Estimating Service Needs for Alcohol and Other Drug Users According to a Tiered Framework: The Case of the São Paulo, Brazil, Metropolitan Area

DANIELA CRISTINA BELCHIOR MOTA, PH.D.,[a,*] CAMILA MAGALHÃES SILVEIRA, PH.D.,[b] ERICA SIU, PH.D.,[b] HENRIQUE PINTO GOMIDE, PH.D.,[a] LAURA HELENA ANDRADE GUERRA, PH.D.,[b] TELMO MOTA RONZANI, PH.D.,[a] & BRIAN RUSH, PH.D.[c]

[a]*Center for Research, Intervention and Evaluation for Alcohol & Drugs (CREPEIA), Department of Psychology, University Federal of Juiz de Fora, Juiz de Fora, Minas Gerais, Brazil*

[b]*Section of Psychiatric Epidemiology, Department and Institute of Psychiatry, University of São Paulo, São Paulo, Brazil*

[c]*Centre for Addiction and Mental Health, Department of Psychiatry, University of Toronto, Toronto, Ontario, Canada*

ABSTRACT. Objective: The purpose of this study was to estimate the need for population-level services for alcohol and other drug abuse in support of local planning. **Method:** Data were drawn from a subsample of 2,942 interviewees from the São Paulo Megacity Study, which evaluated mental health in the general population (18 years and older) of residents in the São Paulo metropolitan area. This population was classified into five hierarchical categories of severity, making it possible to obtain estimates of need for services, combining evaluation criteria regarding drug and alcohol use and general and mental health comorbidities over the last 12 months. For the at-risk groups in this population, estimates from the Potential Demand for the Use of Services survey interviews over the last year were generated. **Results:** Concerning the need for services, 86.5% of the population (Tier 1) had no problems related to drug and alcohol use, 8.9% (Tier 2) used heavily, 3.5% (Tiers 3, 4, and 5) met criteria for substance abuse disorders, among whom 1.3% (Tiers 4 and 5) require more specialized and intensive treatment and support. The following estimates for the Potential Demand for the Use of Services were found: 25.5% (Tier 3) and 51.1% (Tier 4), indicating that a significant number of individuals met criteria for substance abuse disorders but did not perceive any need for professional help or neglected the help available. **Conclusions:** In São Paulo there exists a large sector of the population that requires prevention strategies regarding the risks and harm resulting from alcohol and drug use, followed by a group requiring more specialized care. But a large number of substance users requiring specialized support did not use services and did not believe that they needed professional help. (*J. Stud. Alcohol Drugs, Supplement 18,* 87–95, 2019)

RÉSUMÉ. Objectif : Estimer le besoin de la population en termes de services pour l'abus d'alcool et d'autres drogues de façon à soutenir la planification locale. **Méthode :** Les données proviennent d'un sous-échantillon de 2 942 personnes interrogées dans le cadre de l'Étude sur la mégapole de São Paulo évaluant la santé mentale de la population générale (18 ans et plus) résidant dans la région métropolitaine. Cette population a été classée en cinq catégories hiérarchiques de sévérité, permettant ainsi d'obtenir des estimations de besoins de services, combinant les critères d'évaluation de l'usage d'alcool et de drogues et les comorbidités générales et de santé mentale au cours des 12 derniers mois. Les estimations de l'utilisation de services et des besoins perçus de services, au cours de la dernière année, ont été produites pour les groupes à risque de cette population. **Résultats :** Concernant le besoin de services, 86,5% de la population (catégorie 1) n'ont aucun problème relié à leur consommation d'alcool et de drogue, 8,9%(catégorie 2) consomment beaucoup, 3,5% (catégorie 3, 4 et 5) présentent les critères diagnostics du trouble de l'utilisation de substances, parmi lesquels 1,3% (catégorie 4 et 5) nécessitent du soutien ainsi qu'un traitement spécialisé et intensif. Les estimations suivantes pour l'utilisation de services/besoins perçus ont été calculées, 25,5 % (catégorie 3) et 51,1% (catégorie 4), indiquant qu'un nombre significatif d'individus présentent les critères diagnostic du trouble d'utilisation de substances mais ne ressentent pas le besoin de recevoir une aide professionnelle ou négligeraient celle qui est disponible. **Conclusion :** La mise en place de stratégies d'amélioration des options thérapeutiques, de la disponibilité des traitements et du soutien, ainsi qu'un plan de sensibilisation aux dangers de la toxicomanie devraient être des priorités.

RESUMEN. Objetivo: Estimar la necesidad de servicios a nivel de población para el abuso de alcohol y otras drogas en apoyo de la planificación local. **Método:** Los datos se obtuvieron de una submuestra de 2,942 entrevistados del Estudio de Megaciudades de São Paulo que evaluó la salud mental en la población general (18 años y más) de residentes en el área metropolitana de São Paulo. Esta población se clasificó en cinco categorías jerárquicas de gravedad, lo que permite obtener estimaciones de la necesidad de servicios, combinando los criterios de evaluación con respecto al uso de drogas y alcohol y las comorbilidades generales y de salud mental en los últimos 12 meses. Para los grupos en riesgo de esta población, se generaron estimaciones para el uso de servicios / necesidad de uso percibida durante el último año. **Resultados:** Con respecto a la necesidad de servicios, 86,5% de la población (categoría 1) no tuvo problemas relacionados con la droga y el uso de alcohol, 8,9% (categoría 2) que se utilizan en gran medida, 3,5% (categorías 3, 4 y 5) cumplió los criterios para los trastornos por abuso de sustancias, entre los cuales el 1.3% (categorías 4 y 5) requieren un tratamiento y apoyo más especializado e intensivo. Se encontraron las siguientes estimaciones de Uso de servicios / Necesidad de uso percibida, 25.5% (categoría 3) y 51.1% (categoría 4) que indica que un número significativo de personas cumplieron los criterios para trastornos por abuso de sustancias, pero no perciben ninguna necesidad de ayuda profesional o descuidan la ayuda disponible. **Conclusiones:** Las estrategias para aumentar los conocimientos sobre los peligros del abuso de sustancias, y mejorar las opciones de cuidado y la disponibilidad de tratamiento y el apoyo deben hacerse prioridades.

Received: May 18, 2017. Revision: July 5, 2018.

The Coordination for the Improvement of Higher Education Personnel (CAPES-Coordenação de Aperfeiçoamento de Pessoal de Nível Superior), the National Council for Scientific and Technological Development (CNPq-Conselho Nacional de Desenvolvimento Científico e Tecnológico), and the Research Support Foundation of Minas Gerais State (FAPEMIG - Fundação de Amparo a Pesquisa de Minas Gerais) funded this research.

Correspondence may be sent to Daniela Cristina Belchior Mota at the Universidade Federal de Juiz de Fora, Campus Universitário, José Lourenço Kelmer s/n, Bairro São Pedro, Juiz de Fora, Minas Gerais, Brasil, 36060-330, or via email at: danielabelchior.mota@gmail.com.

Chart 1. Tiered framework

Tier 1: Promotional and preventive actions that involve the general population and the low-risk population. This also includes strategies that focus on a target population, such as children and young people at school.
Tier 2: Early identification and intervention with users at risk and/or suffering from moderate harm associated with substance use, involving secondary prevention strategies which may be developed by nonspecialized sectors and professionals.
Tier 3: Care aimed at users at high risk and harm from substance use but who do not require more intensive support. This covers offers of support for detoxification, withdrawal management, harm reduction and the maximization of treatment opportunities.
Tier 4: Specialized outpatient support which is structured to treat users with chronic health issues and who are more seriously affected than Tier 3 users, involving daily inpatient care and the development of plans for continuity of care.
Tier 5: Specialized support focused on users with more complex and serious needs, such as comorbid mental health issues. This includes specialized, more intensive support, which may be residential or in hospital.

Source: Synthesized from the National Treatment Strategy Working Group (2008).

THERE IS A WIDE RANGE OF RISKS and harmful effects associated with the abuse of alcohol and other drugs, including many mental and physical illnesses (Babor et al., 2007; Whiteford et al., 2013). In spite of the health burden and associated cost, these conditions have not been a global health priority, especially when compared with communicable and incommunicable diseases such as cancer or cardiovascular diseases; this is evident in the neglect regarding the development of treatment systems and the allocation of resources (Degenhardt et al., 2009; Strang et al., 2012).

Although scarce in the relevant literature and quite undeveloped in the Brazilian context, planning models based on the needs of a general population are fundamental for the implementation of services for alcohol and other drug problems. Evidence-based planning models may identify "gaps" in the assistance available to substance users and highlight the means by which some individuals seek help, as the great majority of users who need professional support do not make use of specialized help services (Babor et al., 2008; Chi et al., 2008).

Ford (1985) was the first to discuss systematic models for planning services for alcoholism in the United States. In Canada, Rush (1990) built upon this work and developed a model that estimated the needs of the population based on prevalence of high-risk drinkers to estimate the number of individuals who would seek help, making it possible to plan the allocation of potential cases to service options along a continuum of care.

More recently, Rush et al. (2014) based a new model on a tiered framework (Rush, 2010), of levels of problem severity associated with the use of alcohol and other drugs. The tiered framework refers to a continuum of care model that articulates the need for different levels and types of services based on identified criteria. The established tiers form a hierarchy of a population's needs and focus on two aspects. First, the tiers indicate an increase in the severity of the risks and harm associated with the consumption of alcohol and other drugs, incorporating the current diagnostic criteria and an evaluation of the co-occurrence of mental and other health issues due to substance abuse. Second, the tiers should be associated with the types of care that may be offered to users, and organized in levels of increasing specialization and intensity. Such care services are connected and complementary, and may be part of a continuum of specialized services, but also cover a broad system of treatment, which includes nonspecialized contexts and services (National Treatment Agency for Substance Misuse, 2006; Rush, 2010). Chart 1 summarizes the levels of the tiered framework adopted in Canada.

The availability of robust population surveys has supported the development of new planning models in the field. In the planning model proposed by Rush et al. (2014), a tiered classification system for service need is based on a comprehensive mental health survey and a representative sample of the general Canadian population. It is essential to point out that there is no universal interpretation of the concept of needs (Mechanic, 2003), which is multidimensional and may be constructed, not only from the most objective criteria (e.g., based on pre-established standards or diagnostic criteria) but also from more subjective perspectives such as the user's personal perception on the need for care (Bradshaw, 1994; Sarriera, 2010). This combination of objective and subjective interpretation of need is a core feature of the Rush needs-based planning model.

Besides the estimates of the needs of the population, a second measure to be estimated is what proportion of the population would like to obtain professional help or already does so, making it possible to project the potential demand

for the use of services among those in need. Thus, two constructs have been used: the concept of perceived need, which can be measured by means of questions about self-evaluation of the need for professional help (Levinson et al., 2009), and the concept of the use of services, which in the area of drugs has involved both specialized and nonspecialized services, including contact with professionals who may be part of a large system of formal support (Henderson et al., 2000; Kohn, 2004; Wu & Ringwalt, 2004; Wu et al., 2003). In the present study, the estimates of service use and the perceived need are obtained for each tier of approach adopted, except for the first tier, which refers to health promotional activity that is widely disseminated. Chart 2 presents the criteria for the planning model proposed in this study, noting that the more severe the risks and harm associated with substance use, the greater service use and perceived need would be.

Based on the tiered framework and aiming to obtain estimates for planning of a support network for users of alcohol and other drugs in the metropolitan region of São Paulo, this study has two objectives: (a) Obtain estimates for service needs regarding alcohol and other drug use; and (b) obtain estimates for the potential demand for the use of services for the population with these needs.

Method

Local context

The metropolitan region of São Paulo is made up of the city of São Paulo as well as 38 municipalities. Its population of 19.8 million people represents 10% of the population of Brazil. The local economy generates 18% of the Gross National Product (Brazilian Institute of Geography and Statistics, 2001). Despite being the richest, most industrialized region in Brazil, social inequality is severe, with a heterogeneous distribution of social groups that includes significant levels of poverty (Torres et al., 2003).

Procedures

Data for this study were collected from the São Paulo Megacity Study. The São Paulo Megacity Study (for details, see Viana et al., 2009) was a transversal-cut study that used interviews to evaluate mental health problems in the general population of the area. It was part of a multi-center study carried out in 28 countries, using the same methodology—the World Mental Health Survey Initiative, coordinated by the World Health Organization (WHO) (Kessler et al., 2006; Silveira, 2010; Viana et al., 2009).

The data collection was designed to be representative of the adult population of 18 years of age or more, who were not institutionalized and living permanently in the metropolitan area of São Paulo. The 2000 census conducted by the Brazilian Institute of Geography and Statistics was used as the basis for the sample calculation. The estimated population of the area was 17,517,230 inhabitants, of whom 12,021,837 were adults of 18 years of age or more (Silveira, 2010; Viana et al., 2009).

The survey instrument was an expanded version of the Composite International Diagnostic Interview (CIDI) called the World Version of the Mental Health Survey for the Composite International Diagnostic Interview (WMH-CIDI), which was translated and adapted to Brazilian Portuguese. This instrument was developed to be applied by nonclinical interviewers and to yield diagnostic criteria based on the International Statistical Classification of Diseases and Health Related Problems (ICD-10; WHO, 1992) and the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* (DSM-IV; American Psychiatric Association, 1994) (Viana et al., 2009). Detailed information on sampling has been published by Silveira (2010) and Viana et al. (2009).

For this study, we created two classification systems. First, for the evaluation of the need for services, the population surveyed in the São Paulo Megacity Study was classified into five tiers as shown in Chart 2. Tiers were based on severity of risk and harm associated with the use of alcohol and other drugs during the previous year.

Later, the second classification system was titled the "Potential Demand for the Use of Services," in which the proportion of the population that had needs and wanted professional help was estimated (i.e., the population eligible to receive care or have access to treatment). To this end, either the use of service or the perceived need for services among those substance users who were classified in Tiers 2 to 5 was considered. Estimates for Potential Demand for the Use of Services were not made for Tier 1, as this refers to health promotion and preventative action. However, those users included in the these estimates were those who needed treatment and used the services because of their problems with alcohol, among other drugs, or in spite of not having used the services, perceived their need for them.

The questions chosen to develop the measures of Service Needs and Potential Demand for the Use of Services were based on the last 12 months, as the objective of the model was to project estimates for the planning of a treatment system over the period of 1 year.

Data analysis

The Statistical Analysis System Program was used to perform statistical analysis. Data were collected for other studies and were made available (Silveira, 2010; Viana et al., 2009). In addition, the two classifications were computed, using a combination of variables. To describe each system, relative frequencies and standard errors were used. For the first classification system, related to service needs, the tiers were organized using the criteria and variables in Chart 2. For the second, related to the Potential Demand for the Use

CHART 2. Service needs over the last 12 months: Criteria for tiered framework

Tier 1: Abstainers or low-risk users
- Users of alcohol in abstinence over the previous year or users who consume up to four doses (women)/five doses (men) on a single occasion and less than once a month over the last year; (AND)
- Drug abstainers or users who used any substance less than once a month in the last year.

Tier 2: Users at risk and / or harmed
- Users of alcohol who report at least one heavy drinking episode over the last year (women who consume four or more doses and men who consume five or more doses on a single occasion); (OR)
- Drug users who have used some substance at least once a month over the last year.

Tier 3: Dependent individuals
- Users who meet the DSM-V criteria for disorder due to the use of alcohol or other drugs in the last year.

Tier 4: Severely dependent individuals
- Users who meet the criteria in category 3; (AND)
- Users who have received professional treatment or report personal perception of the need for professional help for alcohol or drug use over the previous year; (OR)
- Over the last year, drug or alcohol use has interfered, from moderately to very intensely, in at least one in four activities on the interference scale (housework, school/work, family relationships, social life).

Tier 5: Severely dependent individuals with comorbidities
- Users who meet the criteria in category 4; (AND)
- Users who have been diagnosed in the DSM-V over the last year with at least two of the following mental health issues: depression, major depression, mania, specific phobia, panic, social phobia, agoraphobia, generalized anxiety disorder, intermittent explosive disorder, attention deficit/hyperactivity disorder, oppositional defiance disorder, conduct disorder, and separation anxiety disorder; these disorders interfered, from moderately to very intensely in at least one of the activities on the interference scale; (AND)
- Users who feel incapable of carrying out their daily activities due to random illness for at least one day over the last year; The disease interfered from moderately to very intensely in at least one activity on the interference scale over the last year.

of Services, the following variables were considered: personal perception of the need for professional help; access to treatment; the use of hospitals; and conversations with professionals such as psychiatrists, doctors, psychologists, social workers, and other mental health care and general health care professionals. All variables took into account the behavior of the substance users over the previous 12 months and those who responded positively to at least one of the variables were considered to represent a Potential Demand for the Use of Services.

Results

Service needs

The assessment of service resulted in a large proportion of the population in the first tier (abstainers or low-risk users—86.5%), indicating that the majority of the general population residing in the São Paulo metropolitan area of 18 years of age or more did not have problems related to alcohol or drug use during the previous 12 months. In the following tier (users at risk and/or harmed), 8.9% of the population had demonstrated occasional heavy alcohol and/or drug use. Even though the population in this second tier do not need specialized treatment, as they had not developed alcohol or drug-related disorders, secondary preventative action is important because of the risks and possible harm associated with this level of consumption.

It was observed that approximately 3.5% (Tiers 3, 4, 5) of the surveyed population in the São Paulo Megacity Study demonstrated issues indicative of substance use disorders. Among this population, 2.2% corresponded to Tier 3 (dependent individuals) who, despite not demonstrating chronic and complex issues, still require maximized care opportunities and an evaluation of the need for treatment; 1.29% corresponded to the sum of the results obtained in Tier 4 (severely dependent individuals) and Tier 5 (severely dependent individuals with comorbidities) resulted in, respectively, 1.2% and 0.09% in need of more specialized and intensive support. Thus, the smallest percentage of this population, Tier 5, demonstrated chronic and complex health issues. Table 1 shows the estimates obtained in each tier and the calculated data for the target population of the greater São Paulo metropolitan region.

Potential Demand for the Use of Services

Having obtained the estimates, we observed that the greater the risk and harm associated with the use of alcohol and other drugs, the larger were the estimates for the Potential Demand for the Use of Services. In the second tier, 7.2% of individuals used services or believed that they needed professional support. In the other tiers, there was an increase in the Potential Demand for the Use of Services of 25.5% and 51.1% in Tiers 3 and 4, respectively (Table 2). Because of the small number of individuals in Tier 5, it was

Table 1. Estimates of alcohol and other drug use over the last 12 months

Tiers	%	*SE*	Estimate in the metropolitan area of São Paulo
Tier 1: Abstainers or low-risk users	86.5	0.8	10,405,488
Tier 2: Users at risk and/or harmed	8.9	0.5	1,070,280
Tier 3: Dependent individuals	2.2	0.2	264,576
Tier 4: Severely dependent individuals	1.2	0.2	148,349
Tier 5: Severely dependent individuals with comorbidities	0.09	0.03	11,096

not possible to estimate the Potential Demand for the Use of Services for this group.

In Table 3, a general view of the variables that make up the criteria for the Potential Demand for the Use of Services for Tiers 2 to 4 is presented. Regarding the use of services, it was observed that use of hospitals, followed up with access to professional treatment, talking with psychologists, psychiatrists, and doctors, generated the largest estimates for the surveyed population in the metropolitan area of São Paulo. Other professionals, such as social workers, mental health, and general health professionals, generated smaller estimates, totaling close to 0.03% of the surveyed population.

Discussion

The tiered framework may be used to classify alcohol and drug users according to the levels of severity associated with substance consumption and their corresponding care needs. In Australia, Barker et al.'s study (2016) provided validation for the tiered framework, pointing out that the higher levels of severity represented in the tiers are positively correlated with a reduction in well-being among the users and an increase in the need for more intensive, integrated care. Thus, the model is adequate for determining elements of severity and complexity, which may be an indicator of varying treatment needs. Nevertheless, more research is required to assess the robustness of the model, and the above-mentioned study was not based on samples representative of the general population.

Founded on the tiered framework, the present study has been the first to propose a classification of various levels of severity for service needs for alcohol and other drug users in Brazil, using representative population samples. Needs assessment in the area of alcohol and other drugs, supported by population studies, has been characterized by a wide range of initiatives and methodologies (Mota et al., 2015), making it challenging to compare our findings with other national or international studies. However, it is possible to compare the results of this study with studies in other countries that have also participated in the World Mental Health Survey Initiative and thus have used the same instrument and methods as the São Paulo Megacity Study. Considering the sum of the estimates of Tiers 3, 4, and 5 (3.5%), which indicate substance use disorders over the last 12 months, a greater prevalence was found in this study, although it was close to the estimates for Colombia (2.8%; Demyttenaere et al., 2004), Mexico (2.5%; Medina-Mora et al., 2005), and the United States (3.8%; Demyttenaere et al., 2004). In relation to the Americas, the estimates found in the present study are considerably larger than the annual prevalence estimates for substance use disorders when compared with those of Peru (1.7%; Piazza & Fiestas, 2014) as well as some European countries, such as France (0.7%) and Spain (0.7%; Demyttenaere et al., 2004).

Despite the relative consistency of the findings for Service Needs, the section regarding the Potential Demand for the Use of Services in the present study requires attention in its interpretation as the estimates were based on a low number of interviewees, which generated indicators that are clearly limited. As, until the present moment, we have no evidence from other population-based studies that prioritized data on indicators and an understanding of the standards of

Table 2. Potential Demand for the Use of Services over the last 12 months

Tiers	%[a]	%[b]	*SE*	Estimate in the metropolitan area of São Paulo
Tier 2: Users at risk and/or harmed	7.2	0.6	0.09	77,793
Tier 3: Dependent individuals	25.5	0.5	0.1	67,466
Tier 4: Severely dependent individuals	51.1	0.6	0.1	75,821

[a]Based on the *n* of each tier; [b]based on the *n* of the entire sample (2,942 individuals).

Table 3. Variables related to the Potential Demand for the Use of Services

	Tier 2		Tier 3		Tier 4		
Variable	%	*SE*	%	*SE*	%	*SE*	Estimate
Use of services							
Professional treatment	0.07	0.05	0	0	0.3	0.01	46,163
Use of hospitals	0.07	0.03	0.08	0.04	0.2	0.08	49,409
Psychiatrists	0.01	0.01	0.01	0.01	0.1	0.05	16,734
Physicians	0.01	0.01	0.01	0.01	0.1	0.05	17,624
Psychologists	0.1	0.06	0.02	0.02	0.1	0.06	35,344
Social workers	0	0	0.03	0.03	0	0	4,556
Other mental health professionals	0	0	0	0	0	0	0
Other general health professionals	0	0	0	0	0.01	0.01	2,199
Perceived need							
Professional help	0.4	0.1	0.4	0.1	0.2	0.13	150,104

the Potential Demand for the Use of Services among users of alcohol and other drugs in Brazil, the results obtained with the aim of constructing a planning model for the São Paulo metropolitan area may be, in some way, backed up by the proximity of our results with those found other studies.

For drug and alcohol users with a level of severity similar to what was classified in this study as Tier 3 (substance dependents, the Potential Demand for the Use of Services was 25.5%), a systematic revision carried out by Kohn et al. (2004) pinpointed service use of 21.9% over a 12-month period. Other studies carried out after the revision by Kohn et al. (2004) found service use of 24% in Australia (Burgess et al., 2009; Slade et al., 2009) and of 38.1% in the United States (Wang et al., 2005), both over a period of 12 months. Regarding the countries that participated in the World Mental Health Survey Initiative, the use of specialized services for mental health issues and substance use disorders varied widely and tends to concentrate on the more serious cases, neglecting cases of low or moderate severity, being lower in low- and middle-income countries such as Nigeria, Colombia, and Mexico. In these countries, the difference between the use of services among more serious cases in comparison with less serious cases tends to be even greater (Wang et al., 2007). In Colombia, only 7.5% of people with substance use disorders have used services over the last 12 months. Similar results have been found in Mexico, revealing a global problem when compared with the findings in other countries (Medina-Mora, et al., 2005; Posada-Villa et al., 2004).

Of note, such studies vary greatly in concept, context, and methodology. Another major difference is that, in the present study, variables in the Potential Demand for the Use of Services were associated with the objective of constructing a planning model. Because of the difficulties regarding the accessibility of services and the scarcity of services in the Brazilian context, the eligible population for treatment may have been underestimated if these estimates were basely only on previous experience of individuals using services, as was done in the studies cited above. Thus, in this study the Potential Demand for the Use of Services was made up of those substance users who had used the services over the previous 12 months or perceived the need to use the services over the previous 12 months (even though the service was not used), making it possible to include the population eligible for treatment.

Regarding the results obtained for variables of the Potential Demand for the Use of Services, presented in Table 3, particularly in less serious cases, such as those in Tiers 2 and 3, the proportion of the population that recognizes the need for professional help is greater than the proportion that uses these services. Perhaps structural barriers, such as the availability of services and transport, together with issues regarding attitude such as minimizing the importance of the disorder, have contributed to the lack of service use, even among those who wish to receive professional help (Andrade et al., 2014). Furthermore, low estimates related to the support of professionals involved in nonspecialized services, such as doctors, health professionals in general, and social workers, have been observed, and are in accordance with other studies (Medina-Mora et al., 2006).

As service use is also influenced by the individual characteristics of the professionals/service providers (Andersen, 1995), it is possible that factors related to the professionals' attitudes, such as stigma (Rassool et al., 2004; Ronzani et al., 2009a) and the lack of preparation to work in this area (Ronzani et al., 2009b) have generated little availability of help and consequently the underuse of nonspecialized services.

The main limitation in this study has been obtaining estimates for the Potential Demand for the Use of Services for Tier 5 (serious dependents with comorbidities), as only 0.09% of the surveyed population, or six individuals, were found. Considering that increased severity of addiction is positively correlated to perceived need for service use, there would be a tendency that an estimate for the Potential Demand for the Use of Services would be greater than estimates generated by the other tiers. As there is no better evidence in the Brazilian context, it is possible to hypothesize, for the application of planning models, that the estimate of the Potential Demand for the Use of Services in Tier 5

would increase in the same proportion as the estimate for Tier 4 (serious dependency) increased in relation to Tier 3 (dependency). Thus, an estimate of 76.7% was obtained for Tier 5.

Other significant limitations resulted from the use of the WMH-CIDI instrument, which possibly generated overestimated results in the section regarding the Potential Demand for the Use of Services. Being reliant on the interviewees' memory, their reporting on service use in this instrument tends to be overestimated, especially in developing countries and when the interviewees are suffering from more serious disorders (Wang et al., 2007). With the exception of the question "access to professional treatment," all the other questions in the WMH-CIDI instrument that were designed to measure the potential demand for the use of services simultaneously evaluate use of services or perceived need for use, for mental health problems and for problems related to the use of alcohol and other drugs.

Even though the carrying-out of the World Mental Health Survey in Brazil (in the metropolitan area of São Paulo), Colombia, Mexico, and Peru represents an advancement in the production of such estimates in Latin America, a region where there are practically no data on the use of services for substance users (Aguilar-Gaxiola et al., 2006), it would be important to pinpoint more precisely the use of services exclusively for problems related to the consumption of alcohol and other drugs. In most countries, including Brazil, there exists a subsystem of specific services in the area of alcohol and drugs, which does not coincide with the mental health system, as well as countries where treatment allocation occurs during primary care (Ministério da Saúde, Brasil, 2003; WHO, 2011), an area that is not evaluated in the WMH-CIDI, except by the indirect indicator of conversations with general practitioners.

There are other considerations that are specific to the Brazilian context, marked by enormous social inequality resulting in a large percentage of the population that is socioeconomically disadvantaged. In the city of São Paulo, an estimated 8.6 million (83.5%) inhabitants live in substandard conditions, earn low wages, and have reduced access to education, basic sanitation, and housing, among other services (Sposati, 2000). As a consequence, the reasoning underpinning the evaluation of severity in the tiered framework, based on a continuum of risks and damage associated with substance abuse, requires fine tuning and testing to be representative of the country's social complexity. In the Brazilian context, even among the general population, and not exclusively among homeless, the social needs of users may be as urgent as their needs arising from substance abuse, and services should be able to provide wide, multidimensional care.

However, in this study, a general overview of these social aspects, extremely relevant to Brazilian context, was obtained, leaving a more focused study for future research. It is crucial to comprehend a wide range of complex factors that influence and determine service needs and the potential demand for the use of services. These measures were described in this study to enhance the planning of an assistance network for users of alcohol and other drugs in the metropolitan area of São Paulo. As was pointed out in Andersen's (1995) classic behavioral model, even though needs represent the strongest determining factors regarding use, this use also depends on predisposing factors (such as gender) and mainly contextual factors related to the availability of services, which may induce demand and, as a consequence, service use. Taking into account obstacles regarding accessibility and great social inequality in the Brazilian context, it would be important to incorporate multidimensional measures in the development of planning models, constructed from multivariate analyses, which correlate the use of services with variables such as socioeconomic level, schooling, and geographic accessibility.

Final considerations

A needs assessment, in accordance with a tiered framework, revealed that in the São Paulo metropolitan area there is a large sector of the population that requires secondary prevention strategies regarding the risks and harm resulting from alcohol and drug use, followed by a group requiring more complex care. The data on the Potential Demand for the Use of Services indicate that a large number of substance users requiring specialized support do not use services and do not believe that they need professional help. There also exist a significant number of individuals who would like to receive professional help but fail to seek help or access services. For the planning of an assistance network for users of alcohol and other drugs living in the metropolitan area of São Paulo, strategies aimed at raising awareness regarding the risks of substance abuse and care options should be a priority, together with an increase in the availability of support and treatment.

Acknowledgments

The authors thank the Psychiatric Epidemiology Center (Núcleo de Epidemiologia Psiquiátrica) of University of São Paulo for allowing us to use the São Paulo Megacity Study database to perform the current study. We are grateful to Kamyama Statistics Consultancy (Kamyama Consultoria em Estatística) for the support in data programming.

References

Aguilar-Gaxiola, S., Medina-Mora, M. E., Magaña, C. G., Vega, W. A., Alejo-Garcia, C., Quintanar, T. R., . . . Rosales, H. (2006). Illicit drug use research in Latin America: Epidemiology service use, and HIV. *Drug and Alcohol Dependence, 84, Supplement,* S85–S93. doi:10.1016/j.drugalcdep.2006.05.010

American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.

Andersen, R. M. (1995). Revisiting the behavioral model and access to medical care: Does it matter? *Journal of Health and Social Behavior, 36,* 1–10. doi:10.2307/2137284

Andrade, L. H., Alonso, J., Mneimneh, Z., Wells, J. E., Al-Hamzawi, A., Borges, G., . . . Kessler, R. C. (2014). Barriers to mental health treatment: Results from the WHO World Mental Health surveys. *Psychological Medicine, 44,* 1303–1317. doi:10.1017/S0033291713001943

Babor, T. F., McRee, B. G., Kassebaum, P. A., Grimaldi, P. L., Ahmed, K., & Bray, J. (2007). Screening, Brief Intervention, and Referral to Treatment (SBIRT): Toward a public health approach to the management of substance abuse. *Substance Abuse, 28,* 7–30. doi:10.1300/J465v28n03_03

Babor, T. F., Stenius, K., & Romelsjö, A. (2008). Alcohol and drug treatment systems in public health perspective: Mediators and moderators of population effects. *International Journal of Methods in Psychiatric Research, 17, Supplement 1,* S50–S59. doi:10.1002/mpr.249

Barker, S. F., Best, D., Manning, V., Savic, M., Lubman, D., & Rush, B. (2016). A tiered model of substance use severity and life complexity: Potential for application to needs-based planning. *Substance Abuse, 37,* 526–533. doi:10.1080/08897077.2016.1143907

Bradshaw, J. (1994). The contextualisation and measurement of need: A social policy perspective. In J. Popay & G. Williams (Eds.), *Researching the people's health.* London, England: Routledge.

Brazilian Institute of Geography and Statistics. (2001). *Censo demográfico populacional do ano 2000.* Instituto Brasileiro de Geografia e Estatística. Retrieved from http://www.ibge.gov.br/censo/

Burgess, P. M., Pirkis, J. E., Slade, T. N., Johnston, A. K., Meadows, G. N., & Gunn, J. M. (2009). Service use for mental health problems: Findings from the 2007 National Survey of Mental Health and Wellbeing. *Australian and New Zealand Journal of Psychiatry, 43,* 615–623. doi:10.1080/00048670902970858

Chi, F. W., & Weisner, C. M. (2008). Nine-year psychiatric trajectories and substance use outcomes: An application of the group-based modeling approach. *Evaluation Review, 32,* 39–58. doi:10.1177/0193841X07307317

Degenhardt, L., Whiteford, H., Hall, W., & Vos, T. (2009). Estimating the burden of disease attributable to illicit drug use and mental disorders: What is 'Global Burden of Disease 2005' and why does it matter? *Addiction, 104,* 1466–1471. doi:10.1111/j.1360-0443.2009.02715.x

Demyttenaere, K., Bruffaerts, R., Posada-Villa, J., Gasquet, I., Kovess, V., Lepine, J. P., . . ., & the WHO World Mental Health Survey Consortium. (2004). Prevalence, severity, and unmet need for treatment of mental disorders in the World Health Organization World Mental Health Surveys. *JAMA, 291,* 2581–2590. doi:10.1001/jama.291.21.2581

Ford, W. E. (1985). Alcoholism and drug abuse service forecasting models: a comparative discussion. *International Journal of the Addictions, 20,* 233–252. doi:10.3109/10826088509044908

Henderson, S., Andrews, G., & Hall, W. (2000). Australia's mental health: An overview of the general population survey. *Australian and New Zealand Journal of Psychiatry, 34,* 197–205. doi:10.1080/j.1440-1614.2000.00686.x

Kessler, R. C., Haro, J. M., Heeringa, S. G., Pennell, B. E., & Üstün, T. B. (2006). The World Health Organization World Mental Health Survey Initiative. *Epidemiologia e Psichiatria Sociale, 15,* 161–166. doi:10.1017/S1121189X00004395

Kohn, R., Saxena, S., Levav, I., & Saraceno, B. (2004). The treatment gap in mental health care. *Bulletin of the World Health Organization, 82,* 858–866.

Levinson, D., Lerner, Y., & Zilber, N. (2009). Estimating the changes in demand for public mental health services following changes in eligibility: Analysis of national survey data. *Journal of Mental Health Policy and Economics, 12,* 19–25.

Mechanic, D. (2003). Is the prevalence of mental disorders a good measure of the need for services? *Health Affairs, 22,* 8–20. doi:10.1377/hlthaff.22.5.8

Medina-Mora, M. E., Borges, G., Fleiz, C., Benjet, C., Rojas, E., Zambrano, J., . . . Aguilar-Gaxiola, S. (2006). Prevalence and correlates of drug use disorders in Mexico. *Pan American Journal of Public Health, 19,* 265–276. doi:10.1590/S1020-49892006000400007

Medina-Mora, M. E., Borges, G., Lara, C., Benjet, C., Blanco, J., Fleiz, C., . . . Zambrano, J. (2005). Prevalence, service use, and demographic correlates of 12-month DSM-IV psychiatric disorders in Mexico: Results from the Mexican National Comorbidity Survey. *Psychological Medicine, 35,* 1773–1783. doi:10.1017/S0033291705005672

Ministério da Saúde, Brasil. (2003). *A Política do Ministério da Saúde para atenção integral a usuários de álcool e outras drogas.* Retrieved from http://bvsms.saude.gov.br/bvs/publicacoes/politica_atencao_alcool_drogas.pdf

Mota, D. B., Rush, B. R., Ronzani, T. M., Castaldelli-Maia, J. M., & Bastos, F. I. (2015). Como a epidemiologia e demais métodos quantitativos podem contribuir com o planejamento da rede assistencial para o usuário de álcool e outras drogas? Considerações preliminaries. Redes de atenção aos usuários de drogas: Políticas e práticas, 2015.

National Treatment Agency for Substance Misuse. (2006). *Models of care for treatment of adult drug misusers. Update.* London, England: Author.

National Treatment Strategy Working Group. (2008). *A systems approach to substance use in Canada: Recommendations for a national treatment strategy.* Retrieved from http://www.ccsa.ca/Resource%20Library/nts-systems-approach-substance-abuse-canada-2008-en.pdf

Piazza, M., & Fiestas, F. (2014). Prevalencia anual de trastornos y uso de servicios de salud mental en el Perú: Resultados del estudio mundial de salud mental, 2005. *Revista Peruana de Medicina Experimental y Salud Pública, 31,* 30–38. doi:10.17843/rpmesp.2014.311.5

Posada-Villa, J. A., Aguilar-Gaxiola, S., Magaña, C. G., & Gomez, L. C. (2004). Prevalence of mental disorders and service use: Preliminary results from the National Study of Mental Health, Colombia, 2003. *Revista Colombiana de Psiquiatria, 33.* Retrieved from http://www.scielo.org.co/scielo.php?script=sci_arttext&pid=S0034-74502004000300002

Rassool, G. H., & Villar-Luis, M. (2004). Tackling drug and alcohol misuse in Brazil: Priorities and challenges for nurses. *International Nursing Review, 51,* 201–207. doi:10.1111/j.1466-7657.2004.00248.x

Ronzani, T. M., Higgins-Biddle, J., & Furtado, E. F. (2009a). Stigmatization of alcohol and other drug users by primary care providers in Southeast Brazil. *Social Science & Medicine, 69,* 1080–1084. doi:10.1016/j.socscimed.2009.07.026

Ronzani, T. M., Mota, D. C. B., & Souza, I. C. W. (2009b). Alcohol prevention within primary care in municipalities in the state of Minas Gerais, Southeastern Brazil. Revista de Saúde Pública, 43, 1–11. doi:10.1590/S0034-89102009000800009

Rush, B. (1990). A systems approach to estimating the required capacity of alcohol treatment services. *British Journal of Addiction, 85,* 49–59. doi:10.1111/j.1360-0443.1990.tb00623.x

Rush, B. (2010). Tiered frameworks for planning substance use service delivery systems: Origins and key principles. *Nordic Studies on Alcohol and Drugs, 27,* 617–636. doi:10.1177/145507251002700607

Rush, B. R., Tremblay, J., Behrooz, R., Fougere, C., & Perez, W. (2014). *Development of a needs-based planning model for substance use services and supports in Canada: Final report.* Toronto, Ontario: Centre for Addiction and Mental Health.

Sarriera, J. C. (2010). Análise de necessidade de um grupo ou comunidade. A avaliação como processo. In J. C. Sarriera & H. T. Saforcada (Orgs), *Introdução à Psicologia Comunitária: Bases Teóricas e Metodológicas.* Porto Alegre: Editora Sulina.

Silveira, C. M. (2010). *Preditores sócio-demográficos das transições entre os estágios do uso de álcool (uso na vida, uso regular, abuso e dependência) e remissão dos transtornos relacionados ao álcool na população adulta residente na região metropolitana de São Paulo.* Tese de Doutorado, Universidade de São Paulo, São Paulo.

Slade, T., Johnston, A., Oakley Browne, M. A., Andrews, G., & Whiteford, H. (2009). 2007 National Survey of Mental Health and Wellbeing: Methods and key findings. *Australian & New Zealand Journal of Psychiatry, 43,* 594–605. doi:10.1080/00048670902970882

Sposati, A. (2000). *Mapa da exclusão/inclusão social da cidade de São Paulo / 2000: Dinâmica social dos anos 90.* São Paulo: NEPSAS – PUC/ SP.

Strang, J., Babor, T., Caulkins, J., Fischer, B., Foxcroft, D., & Humphreys, K. (2012). Drug policy and the public good: Evidence for effective interventions. *The Lancet, 379,* 71–83. doi:10.1016/S0140-6736(11)61674-7

Torres, H. G., Marques, E., Ferreira, M. P., & Bitar, S. (2003). Pobreza e espaço: Padrões de segregação em São Paulo. *Estudos Avançados, 17,* 97–128. doi:10.1590/S0103-40142003000100006

Viana, M. C., Teixeira, M. G., Beraldi, F., Bassani, I. S., & Andrade, L. H. (2009). São Paulo Megacity Mental Health Survey - a population-based epidemiological study of psychiatric morbidity in the São Paulo metropolitan area: Aims, design and field implementation. *Revista Brasileira de Psiquiatria (Sao Paulo, Brazil), 31,* 375–386. doi:10.1590/S1516-44462009000400016

Wang, P. S., Aguilar-Gaxiola, S., Alonso, J., Angermeyer, M. C., Borges, G., Bromet, E. J., . . . Wells, J. E. (2007). Use of mental health services for anxiety, mood, and substance disorders in 17 countries in the WHO world mental health surveys. *The Lancet, 370,* 841–850. doi:10.1016/S0140-6736(07)61414-7

Wang, P. S., Lane, M., Olfson, M., Pincus, H. A., Wells, K. B., & Kessler, R. C. (2005). Twelve-month use of mental health services in the United States: Results from the National Comorbidity Survey Replication. *Archives of General Psychiatry, 62,* 629–640. doi:10.1001/archpsyc.62.6.629

Whiteford, H. A., Degenhardt, L., Rehm, J., Baxter, A. J., Ferrari, A. J., Erskine, H. E., . . . Vos, T. (2013). Global burden of disease attributable to mental and substance use disorders: Findings from the Global Burden of Disease Study 2010. *The Lancet, 382,* 1575–1586. doi:10.1016/S0140-6736(13)61611-6

World Health Organization. (1992). *International statistical classification of diseases and related health problems, 10th Revision.* Geneva, Switzerland: Author.

World Health Organization. (2011). Resources for the treatment and prevention of substance use disorders: Most commonly used treatment setting for the treatment of alcohol and drug use disorders, 2008. Retrieved from http://gamapserver.who.int/gho/interactive_charts/substance_abuse/treatment_alcohol_drugs/atlas.html

Wu, L.-T., Kouzis, A. C., & Schlenger, W. E. (2003). Substance use, dependence, and service utilization among the US uninsured nonelderly population. *American Journal of Public Health, 93,* 2079–2085. doi:10.2105/AJPH.93.12.2079

Wu, L.-T., & Ringwalt, C. L. (2004). Alcohol dependence and use of treatment services among women in the community. *American Journal of Psychiatry, 161,* 1790–1797. doi:10.1176/ajp.161.10.1790