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Review Article

Crack consumption and tuberculosis: an integrative review

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This article aimed to verify the scientific production regarding the consumption of crack and its favoring in the occurrence of tuberculosis (TB), identifying the main approach adopted in these publications and describing the main results of the studies found. It is an integrative review in the database of PUBMED, LILACS and SCIELO portal. The found articles have the following main approaches: the profile and behavior of users, the relationship between TB and drug use, and health strategies presented for the control of TB in these individuals.

Descriptors: Tuberculosis; Crack Cocaine; Drug Users.

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Consumo de crack e a tuberculose: uma revisão integrativa

Este artigo teve por objetivo verificar a produção científica quanto ao consumo de crack e seu favorecimento na ocorrência de tuberculose, identificando o principal enfoque adotado nessas publicações e descrevendo os principais resultados dos estudos encontrados. Trata-se de revisão integrativa nas bases de dados PubMed, LILACS e do portal SciELO. Os artigos encontrados têm como principais enfoques: o perfil e comportamento dos usuários; a relação entre a tuberculose e o uso da droga, e as estratégias de saúde apresentadas para o controle da tuberculose nesses indivíduos.

Descritores: Tuberculose; Cocaína Crack; Usuários de Drogas.

Consumo de crack y la tisis: una revisión integrativa

Este artículo tuvo por objetivo verificar la producción científica en cuanto al consumo de crack y su favorecimiento en la ocurrencia de tisis (TB), identificando el principal enfoque adoptado en estas publicaciones y describiendo los principales resultados de los estudios encontrados. Se trata de una revisión integrativa en las bases de datos PUBMED, LILACS y el portal SCIELO. Los artículos encontrados tienen como principales enfoques: el perfil y comportamiento de los usuarios; la relación entre la TB y el uso de la droga; y las estrategias de salud presentadas para el control de la TB en esos individuos.

Descriptores: Tuberculosis; Cocaína Crack; Consumidores de Drogas.

Introduction

According to the World Health Organization (WHO), about 10% of the populations inhabiting big urban centers worldwide consume psychoactive substances regardless of gender, age, education level or social status. This fact is equivalent in large urban centers of Brazil[1].

The consumption of these substances has brought numerous challenges to public policies. The potential that the drugs have to influence and transform the structure of people creates obstacles for the family unit and affect the daily lives of health services that need to adapt themselves to the highlighted needs in the community[2].

The crack is consumed by less than 1% of the population, but their use has been considered a public health problem due to the progressive growth among children and adolescents living on the streets, mostly in southern and southeastern Brazil[3].

The crack consumption contributes to transmission and contamination of diseases among users by decreasing the immune defenses and expose people to different situations and risk behaviors. Among the diseases that can be spread from drug use the tuberculosis (TB) stands out. The risky lifestyle of the users, the housing conditions, the accumulation of people indoors and isolated for consumption, the sharing of materials such as pipe and malnutrition caused by the drug favor the progression to active disease[4].

Against this background it is important to expand the look to this specific population, to understand their behavior and know their opinions, thus enabling a greater health intervention in daily lives of these users and strengthen strategies for prevention and control of TB.

Actions and strategies have been implemented to reduce the risk of contagion and / or worsening of the disease for drug users infected with TB. The strategies of harm reduction implemented by Ordinance No. 1028, 1st July 2005 aims to: stimulate ways of preventing infections by HIV / AIDS, hepatitis and tuberculosis through information, education and counseling; disseminate public services of health care and to ensure integral care for drug users[5].

Despite the measures of protection and education activities offered to crack users it is considered that these have a higher risk of being contaminated with TB due to their social, psychological and clinical vulnerability. Given this, it was intended, through an integrative review, verify scientific production regarding the consumption of crack and its favoring in the occurrence of TB, identifying

the main approach adopted in these publications and describing the main results of the studies found.

Methodology

The integrative review is a research method that allows the search, critical evaluation and synthesis of the available evidence about the research theme. This method aims to gather and synthesize research results about a defined topic or issue in a systematic and orderly manner, contributing to a deeper understanding of the subject investigated. The final product is to identify the current status on the selected theme, the implementation of effective interventions in health care and reducing costs as well as identifying gaps that lead to the development of future research[6].

For the preparation of this integrative review the following steps were covered: the establishment of the matter and objectives of the integrative review, the establishment of criteria for inclusion and exclusion of articles (sample selection); definition of the information to be extracted from selected articles, analysis of results , discussion and presentation of the results and the last step was the presentation of the review.

So, to guide the integrative review, it was used the following question: What is the approach and the main results of the publications regarding the consumption of crack and its favoring in the occurrence of tuberculosis?

As controlled descriptors it was used "crack cocaine" and "tuberculosis" with their English translations, defined by reference to MeSH and DECS. The bases used were the Public Medical (PubMed), Latin American Literature on Health Sciences (LILACS) and the portal Scientific Electronic Library Online (SciELO).

The search limits used were articles published in Portuguese, Spanish and English. Temporal cut was not used in the query of the database. The initial results of the search were 13 articles, 11 in PubMed, only 1 in LILACS and 1 in SCIELO.

It was performed initial reading of all articles resulting in 12 selected for analysis, since one of the publications did not address the issue under study and was excluded. After reading the posts was elaborated a synoptic table (Figure 1) for synthesis of selected publications, the following aspects were covered: database, title of the research, names of the authors, year of publication, country of study, type of study, sample and approach of the publication. After the organization of the data was carried out a descriptive analysis of the main results of the studies divided into three categories according to the similarity and proximity of the objectives and results.

Title/Author/Rev.	Year/Country	Objective	Design	Sample	Focus
Tackling tuberculosis in London's homeless population. Burki T. The Lancet, Volume 376, Issue 9758, pages 2055-2056,	2010/England	Report about the high rates of tuberculosis in western Europe, emphasizing the homeless population as higher risk.	Report	X	Strategies to Control TB
Limited utility of name-based tuberculosis contact investigations among persons using illicit drugs: results of an outbreak investigation. Asghar RJ, Patlan DE, Miner MC, Rhodes HD, Solages A, Katz DJ, Beall DS, Ijaz K, Oeltmann JE. J Saúde da População Urbana, 2009 Sep; 86(5):776-80.	2009/United States of America	Describe transmission patterns and make recommendations to control TB among drug users.	Quantitative Research	18 patients with resistance to isoniazid were interviewed and their medical records were reviewed 187 contacts of these patients	Strategies to Control TB
Drug abuse profile patient delay, diagnosis delay and drug resistance pattern- among addict patients with tuberculosis Shamaei; Marjani; Baghaei; Chitsaz; Rezaei Tabar; Abrishamj; Tabarsi; Mansouri; Masjedi. Int J STD AIDS/ MEDLINE/PubMed	2009/Iran	Determine the profile of patients admitted with TB with a history of drug use in a national referral hospital in Iran	Quantitative Research	944 records of new TB cases admitted to a national referral hospital in Iran, 2003-2006	Clinical Behavior Profile.
Crack Cocaine and infectious Tuberculosis. Stoy, Bothamley, Hayward. Emerg Infect Dis./MEDLINE/ PubMed	2008/England	Verify if the crack use increases the risk of pulmonary TB with positive smear and that a component of this risk is related to lung damage caused by the inhalation of crack.	Quantitative case-control	970 patients with pulmonary TB between 15 and 60 years	Clinical
Alterações pulmonares em usuários de cocaína. Terra Filho, M; Yen. CC.; Santos, UP; Munoz, DR. São Paulo Med. J./ SCIELO	2004/Brazil	Present to physicians the pulmonary aspects of cocaine use and alert them about the various effects of this drug on the respiratory system, emphasizing those related to the long-term use.	Narrative Review	X	Clinical

(continue...)

Doing a shotgun: a drug use practice and its relationship to sexual behaviors and infection risk. Perlman; Henman; Kochems; Paone; Salomon; Des Jarlais. Soc Scj Med. 48(10):1441-8	1999/United States of America	Characterize fully the practice of shotgunning, the range of associated behaviors, and settings and contexts in which this practice occurs.	Qualitative Research Ethnographic Observation	4 drug users, 3 men and 1 woman	Behavior
Tuberculosis screening anel compliance with return for skin test reading among active drug users. Malotte; Rhodes; Mais. Am J Public Health.	1998/United States of America	Evaluate the independent and combined effects of different levels of monetary incentives and a theory based in educational intervention on return for reading the skin test of drug users.	Quantitative Research Randomized clinical trial	1004 drug users randomly divided into 3 groups of monetary incentive.	Strategies of Control of TB
Crack cocaine and schizophrenia as risk factors for PPD reactivity in the dually diaenosed. Taubes T, Galanter M, Dermatis H, Westreich L. JAddict Dis. 1998;17(3):63-74		It was studied factors that contribute to an increased risk of positive PPO	Quantitative Research	147 hospitalized patients diagnosed with mental illness and substance abuse in a large urban hospital	Clinical
Shotgunning as an illicit drug smoking practice. Perlman; Perkins; Paone; Kochems; Salomon; Friedmann; Des Jarlais;	1997/United States of America	Investigate the practice of shotgunning and track tuberculosis among drug users	Quantitative Research	354 drug users were interviewed and screened for TB	Behavior
Mycobacterlum tuberculosls Inftctlon among crack aM Injectlon drug users in San Juan, Puerto Rico. Reyes; Robles; Colon; Marrero; Castillo; Melendez; PR de Saúde J. Sci 1996 Sep; 15(3):233-6	1996/United States of America	Determine the prevalence of Mycobacterium tuberculosis infection and its association with HIV and health risk factors among drug users	Quantitative Research	716 UDI and crack users were subscribers from community sites	Clinical
Carbon-laden macrophages in pleural fluid of crack smokers. Singh; Greenebaum; Cole Diagn Cytopathol 1995 novembro; 13(4):316-9	1995/United States of America	Reporting the discovery of carbon-laden macrophages in four pleural fluid cytological preparations of two smoking crack	Case Report	2 crack users	Clinical
A cluster of tuberculosis among crack house contacts in San Mateo County, California. Leonhardt KK, Gentile F, Gilbert BP, Aiken M. Am J Public Health. 1994 novembro; 84(11):1834-6.	1994/United States of America	Investigate cases of tuberculosis among individuals residing or transiting in a house used for the consumption of crack	Quantitative	89 individuals classified by levels of exposure	Behavior

Figure 1 - Synoptic Table for synthesis of selected articles. 2012

Results and discussion

It was found in this study the lack of publications involving TB and crack use in these databases. However, even if occasional, publications on the theme allow viewing of aspects relevant to the topic, perceived by analyzing the approach.

Identified a predominance of publications from North America, 66.7% are from the United States of America (USA), which can be justified by the drug have become popular in this country in the states of New York, Miami and Los Angeles from the 80's[7] and only have records of the crack in Brazil in 1988 in the state of São Paulo[8].

It was considered recent the publications on the subject, since the oldest article found in this review is dated from 1994. In subsequent years, there was on average one publication / year on the issue of TB and Crack / Cocaine. This fact can be explained because until the year 1989 the national epidemiological surveys not detected the presence of the crack. However, in 1993 the use reached 36% of the population and in 1997 this number increased to 46%. Specialized services for addiction treatment felt the impact when in some centers the proportion of crack users was from 17% (1990) to 64% (1994)[9].

When establishing the main focus of the publications it was identified that five had clinical or experimental approach, three were based on strategies for TB control in drug users and four were based in behavior and profile of crack users with TB.

Based on the central focus of the publications it was created the following categories of results analysis: clinical relationship of TB with the consumption of crack; user profile and behavior, and health strategies presented for the control of TB in this specific population.

Clinical relationship of tuberculosis with the consumption of crack

All studies found refer some kind of clinical relationship of TB with crack consumption, either directly by mention physiological factors of relationship or indirectly by assign clinical relationship due to behaviors that stimulate other factors of direct association.

Among people with tuberculosis, consuming crack favors spread of disease due to cough induced by drug use, the contacts are very close indoors, and even the spread is enhanced by intermittent flow of people[10]. Furthermore, the spread of HIV among drug users and malnutrition make them more susceptible to the development of TB, in addition to providing rapid disease progression[4].

As for the TB diagnostic tests in crack users, it is clear that the relative risk of smear-positive is 2.4 times higher in crack users compared with non-drug users, when compared to users of other drugs the relative risk for crack users was also higher (1.6 times)[11]. In addition, another U.S. study identified carbon loaded macrophages in pleural fluid of crack users[12]. There are several acute pulmonary complications of a crack user: chest pain, dyspnea, dry cough or with sputum elimination and fever are some signs and symptoms present. In this context, if the user consumes the drug in an inappropriate environment with several persons the transmission of TB will be more prevalent when compared with other drugs[9] when having the presence of a bacillus patient.

By correlating the Tuberculin Purified Protein Derivative (PPD) test with the use of crack 30 days prior to hospitalization of individuals with schizophrenia, a study (1998) found significance of this item with positive PPD. Also revealed increased risk for TB among crack users by presenting a relative risk of 3.53 times for positive PPD when compared with non-crack users[13].

In contrast, in a study accomplished with 716 injecting drug users (IDUs) and / or crack users, it was identified that 10.3% were reactive to PPD skin test and 34.7% were seropositive for human immunodeficiency virus (HIV), and TB infection was more prevalent among IDUs and among those HIV positive[14]. Due to the form of administration of the drug, IDUs have a higher chance of falling ill with opportunistic infections[15]. To be HIV positive is considered a potent risk for the development of TB, since it increases the chance of activation of the latent Mycobacterium tuberculosis bacillus and by inducing a rapid disease progression and re-infection[16].

Regarding the treatment, although without statistical significance between drug use and resistance to antituberculosis drug, the frequency of individuals who are resistant to first-line drugs was higher among users of opium, heroin and crack setting 19.5% of 944 respondents[17]. With this, it is clear that users of these drugs have a higher risk of contracting the disease, and possibly may have difficulties related to treatment.

An informative study for the medical profession concluded, based on similar results to those presented earlier, that the professional must look into your daily routine for the various clinical manifestations of pulmonary complications that can be influenced by the method of drug administration, by the dosage, as well as by the presence of associated substances, and defines the range of youth as the main focus of attention, since the classic clinical presentation is most common among children and young adults[17].

Profile and behavior of crack users affected by tuberculosis

In many countries, such as England and the United States of America, users are usually young adult males[16] and with complicated social factors such as poverty and low education[18]. Regarding the type of drug appear crack, heroin and opium, and even the combined use of them[19]. These findings are similar to Brazilian studies that indicate that the crack users are mostly young, with low-income and male[20-21]. These data connect drug users to the reality of TB, a disease that affects mainly people of lower economic classes, considering that this disease still presents itself as a serious social and health problem[22].

It was found that drug users who have TB have a longer search for a health service when compared with non-drug users[16]. This can be attributed to impaired perception of symptoms, or to decide to look for a health service, either for fear of reprisal or stigma, or because they live in countries where there is not a public health care for lack of monetary resources.

After entering in the health network, it turns out that the diagnosis is more responsive to users when compared to non-users[16], moreover, the non-users of crack tend to have a longer time between diagnosis and treatment than crack users[11]. One factor that can affect this result is the magnified suspect in individuals considered at higher risk of contracting TB, or the devaluation of the cough or unsuspected disease due to unpreparedness of the professionals[23].

Furthermore, a study found that it is statistically significant the relationship between the use of crack and searching for treatment in emergency departments[11]. Probably due to the worsening of the disease in drug users, since them take more time to search for some service due to several social and economic factors and for the impaired self-perception as a result of drug use. Also, when crack users need healthcare they prefer hospitalization and have poor adhesion at the later stage, the ambulatorial [24].

Another study of this population demonstrated, by monitoring a case of TB, that this left a trail of disease spread due to the movement in different environments, it was found that it is associated with lack of access to health services, abandonment of treatment, environment and the own consumption of drugs and the homeless population[10].

Apart from the circulation by different environments, draws attention in the literature other behavior of drug users that propagate TB, the shotgun practice. Shotgunning is a way to smoke the drug where the "smoke" aspirated by a user is passed "mouth-to-mouth" to another user. This is a common practice among crack users and with great potential for transmission of respiratory pathogens such as the causative agent of TB, Koch's bacillus[19]. This practice can be considered as a form of drug use with close ties to sexual behavior, motivated by both pragmatically

as interpersonal relations which, according to the author, to be combined into a single phenomenon increases the risk of potential direct and indirect disease transmission by sexual, blood and respiratory routes[25].

In 1997 , a study showed the frequency of shotunning by drug type and association with the user profile in individuals with TB, identifying that 59 respondents reported shotgunning while smoking crack (68%), marijuana (41%), or heroin (2%), to determine the association the multivariate analysis revealed that drinking to get drunk (OR 2.2, IC 95% 1,1-4,3), having engaged in high-risk sex (OR 2,6, IC 95% 1,04-6,7) , and crack use (OR 6.0, IC 95% 3,0-12) were independently associated with this practice[19].

These indicators show the need for guidance on the risks of shotunning and the constant need for intervention and control of TB among drug users, since the use and neglect of self-care enhance the vulnerability of this population.

In a specific study on this practice, it was concluded that it is necessary to evaluate and develop possible interventions to reduce overall risk that consider the relationship between interpersonal and sexual behavior and specific forms of drug use[25].

Health strategies to control tuberculosis in crack users

Some studies are focused on developing strategies for improving the diagnosis of TB in drug users[26], to enhance the care of crack users[18] and to expand the number of contacts of drug users evaluated[27]. It is noteworthy that all studies working with actions tests to control TB in drug users refer as need to increase investments to combat the disease.

A U.S. study in 1998 investigated the return for reading of PPD of 1004 drug users randomly divided into three groups with different financial incentives, noting that 90% of people who received $ 10 returned for skin test reading compared with 85% who received $ 5 and 33% of those who received no monetary incentive, demonstrating that the monetary incentive in this population may help in the diagnosis of TB. The same study applied health education sessions during application of the skin test, although it was identified that this action had no impact on return of users to read the PPD[26].

Once diagnosed it is necessary to ensure adherence to treatment which involves the user to follow it properly, it requires to provide to users some alternative to facilitate this process. In London, it was suggested adding methadone to TB treatment for alcoholics, however it is recognized that adding addict drug does not work for users of crack, which does not have a replacement yet. The same author says that mandatory screening when entering in shelters is a possibility and regrets that in the UK the nursing care and treatment supervision provided are still scarce[18].

In Brazil, the role of family health teams should ensure the follow-up of TB patients in their territory, especially those with most risk of abandonment, as users of crack and other drugs, this practice of supervision of treatment could decrease the rate of abandonment in this population[4]. However, several weaknesses in the infrastructure and organization of these services may hinder the effective monitoring of drug users in treatment for TB.

Another point that requires a discerning look is to identify contacts of TB patient, especially when it is a drug user which often goes a long way to search or consume drug. Given this, one study found the relative risk of TB among contacts named by the user and contacts observed by health staff, noting that compared to named contacts, the contacts observed were 8 times more likely to have positive results in the cutaneous test (RR = 7,8; IC 95% = 3,8-16,1). With this, the authors considered that seek and test the contacts observed can provide a higher yield than the traditional naming of contacts when it comes to illicit drug users or individuals who attend places characterized by the use of illicit drugs[27].

Final considerations

It was identified that in the databases consulted is still scarce the number of available publications concerning the use of crack and its favoring in the occurrence of TB, which is at variance with the epidemiological and current public health situation. In addition, the publications are aimed at the crack user profile with TB and there is little about the behavior of these individuals as to the patterns of drug use, psychological and social repercussions and TB treatment for this specific population. Even smaller is the number of articles on current strategies developed for this population in TB control, with little effect on suggestions made by these studies due to monetary demands that paragraphs list these strategies. Regarding the clinical relationship between TB and crack use there are several aspects of the relationship between illness and consumption of drugs, strengthening the association between them.

It is necessary to develop studies that address user behavior to better understand these individuals and thus be able to plan intervention strategies for TB control considering the specificities of each subject.

It is believed that the role of health professionals through the host and strategies to reduce harm to health could provide favorable results for crack users, encouraging self-care and health-promoting improvements in quality of life.

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