59.4% of the people that reported injection usage were aged between 35 and 49. It is estimated that due to the baby boomers, in 2015 people with 55 had a higher probability of already having injected drugs than those of 25 (Armstrong, 2007). However, older consumers had lower levels of high-risk behavior than younger users, such that, for every five years, significant reductions can be found in injection drug use in public, sharing needles and problems related to this behavior, whereby the older group refers to individuals of 35 and over (Horyniak *et al.*, 2013).

These studies endorse the necessity to conduct further investigations on this phenomenon (Beynon *et al.*, 2009; Schlaerth *et al.*, 2004), especially for the evaluation of the necessities of this age group (Pillon *et al.*, 2010), so as to facilitate the establishment of specific treatment (Lofwall *et al.*, 2008; Roibás *et al.*, 2010), as well as policies and treatment infrastructure that are sensitive to their needs (Fahmy *et al.*, 2012). Despite the bureaucratic and economic difficulties found in different countries and socio-cultural contexts, the planned responses should be more suited to the vulnerabilities and resources of the users (for example, it is important that

accommodation does not be given a time limit) (Roibás *et al.*, 2010). Triage of those presenting increased risk factors should be refined (Han *et al.*, 2009); healthcare professionals should question the patients on their illegal drug use and pay attention to the possibility of receiving less sincere responses (Schlaerth *et al.*, 2004).

Discussion

This study had the objective of analyzing the scientific production on the use of psychoactive substances by the elderly, as well as the socio-demographic and clinical conditions of elderly users. The majority of the reviewed studies were developed in the USA, which corroborates the findings of the literature review by Rosen, Hunsaker, Albert, Cornelius, & Reynolds (2011). In relation to sociodemographic characteristics, the studies show a predominance of males with a low level of education, among elderly users, especially in regard to the consumption of illicit drugs, although educational levels have been increasing. Lack of employment resulting in low income was also shown, confirming the results of another study (EMCDDA, 2010), an association that has been more and more evident in the literature. The consumption of illicit drugs has also been associated with groups of unmarried individuals living in isolation, while another study reported that these individuals live alone more than younger consumers, which may be related to aging itself (EMCDDA, 2010). The results indicate a high prevalence of organic and psychiatric pathological conditions, as referred to in another study (EMCDDA, 2010), highlighting infectious diseases and major depression.

Alcohol continues to be the most commonly used drug, although its consumption has been decreasing, in contrast to what has been observed in relation to illicit substances. There does not appear to be any unanimity as to the most used illicit substance, as it varies, possibly due to the different types of data collection and locations from which samples are obtained. The existence of poly-consumption can be highlighted; that is, the simultaneous consumption of various illicit substances. It also stands out the combination of these substances with alcohol and tobacco. However, the use of nicotine is not usually documented by the studies.

The literature describes the possibility of the elderly responding better to treatment (EMCDDA, 2010; Rosen *et al.*, 2011). In fact, in the present review, some references to this situation were found, whereby elderly people on treatment maintenance programs present lower consumption. I addition, despite the age of injection drug usage is on the rise, older users are still less associated with such high-risk behavior. Nevertheless, the elderly people on methadone maintenance programs have more body pain compared to the population norms for the same age and sex (Lofwall *et al.*, 2005).

Finally, the reference to the necessity of making more studies available in the area was a recurrent theme among the articles reviewed, as was the formalizing of treatment options and the provision of specific infrastructure. The lack of detection of the difficulties of these users delays the possibility of early intervention (Pillon *et al.*,

2010), which reinforces the necessity to understand the situation of these individuals in the most diverse areas of life (Roibás *et al*., 2010), document their specific necessities (EMCDDA, 2010), define specific protection factors and also investigate their caregivers, as well as the socio-economic, environmental and clinical factors associated with the problem (Simoni-Wastila & Yang, 2006). Therefore, more studies related to the characteristics of these users may contribute to the knowledge and comprehension of the factors involved in the phenomenon, facilitating identification of the problem by healthcare professionals, with early detection of their necessities and suitable responses and resources to optimize the beneficial effects of treatment, thus favoring rehabilitation and improved quality of life.

The studies recovered in the present review have some limitations that should be pointed out. Lack of definition of the term "elderly" in the studies on the consumption of alcohol and/or other drugs, and the indiscriminate use of this terminology, makes a comparison between the diverse studies difficult. At times, the articles make reference to consumption statistics without explanation of the diagnostic classification utilized (use, abuse or dependence). Besides this conceptual problem, some studies are centered only on the consumption of the principal drug, while others are fixed on the multiple drugs being consumed. Types of consumption are also diversified in the different studies, from recreational use to substance use disorder. Rosen *et al*. (2011) report that the ways in which the diagnoses of mental illnesses are evaluated vary considerably, which was also shown to be present in these studies. However, Hulse (2002) reports that the DSM-IV identifies this type of consumer less precisely, in comparison to ICD-10. This is because the diagnosis of abuse or dependence in DSM-IV centers on social, legal, interpersonal and professional consequences, which may not be so applicable given the lifestyle changes that occur in this age group. As already stated, this reinforces the necessity of defining specific forms of evaluation and diagnosis for this population (Gfroerer *et al*., 2003; Rosen *et al*., 2011; Hulse, 2002).

Another limitation found in the reviewed studies refers to the methodological design, whereby some investigations use small convenient samples (Rosen *et al*., 2011). Moreover, with the exception of the studies carried out at hospital emergency services, data collection was based on self-reporting, which may influence the data, be it through the distortion of the patient's memory or through the desire for social acceptance (Han *et al*., 2009). Finally, it should be considered that it is necessary to perfect the LE of publications so as to provide more solid basis for professional orientation and practice. The limitations mentioned also ultimately influence the conclusions of the present review.

Future studies should consider larger samples, either with users in treatment or with those that are without treatment (Rosen *et al*., 2011). The clinical consequences of "lifelong" use should be observed (Fahmy *et al*., 2012) and understanding should be sought as to whether consumption among this age represents a pattern of

continuous use since youth, with relapse after abstinence, new use, or even a combination of these possibilities (Lofwall *et al.*, 2008). The researchers should also seek to prioritize robust methodological designs, which provide more consistent LE.

The use of illegal drugs by the elderly is characterized as a health problem that has been neglected by public policies, despite implicating in high social cost, with repercussions in terms of the financial burden (Schlaerth *et al.*, 2004). Consequently, interventions involving this population should be efficient and cost effective (EMCDDA, 2010), without neglecting the prevention and promotion of health through inter-sectoral cooperation. The practice of physical activity and engagement in leisure activities should be stimulated in order to promote a healthy lifestyle.

There should also be development of a framework to direct clinical care, service development, staff training and orientation on appropriate medication for this population (EMCDDA, 2010; Gfroerer *et al.*, 2003; Rosen *et al.*, 2011), including for substitution treatments, besides integrating professionals experienced in drug treatment at geriatric services (EMCDDA, 2010). Greater investment is desirable for research aimed at the use of trans-culturally adapted diagnostic instruments that are valid for the detection of substance use and abuse among this population.

This review reinforces the necessity for more sophisticated production of knowledge in this area, especially in Portugal, given that no Portuguese studies were found. Considering the high rate of aging in the population, the increase in chronic conditions resulting from the epidemiological transition, as well as the associated social and health costs, it can be concluded that it is necessary to know the reality of licit and illicit substance use in the elderly population so as to understand the dimension of its impact on public health.

Due to the already expected increase in the number of elderly people dependent on psychoactive substances, their specific vulnerabilities (physical, psychological and social) and the scarcity of existing literature, especially in Europe, it is necessary to invest in research on the social and health characteristics and necessities of this population. This would enable the development of treatment capable of offering responses, which should be implemented in the coming years. It would also enable increased awareness and capacitation of the professionals with knowledge on this population, establishing subtle differences between the diverse age groups, so as to facilitate the development of evaluation instruments, as well as methods and places for the tracking of these users and the design of future strategies of prevention, intervention and promotion of health.

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