Review

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Substance use disorder and schizophrenia: prevalence and sociodemographic characteristics in the Latin American population

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Interest in understanding the comorbidity of schizophrenia and substance use disorder has been increasing due to the increase of this diagnosis, to the negative effects observed in the subject and to the health service costs. This dual disorder can have dramatic effects on the clinical course of the psychiatric disorder, this being, for example increased relapses, re-hospitalizations, more severe symptoms, non-compliance with antipsychotic medication, marked mood changes, increased rates of hostility and suicidal ideation as well as in other areas of functioning, including interpersonal violence and victimization, homelessness, and legal problems. Literature from the United States and Europe in particular suggests that the prevalence rates for this dual diagnosis may range from 10 to 70%.

In this study, we have reviewed the prevalence of the dual diagnosis of schizophrenia and substance use disorder as well as the sociodemographic characteristics in the literature on Latin-American populations. Notwithstanding that the dual disorder is a widely accepted diagnosis, relatively little is known about its prevalence in Latin American populations or about the environmental factors that may influence it, as well as about the demographic, clinical, and other characteristics of these individuals. A better understanding of this diagnosis might improve the methods for the detection and assessment of substance use disorder in persons with severe mental illness such as schizophrenia.

Key Word:
Dual diagnosis, comorbidity, schizophrenia, substance use disorder, Latino populations, Latinos.

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Esquizofrenia y trastorno en el consumo de sustancias: prevalencia y características socio-demográficas en la población Latina

El interés por comprender la co-morbilidad de la esquizofrenia y el trastorno en el uso de sustancias, ha aumentado debido al incremento de este diagnóstico, a los efectos negativos observados en el sujeto y a los costos en los servicios de salud. Este trastorno dual puede tener efectos dramáticos en el curso clínico del trastorno psicótico tales como: mayores recaídas, re-hospitalizaciones, síntomas más severos, no adherencia al tratamiento antipsicótico, cambios marcados del humor, aumento en el grado de hostilidad e ideación suicida, así como alteraciones en otras áreas del funcionamiento incluyendo violencia, victimización, indigencia y problemas legales. La literatura proveniente en particular de Estados Unidos y Europa sugiere que el rango de prevalencia para este diagnóstico puede oscilar entre el 10% hasta el 70%.

En este estudio, revisamos la prevalencia del diagnóstico dual de esquizofrenia y trastorno en el uso sustancias, así como sus características sociodemográficas, con base en la literatura disponible alrededor del mundo dando énfasis en la poblacion latina. A pesar de que este diagnóstico es ampliamente aceptado, se conoce poco sobre su prevalencia en la población latina, sobre los factores ambientales, demográficos, clínicos y otras características de estos individuos. Un mejor conocimiento sobre este diagnóstico permitiría mejorar los métodos para la detección y adecuada valoración del trastorno en el uso de sustancias en personas con trastornos metales severos como la esquizofrenia.

Palabras clave:
Diagnóstico dual, comorbilidad, esquizofrenia, trastorno en el consumo de sustancias, poblaciones latinas, latinos.

INTRODUCTION

The epidemiological studies worldwide, most coming from the United States (USA) and Europe, have described the prevalence of substance use disorder (SUD) in the general population, in specific populations such as in subjects with mental diseases, and in minority populations such as those from Latin America. The prevalences reported vary widely among the existing investigations, possibly because of differences in the methodology used, the diagnostic criteria used, the time period studied and the origin of the population.[1,2]

The American Association of Psychiatry in the "Diagnostic and statistical manual of mental disorders" 4th edition, revised text (DSM-IV-TR),[3] in the section called "Substance-related disorders" includes SUD and alcohol use disorder. Each one of these sections contains drug or alcohol abuse and dependence, respectively.[3] For the effects of this review, we will use the expression SUD for both the abuse and/or dependence disorders, both for alcohol as well as illicit drug. Furthermore, when we refer to "dual diagnoses," we will be referring specifically to the diagnoses of SUD concurrent with Schizophrenia (SC).

PREVALENCE OF SUD IN DEVELOPED COUNTRIES

At the onset of the 1980s, the National Institute of Mental Health of the United States, in collaboration with five research teams (University of Veale, University of Johns Hopkins, University of Washington in San Luis, Duke University, and University of California in Los Angeles) developed what was the first large survey in the USA on mental diseases. The study, which was called the "Epidemiology Catchment Area" (ECA), used the "Diagnostic Interview Schedule" (DIS) as an evaluation tool, basing the diagnoses on the DSM-III. The total sample was 20,291 individuals. The objective was to determine the prevalence of mental disorders for specific groups in the USA (for example, in older adults, in different ethnic groups, in the rural and urban population). Therefore, it has not been possible to generalize their results on a national level.[4] In this study, alcohol or drug dependence or abuse prevalence over a lifetime was reported in 16.7%.[5]

At the onset of the 1990s, the "National Comorbidity Survey" (NCS) calculated the prevalence of psychiatric disorders according to the DSM-III, both over a lifespan as well as during the year prior to the interview. This investigation was the first to administer a structured psychiatric interview, that is, the "Composite International Diagnostic Interview" (CIDI), in a representative and probabilistic sample of 8,098 subjects from the United States.[6] Therefore, it is the first study to make it possible to generalize the prevalence of mental disorders in the USA.[4] They found that the prevalence of SUD in the year prior to the interview was 11.3% and over the lifetime 35.4%.[6]

Following the NCS, the "National Comorbidity Survey Replication" (NSC-R) was developed during February 2001 to September 2003. It used a sample of 9,282 persons and was also a representative investigation for the USA population. Using the already-mentioned structured diagnostic interview (CIDI), with diagnostic criteria of the DSM-IV, it was estimated that 14.6% of the United States population met the criteria for SUD over their lifetime. [7]

Another representative study is that of the "National Epidemiologic Survey on Alcohol and Related Disorders" (NESARD), carried out between 2001 and 2002. The participants included 43,093 non-institutionalized civilians, inhabitants of the USA, including Alaska and Hawaii. It used the interview called "Alcohol Use Disorder and Associated Disabilities Interview Schedule-DSM-IV" (AUDADIS-IV), created by the National Institute on Alcohol Abuse and Alcoholism of the United States. The prevalence for SUD was 9.35%,[1] while the lifetime prevalence for the alcohol use disorder was 30.3% [2] and for illicit drugs 10.3%. [8]

There are three studies on the prevalence of SUD in other parts of the world that also used a large population sample and a methodology similar to that of the NCS and NCS-R, using the CIDI and diagnostic criteria of the DSM. The first one, the "Netherlands Mental Health Survey and Incidence Study," was a prospective study with 7,076 subjects to determine the prevalence of psychiatric diseases in Holland. The prevalence of SUD over the lifetime in the previous year and in the previous month of recruitment of the subjects, in accordance with the DSM-III criteria was 18.7%, 8.9% and 5.8%, respectively.[9] The "Australian National Survey of Mental Health" interviewed a representative sample of 10,641 subjects and reported a prevalence of 3.4% in the month prior to the interview and of 7.9% in the year prior to the interview.[10] The objective of the last one of the three investigations, that is the "German Health Survey–Mental Health Supplement," was to determine the prevalence of the somatic and mental disorders in that country. It was carried out in a representative sample of 4,181 individuals, using a modification of the CIDI for the diagnostic evaluations called "Munich CIDI," this being an interview based on the DSM-IV criteria. Prevalence over the lifetime, in the past year, and in the 4 weeks prior to the interview were reported as, respectively, 9.9%, 4.5% and 2.9%.[11]

PREVALENCE OF THE SUD IN LATIN AMERICAN POPULATIONS

The Latin American population differs from the non-Latin American population in the prevalence of mental

diseases.[12, 13, 14] However, few publications have studied this ethnic group. The principal studies report the prevalence of SUD in Latin American populations, however in subjects that live in the USA, it being likely that these results cannot be extrapolated to the Latin Americans who live in their native country. In the second part of the previously mentioned NCS-R, 5,692 persons out of the 9,282 initial subjects were reinterviewed. The sample was subdivided into Hispanics, non-colored Hispanics and non-whites Hispanics. The results show that the Hispanic group had a similar risk of SUD as the non-Hispanics, and that the prevalence over the lifetime in Hispanics was 16.1%.[13]

Different data are seen in the NESARD study that obtained the prevalence over the lifetime for specific psychiatric disorders according to the ethnic group and country of birth. For the alcohol use disorder, it was found that the prevalence for Puerto Ricans was 18.5%, four Cuban-Americans 10.2% and four white non-Hispanics 33.9%. The prevalence for any substance use disorder was 8.5%, 4.8% and 11.2%, respectively.[12] The authors concluded that the SUD occurs in lower number in Hispanics and that the risk in general increases for subjects who were born in the USA regardless of the ethnic group.[12] This finding is in agreement with another study that reported greater risk of suffering SUD for the Mexican-Americans born in the USA, and for the non-Hispanic whites born in the USA, compared with those who were born in Mexico.[14]

From May 2002 to September 2003, the "National Latino and Asian American Study" was carried out with a representative national sample of Hispanics living in the USA. The final sample consisted of 2,554 subjects from four groups: Mexicans (868), Puerto Ricans (495), Cubans (577) and others (614). The results have shown that Puerto Rican men have a greater likelihood of suffering SUD then Cuban men and that Puerto Rican women also have a higher likelihood than the Cuban men and that the Puerto Rican women also have a higher likelihood than the Cubans and Mexicans. In addition, the above described results were replicated, this showing that the likelihood of suffering SUD is significantly lower in immigrant Latinos compared with Latinos born in the USA.[15] The study reported the prevalence of SUD in 11.2%,[16] this percentage being lower than that found in the NCS-R. It is important to observe that the Latin American sample in the NCS-R included 527 subjects while the sample of the latter study described was made up of 2,554 individuals.

Zhang et al. studied the prevalence of 16 mental disorders according to the DSM-III in Europeans-Americans, Afro-Americans, Hispanic-Americans and Asiatic-Americans in 18,126 residents of five regions of the USA.[17] They reported a prevalence of 4.2% for the substance use disorder over the lifetime in the Hispanic population, this percentage being lower in Hispanics than in European-Americans. The prevalence for abuse and/or dependence of alcohol for Hispanics was 16.6%, a percentage that was very similar to that found for European-Americans. [17]

We found two studies on SUD that used Latin-American populations of subjects living in their respective Latin American countries. These studies established a comparable methodology (applying the CIDI and the diagnostic criteria of the DSM-III or DSM-IV). The "Epidemiological Catchment Area Study in the city of Sao Paulo" was carried out in Brazil between 1994 and 1996 with 1,464 Brazilians. It reported a prevalence of 16.1% for SUD over the lifetime according to the DSM-III.[18] The second investigation, that is the "Encuesta Mexicana Nacional de Comorbilidad" (Mexican National Comorbidity Survey), studied the prevalence of psychiatric disorder over the lifetime according to the DSM-IV in a probabilistic sample of 5,286 non-institutionalized persons in the urban zone of Mexico. It showed that 7.8% of the sample met the criteria for SUD at some time point in their lives.[19]

DUAL DIAGNOSIS: SCHIZOPHRENIA AND DISORDER IN SUBSTANCE USE IN WEALTHY COUNTRIES

It has been described that subjects with schizophrenia have a greater risk than the general population of presenting substance abuse or dependence during their lifetime.[5] Multiple investigations have shown elevated percentages of SUD associated to any mental disorder.[5, 20-24] However, few of them specifically calculate the prevalence of the comorbidity of SUD with psychotic disorders, and although some of them have analyzed it, these studies still are limited because they were conducted with small population samples.[25, 26] Since the World Health Organization carried out an international study that involved 1,202 patients with schizophrenia from 9 different countries,[27] few investigations have been carried out that use a large sample and appropriate methodology for the respective diagnoses.

The high prevalence of dual diagnoses (SC and SUD) have been mainly reported in studies from the USA and Europe.[5, 21, 28-30] In the SUD, it was estimated that 28.9% of persons with mental disease will have SUD over their lifetime and that schizophrenia was the third most frequent comorbid mental disease with SUD. The study reported a prevalence of 47.0% during the lifetime for any comorbid alcohol or substance abuse or dependence in persons with schizophrenia or schizophreniform disorders. The risk of developing SUD over the lifetime was 4.6 times greater for persons with schizophrenia than for persons without mental disorders.[5]

In the NCS-R, 2,322 were randomly selected. In them, prevalence for comorbid SUD with non-affective psychosis

was evaluated, using the DIS, CIDI, the section of the "Structured Clinical Interview for DSM-IV" and the diagnostic criteria of the DSM-IV. The comorbidity of nonaffective psychosis with SUD over the lifetime was 26.8% and prevalence in the year prior to the investigation was 15.6%.[31]

In the study "Clinical Antipsychotic Trials in Intervention Effectiveness " (CATIE), carried out by the National Institute of Mental Health of the United States,[32] the SUD was determined in a sample of 1460 persons with schizophrenia, it being shown that 60.3% of them had at least one substance abuse or dependence.[32] This study was carried out between the years 2001 and 2004 and 57 regions of the USA. The diagnosis of schizophrenia was based on the DSM-IV, using the review of the medical dossiers and interviews with the available informers. In order to diagnose SUD, the "Structured Clinical Interview" scale was used, this being confirmed with physiological indicators, urine or hair samples, and family interviews.[32]

On the other hand, Cantor-Graae analyzed the studies published between the year 1992 2000 on the comorbidity of SUD in schizophrenic individuals. They only included those in which there was diagnostic information of schizophrenia, schizoaffective disorder and SUD, which had had a sample size of at least 30 subjects, that did not include studies in which the criteria used to diagnosis abuse or dependence were not clearly specified. In all, a total of 47 studies (10 from Europe, 2 from Canada and 35 from the USA) that reported prevalences of dual diagnoses between 40 and 60% over the lifetime were reviewed.[33]

Different investigations were carried out on the subject in other wealthy countries, but as has already been previously mentioned in this review, they had the limitation that they were done in a reduced sample of the population and/or also with different methodologies, which made it impossible to compare them.[20, 21, 34-40] In these articles, the comorbidity of SUD in individuals with schizophrenia or other psychotic diseases varied from 10 to 70%, a variation that was mainly attributed to the population analyzed, the time period used to conduct the study and the instruments used.[20,21,34-40]

There are few studies that compare the prevalence of SUD in subjects diagnosed of schizophrenia versus individuals in the general population. In a cross-sectional study performed in Oslo, Ringen Pa compared 148 subjects with schizophrenia or with bipolar disorder in the stable phase with 329 individuals representative of the general population. The study showed a prevalence of SUD in 59.9% of the patients versus 41.7% in the control sample. The diagnostic criteria were based on the DSM-IV and only the disorder in the use of illicit drugs not including alcohol was evaluated.[21]

DUAL DIAGNOSES: SCHIZOPHRENIA AND SUBSTANCE USE DISORDER, IN THE LATINO POPULATION

Psychiatric disorders, including SUD, are more prevalent in the USA than in many other parts of the world.[41, 42] However, most of the epidemiological information on the comoribidities of SC and SUD in the Hispanic population comes from studies carried out in the USA.

Montross studied the database of the Mental Health System of the Country of San Diego (USA) corresponding to the tax year 2002 to 2003 to determine the comorbidity of SUD in patients with schizophrenia and schizoaffective disorder in European-Americans, African-Americans and Hispanics. They only included the cases that met the SC or schizoaffective disorder criteria according to the DSM-IV and when the preference language was English or Spanish. The diagnostic process consisted in the following three steps: 1) clinicians with an expert level performed a diagnostic evaluation, 2) supervisor clinicians confirmed or corrected the diagnosis by conferences, 3) the psychiatric team in charge of the treatment definitively confirmed the diagnosis. The final sample was 6,424 subjects, 1,362 of whom were Latin Americans. Comorbidity was defined as the diagnoses of EC or schizoaffective disorder plus the presence of SUD. The prevalence of the duality throughout the life was not studied. They found that the Afro-Americans had greater prevalence (25%), followed by the European-Americans (22%) and finally by the Latin-Americans (19%). In addition, they reported that the Latin-Americans whose first language was English had a 1.7 times greater risk of having dual diagnosis then those whose mother tongue was Spanish.[23]

In the "Mexican American Prevalence and Services Survey," Vega et al. described the prevalence of putative psychotic symptoms that were expressed independently of any psychiatric disorder and the co-occurrence with common psychiatric disorders such as depression, anxiety and SUD throughout the life.[43] The diagnostic instrument used was the CIDI, using the diagnostic criteria of the DSMIII-revised. The interviews were made personally to 3,012 Mexican-Americans residing in Fresno, California (USA), between the year 1995 to 1996. The sample was selected using a stratified probabilistic form. The investigators demonstrated that 23% of the immigrants and 49% of the subjects born in the USA had at least one symptom or sign of psychosis with comorbid SUD. This difference was also maintained in the case of those diagnosed of SUD, but in whom no symptom or sign of psychosis was associated, with a prevalence of 4% for the immigrants and 16% for those born in the USA.[43] The authors concluded that SUD had a greater prevalence in those persons who had putative psychotic symptoms compared with those who did not have these symptoms and that

Mexicans born in the USA had a greater prevalence of having SUD then the immigrant Mexicans.[43]

In regards to the studies developed in the Latin American countries, we only found two investigations, one from Brazil and the other that was a multicenter study that included Central America (Costa Rica and Guatemala), Mexico and the USA (San Antonio, Texas, Los Angeles and San Diego, California). In the study developed in Brazil, based on the review of medical histories, those patients who reported severe mental disease and who attended the public health service of the city of Sao Pablo at least once between September 1 and September 30, 1997, were enrolled. Those patients with functional psychoses, defined in this investigation as individuals who met the criteria according to the "International Classification of Diseases," 10th edition, for non-affective psychoses, bipolar disorder or depressive disorder with psychotic symptoms, were enrolled. The substance use pattern and abuse and dependence symptoms were evaluated only during the year prior to the interview by means of the "Schedule for Clinical Assessment in Neuropsychiatry." They concluded that the prevalence of SUD with functional psychoses was 10.4%, it being 7.3% for alcohol abuse or dependence and 4.7% for illegal or nonprescribed substances.[26]

The other investigation developed in Latin American countries is a study whose strength comes from having been multicenter, being developed in Central America (Costa Rica and Guatemala), Mexico and the USA (San Antonio, Texas, Los Angeles and San Diego, California) during the same period of time, using an important sample of subjects with schizophrenia. Furthermore, standardized interviews conducted by psychiatrists were applied and the diagnostic method was the same in the three regions. The participants were evaluated systematically, using the best estimate process to do so. [44] This process is based on the DSM-IV to allocate the diagnoses over the lifetime of each participant.[45] This study included a total sample of 518 Latin Americans with schizophrenia, 23.4% of whom had comorbidity with SUD. When the frequency of this comorbidity was compared between the different countries, it was demonstrated that the USA was the country having the greatest frequency and that Mexican men who immigrated towards the USA had this comorbidity more frequently compared with those who had never left their country of origin (México).[44]

SOCIODEMOGRAPHIC CHARACTERISTICS

The description of the sociodemographic characteristics of the subjects having dual diagnosis mainly comes from the studies carried out in the USA and Europe. Consistently, dual diagnosis was found more in men, the unemployed, who had never married and those with fewer years of schooling.[21, 31, 32, 34, 36, 37, 44, 46]

In the Hispanics, Montross demonstrated that the predictors of comorbidity were being a man, homeless and those whose first language was English. The variables used and educational level were not significantly associated with the comorbidity.[23] The studies carried out in the Latin American countries showed the following: in Brazil, most of the subjects having dual diagnosis were single, with low educational level and male.[26] On the other hand, Jiménez-Castro, in the multicenter investigation, observed that being a man, being unemployed and immigration of Mexicans towards the USA were risk factors for presenting dual diagnosis.[44] In addition, in the latter study, it was concluded that the episode and/or depressive syndrome is associated with the comorbidity of schizophrenia and SUD,[44] a risk mentioned previously by other authors in these populations.[47, 48]

CONSEQUENCES OF THE COMORBIDITY

It is well-known that SUD has a negative impact on the course of mental disease.[49] Individuals with this comorbidity have a more torpid evolution, poor prognosis, more readmissions to the hospital, greater treatment noncompliance, worse response to neuroleptics, more positive symptoms, more affective disorders, and more violent behaviors, behavior disorders, suicide and severity of the depressive symptoms.[20, 28, 50-54] In the USA, approximately 10 to 20% of the persons with dual diagnosis have had long periods of homelessness.[55] One study showed that the key factor for the homeless patients with psychiatric disorder was substance use.[56] On its part, The Mental Health Department of California found that violent crime was 62 times greater against persons with dual diagnosis than for the general population.[57]

When patients with dual diagnosis and those with schizophrenia alone were compared, Soyka et al. found that the patients with dual diagnosis reported more positive symptoms, especially hallucinations, greater derealization, depersonalization, ambivalence, hopelessness, delinquency, aggressivity, more intense sudden delusions, and more previous suicide attempts. In addition, they are patients with little collaboration and who have a lower awareness of their disease.[29] These findings were replicated in the CATIE, that describes more homelessness, behavior problems as children, history of major depression and the presence of more positive symptoms in the subjects with dual diagnosis.[30]

CONCLUSIONS

SUD is more frequent in individuals with schizophrenia than in the general population in all of the countries

studied. The mechanism that contributes to the high comorbidity of schizophrenia and SUD is still not clear. There are differences in the prevalence of the diagnoses of SUD alone or in comorbidity with schizophrenia between populations. Greater prevalence of the dual diagnosis has been documented in patients born in the USA and in Latin Americans who immigrate to the USA, compared with Latin Americans who live in their own country. It is not known why the prevalence is lower in Latin Americans. It has been suggested that this may be due to protective factors in childhood and to the control that the Latin American families exert over the individual.[58, 59] However, the cause is still not known with certainty. Equally, it has been suggested that the greater prevalence of the dual diagnosis in Latin-American immigrants could be influenced by the acculturation towards the USA. This is probably one of the consequences of the social adaptation and part of the cultural change entailed in immigrating to the USA.[59, 60]

Investigations have consistently indicated that persons with a dual diagnosis have more negative consequences when compared with those subjects who only have schizophrenia, and that male gender has been associated with the comorbidity.

The aims of the present review have been to present the publications, including the most important epidemiological studies that have been generated around the world on the subject of SUD with comorbidity with schizophrenia, placing special interest on the Latin American population, a population lacking its own epidemiological studies. Furthermore, the high prevalence and sociodemographic factors associated to this dual diagnosis, as well as the impact on the society and on the persons who suffer it, are specified. Our interest is that once these backgrounds are known, work is done on better detection and prevention of this comorbidity and that the importance that it deserves is given within the field of public health. We also want to stimulate the development of future studies, aimed at investigating the comorbidity of schizophrenia and SUD as a function of ethnicity and thus to be able to clarify the factors that are involved in the protection of the Latin Americans when this dual diagnosis is present.

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