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A systematic review and meta-analysis of the efficacy of the long-term treatment and support of substance use disorders

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ABSTRACT

Rationale: The reconceptualization of substance use disorders (SUD) as a chronic phenomenon calls for a paradigm shift in service provision, particularly by way of long-term treatment and support. Studies that have evaluated the efficacy of long-term treatment models seem to indicate that they are an improvement on more standard short-term treatments, even though these studies do not take the durations into consideration.
Objective: Measure the efficacy of SUD treatments and support lasting 18 months or more regarding their ability to decrease substance use as compared to shorter treatments.
Methods: A meta-analysis based on a systematic literature review was conducted. Eight databases were consulted for peer-reviewed studies. Certain variables were coded as moderators: intervention length, participant characteristics, and treatment characteristics.
Results: The main results suggest that the people who received a planned long-term treatment or support had a 23.9 % greater chance of abstaining or consuming moderately than did people who received a shorter standard treatment (OR = 1.347 [CI 95 % = 1.087–1.668], p < .006, adjusted OR = 1.460 [CI 95 % = 1.145–1.861]). None of the moderation analyses revealed any variation in the efficacy of the long-term treatments and support.
Conclusions: The reconceptualization of the SUD as a chronic disorder among people with this problem leads us to reconsider both the length of the services provided and the paradigms underlying their organization.

1. Introduction

Determining the optimal length of the services provided to people with a substance use disorder (SUD) is fundamental, particularly when this disorder is reconceptualized as being chronic. SUD is a persistent disorder for a large proportion of people with this problem. As such, relapse rates measured one year after an SUD treatment hover somewhere between 40 % and 60 % (Brecht and Herbeck, 2014; Finney and Moos, 1992; Schellekens et al., 2015). Likewise, five years after the treatment, 50 % of the people still presented SUD diagnostic criteria, indicating that, for a sizable proportion of people, recovery is a long-term process (White, 2012). A study review looking at the trajectories of people with SUD revealed that, for 35 %–54 % of the people, it took on average 17 years from the first appearance of the disorder to a complete absence of diagnostic criteria for a whole year (Fleury et al., 2016). Likewise, the median time from the first treatment episode to the first full year without substance use was nine years (Dennis et al., 2005). Service utilization records also showed almost two-thirds of those in treatment were not first-time clients, and of these, 15 % were, at the very least, on their fifth treatment (SAMHSA, 2019).

This data has contributed to the reconceptualization of SUD in a long-term perspective, leading several authors to employ the concept of chronicity to better characterize the persistence of the disorder over time (American Society of Addiction Medicine, 2011; Chauvet et al., 2015; Fleury et al., 2016; McLellan, Lewis, O'Brien & Kleber, 2000; Stevenson, 2005; White, 2012). Chronicity refers to the presence of a disorder over several years, including repeated episodes of treatment and support, punctuated by shorter and longer periods without consumption followed by periods of problematic use (Fleury et al., 2016; White, 2012). Among people with an SUD, those with a long-term or chronic profile differ from others by way of the disorder's greater clinical severity (e.g., polysubstance dependence, injection drug use, young age of SUD onset), a more complex profile (e.g., concomitant mental health disorder(s), hospitalization for these mental health problems,

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criminality and court ordered treatment), greater vulnerability (e.g., family history of SUD, traumatic events), and a lower recovery capital (Grahn et al., 2014; White, 2008).

In Canada, the United States, and Europe, treatment provision in most specialized services for SUD lasts less than six months (European Monitoring Centre for Drugs and Drug Addiction, 2014; Gouvernement du Québec, 2019; SAMHSA, 2019), which would seem to correspond more closely to the needs of people with a temporary profile. However, despite the acknowledgement of SUD as a persistent phenomenon in a sizable proportion of people, the current provision of service is based on a limited view of the disorder that proposes short-term treatment aimed at abstinence and a permanent resolution of the problem after participating in only a single treatment episode (White, 2008). Several authors have called for a paradigm shift that would take better account of the characteristics of people with a long-term SUD profile. This paradigm shift involves a greater consideration of the notion of recovery by proposing personalized services (Neale et al., 2019), organized in a comprehensive approach. These services must focus on the improvement of quality of life and well-being (Laudet, 2007; White, 2007), take experiential knowledge into account (Baillergeau and Duyvendak, 2016), and pay attention to both recovery initiation factors and to those ensuring its management (White and Kelly, 2011). This paradigm shift must also include a long-term treatment view that ensures better continuity between the treatment episodes (Hser et al., 2004), individualized length and intensity of service according to the person's needs (King et al., 2010; White et al., 2011), a more proactive assessment, continuous monitoring, and links with support services focused on recovery (Scott et al., 2011).

To determine treatment needs based on a given SUD severity, Rush et al. (2019) developed a model composed of three interrelated dimensions, namely: acuity (intensity, urgency), complexity (concomitant mental and physical health and judicial problems, etc.) and chronicity, which refers to the length of time. Most of the current treatment models are calibrated on the gravity of the disorder. Others concentrate more on the complexity such as in the case management model (National Case Management Network, 2009). In the last decade, some authors have examined the provision of services as a function of the disorder's continuity over time (Kelly and White, 2011; McKay et al., 2010; Scott and Dennis, 2003). In the present article, this last dimension will be examined more attentively.

1.1. Long-term treatment and support models

Generally seen as a continuation of a more intensive initial treatment (McKay, 2009), long-term treatments are known by names such as extended intervention, continuing care, stepped care, recovery management, or aftercare, and likewise, come in various types whose services vary greatly from one model to another.

Some models, such as the Recovery Management Check-up (RMC) (Scott et al., 2003), are specifically designed to reduce the time between a relapse and a return to treatment by maintaining regular, proactive contact with people who have finished their treatment. This model allows practitioners to respond to the issue of a changing trajectory in people with chronic SUD by providing services during crisis periods and maintaining contact during periods of stability. Other models, such as Telephone Monitoring and Counseling (TMC) (McKay et al., 2010), propose instead the provision of continuous therapeutic support, which begins during an intensive treatment episode and which evaluates the progression in the objectives for change. The frequency of telephone contact is adjusted to the patients' needs and evaluated according to their risk of a relapse. If the risk is high, the frequency of contact increases and the patients are invited to come in for personal meetings. Long-term treatment models can also take the form of residential treatment where peers are asked to play an important role in the recovery of other residents (e.g., therapeutic communities; De Leon, 1985). Finally, Alcoholics Anonymous and Narcotics Anonymous constitute a form of long-term treatment because they provide a support network that does not set time constraints (Alcoholics Anonymous, 2019; Narcotics Anonymous, 2018).

The efficacy of long-term treatment and support models has not been greatly studied, but the few studies that have looked at this question seem to indicate that they are an improvement on more standard treatments. In a systematic review of the efficacy of continuing care for treatment of alcohol addiction, Lenaerts et al. (2014) noted the lack of good quality articles on the subject. Their analyses only looked at six articles, whose treatment length varied from 10 weeks to 1 year. Their results indicated a tendency in favor of active continuing care as compared to standard treatments. According to Lenaerts et al. (2014), active continuing care differs from standard treatment by way of its proactivity, its regular, coordinated contact between patients and the various health services, the reinforcement of coping, motivation, and empowerment strategies, and the attention paid to the patients' family relationships. Other authors carried out a meta-analysis on the efficacy of continuing care in the treatment of SUD in general (Blodgett et al., 2014). This meta-analysis comprised 19 studies whose treatment length varied from 8 weeks to 24 months. Their results showed a weak effect ($g = 0.187$, $p < .001$) regarding a decrease in AOD use that was in favor of continuing care as compared to the control group. The analyses of moderator variables that were carried out did not reveal any associations between a longer treatment and greater efficacy. Simoneau et al. (2018) conducted a systematic review looking at treatments provided to people with an SUD characterized as *chronic*. They identified 16 studies whose treatment length varied from 2 months to 4 years (3 treatment programs did not have a planned ending). Their results show that, generally speaking, most effective treatments were intensive, long-term, and covered several areas of life.

Several studies have shown that longer time spent in treatment was associated with better outcomes in terms of decreased substance use, improved employability, and reduced criminal activity (Condelli and Hubbard, 1994; Gossop et al., 1999; Simpson, 1981; Simpson et al., 1997) as well as a reduction in post-treatment readmission rates (Moos et al., 1995) and relapse rates (Brecht et al., 2014). A review of 20 studies evaluating the efficacy of various aftercare and support models noted that three 12-month-long models obtained positive results whereas the shorter ones were more heterogeneous (McKay, 2009), thereby indicating that longer planned treatment could have a considerable effect on their efficacy. That being said, this literature review was not able to determine whether the models' greater efficacy depended on their length, since the included studies did not compare the long-term models with those of the short-term.

The overall outcome of these studies is generally favorable to a service provision that goes beyond short-term treatment. Use of long-term monitoring would thus seem to be promising. That being said, which of the following components would have the most impact on the person's recovery: service intensity, frequency, AA/NA membership, treatment retention, a continued relationship with the practitioner, total duration of services, or service flexibility in terms of diversity or in response to fluctuating SUD acuity? Each one of these dimensions could be the subject of specific studies. In this article, the question of the length of the services over time was retained since it was a recurring theme in our exchanges with service providers: "For how long should we accompany people after an SUD treatment episode?" (Desrosiers and Ménard, 2010; Djouini and Kamgang, 2017). This question was likewise at the heart of our thinking about SUD and its reconceptualization as being a chronic disorder for a large number of people.

According to the National Institute on Drug Abuse (2012), people with a SUD (excluding people with an opioid addiction) would need a minimal threshold of 90 service days (e.g., medications, behavioral therapies, or their combination) to begin necessary changes toward recovery. Even though this length of time is preferable to a complete lack of service, it does not seem long enough for people with a persistent SUD. Given the high relapse rates after the first year of treatment and the

problem's cyclical nature, which involves repeated periods of abstinence and relapse over several years, and given the length of this clientele's recovery trajectories, it would seem that the provision of a long-term recovery service is needed to allow these people to maintain the changes initiated in the various areas of their lives (Finney et al., 1992; Fleury et al., 2016; Scott et al., 2005; White, 2012). There is no scientific consensus concerning the length of the services these people should receive if they are to instigate and maintain the changes required in a recovery process. The majority of data currently available is based on treatment length that does not exceed 12 months (Bergman et al., 2015; Eastwood et al., 2018; Grella et al., 2010; Lash et al., 2007; Lemke and Moos, 2003; McKay, 2009; McKay, Knepper, Deneke, O'Reilly & DuPont, 2016; Metsch et al., 1999). Consequently, as there exists no scientific criteria for determining the optimal length of service for people with persistent SUD, as the state of knowledge currently stops at 12 months, and as the recovery trajectory would seem to require long-term service, it would be worthwhile to look at services longer than 12 months. This is why an 18-month treatment length was set as our threshold when retrieving studies.

1.2. Objective

The objective of this systematic review followed by a meta-analysis was to measure, in comparison to shorter treatments, the efficacy of 18-month-or-longer SUD treatments and support with regard to their ability to reduce AOD use. Moreover, the moderating effect of certain variables on the reduction of AOD use will be examined, namely: a) the participants' characteristics (age, sex, SUD type); b) treatment and support characteristics (comprehensive or specific nature of the interventions, treatment type, support type); and c) length of treatment and support.

2. Method

A systematic review was carried out with the goal of conducting a meta-analysis whose steps were conducted in keeping with the PRISMA' reporting standard (Liberati et al., 2009) as well as otherm, quality, standards noted in the article by Johnson and Hennessy (2019). The overall selection process was conducted independently by the first author with the help of a research assistant. In the case of a disagreement, a third person (authors J.T. or K.B.) was asked to decide. 1) Identification. The document research examined eight databases (PsycINFO, MEDLINE, Academic Search Complete, CINAHL, Érudit, Psychology and Behavioral Sciences Collection, Social Services Abstracts, Cochrane Library) as of April 17, 2018. The following concepts were combined along with their associated keywords: "Substance use disorder," "extended intervention," and "evaluation" (see Appendix A for the complete research equation). Moreover, to identify other pertinent studies, experts in this field were contacted and the reference list of included articles was progressively examined until no new references were found. 2) Screening. The identified articles were quickly evaluated based on their title and their abstract. 3) Eligibility. The selected articles were then completely read to determine whether or not they met the inclusion criteria. 4) Inclusion. The information in the included articles were then extracted and analyzed.

2.1. Inclusion criteria

The studies had to examine the efficacy of a long-term SUD treatment and support lasting 18 months or more in comparison with a group (with or without randomization) whose intervention was shorter. All the study participants had to have received an initial, basic treatment. Studies were excluded if there was no difference in length of services provided between the experimental and comparison groups. The participants had to have a problem with AOD use, as evaluated by the presence of an SUD (based on DSM-V criteria) or an addiction diagnosis (based on DSM-IV, DSM-III, or ICD-10 criteria), or have received specialized addiction services. The measure of the treatment's efficacy had to take into account, among other things, a consumption frequency (abstinence or not) or an indicator of AOD use that decreased to a level considered to be moderate. Participants had to be 18 years old or more and could present concomitant problems, such as mental health problems or delinquency, on the condition that there was a component in their treatment that was clearly linked to SUDs. The studies had to be published in English, French, or Spanish and in a peer-reviewed journal. The studies had to use an experimental or quasi-experimental design. They had to be carried out in an OECD country, since these countries have similar democratic systems and a market economy (Organisation for Economic Co-operation and Development, 2019). Studies were excluded if they dealt with the efficacy of medication or if they exclusively evaluated the costs related to the efficacy of treatment. Studies on substitution treatments such as methadone or buprenorphine, as well as studies on assertive community treatment were not selected because they are intended for clients with distinct specific needs (e.g., severe and persistent psychotic disorder with or without SUD, opioid use disorder). Including them in the meta-analysis would have made the results so heterogenious that they would have been difficult to interpret.

In cases where two studies or more were based on the same sample, the study that was most useful in answering the present research question was included. For example, in the first stage, we selected studies by Öjehagen et al. (1992) and Ojehagen, Berglund, and Appel (1993). The latter study had secondary analyses based on the same sample as the first, asking more specifically whether people at risk of suicide responded well to the treatment; the first study was consequently included.

2.2. Encoding, extraction, and assessment of risk of bias

Assessing risk of bias and extracting data from the included studies was conducted independently by the main author and a research assistant. Differences in opinion were discussed in order to achieve consensus. An extraction grid based on the PICOS format (Population, Intervention, Comparison, Outcomes, Setting) was used and, when necessary, additional information was requested from the authors. The risk of bias was assessed using a tool developed by Cochrane Collaboration (Higgins et al., 2011) to estimate the potential bias of randomized studies regarding their methodology and results. Seven domains were assessed based on whether or not the studies had a low, high, or unclear risk: random sequence generation, allocation concealment, blinding of participants and personnel, blinding of outcome assessment, incomplete outcome data, selective reporting, and other possible biases (including conflict of interest).

The efficacy of the intervention was codified based on whether or not it assessed abstinence or moderate consumption in the participants. Abstinence was defined as a lack of AOD consumption during the study period. For moderate consumption, all indicators that took into account usage that did not interfere with the person's daily functioning were considered. Information concerning the total number of people in the experimental and comparison groups was extracted as well has the number of abstainers or moderate users in each group at the measurement time that was closest to the end of the intervention.

The following potential moderators were coded as categorical variables: 1) planned or measured length of treatment and support (18 or 24 months or more); 2) frequency/dose of treatment and support provided (a. Residential: a form of therapeutic support in one's living environment; b. Community-based: ex. Outpatient, peer support group, therapeutic support, or reinclusion in treatment if needed; c. Monitoring: observation of the quantity of AOD use); 3) nature of treatment and support, coded either "comprehensive" when the intervention involved several areas of life (e.g., housing, family, couple, work, health, adaptability, etc.) in addition to examing SUD, or "specific" when the intervention only examined SUD; 4) type of caregiver (peer or professional); 5) type of addiction (alcohol or alcohol and drugs); 6) type of design

used (randomized or not).

Other moderators were codified as continuous variables: the percentage of men, the mean age, year of publication, the difference of the intervention length between experimental and comparison groups and, consequently, the length of the basic treatment received by the two groups. Planned treatment and support length was also codified as a continuous variable.

2.3. Meta-analysis procedure

The meta-analysis was conducted using version 3 of the *Comprehensive Meta-Analysis* software (Borenstein et al., 2013). The odds ratio was chosen as the effect size, given that most papers presented their results in a dichotomous form for each group. The odds ratio refers to the probability of an event occurring (dependent variable) in the treatment group as compared to the probability of it occurring in the comparison group (Card, 2012). An odds ratio of 1 means there is no effect; greater than 1 means that there is a greater probability of the event occurring in the treatment group; less than one means that it is more likely to occur in the comparison group (Szumilas, 2010). The odds ratio was calculated for the study with a confidence interval of 95 % (95%CI). When a study had results for both abstinence and moderate consumption, a mean was calculated to obtain a combined effect size. The combined effect size was then treated as the data for that study limiting over-representation of some samples in the analyses (Borenstein et al., 2009).

Decisions had to be made regarding how to include certain studies in the present analysis. If a study was composed of three groups (e.g., Jason et al. (2015); McKay et al. (2013)), the results of the two experimental groups were combined together when they were the same type of intervention (e.g., residential). McKay et al. 's (2010) study was composed of three groups of which two were experimental groups which could not be coded as the same type. Each of the groups was compared with the control using the study's effect size, which, for this study only, overrepresented the control group. In studies by Jason et al. (2015) and Jason et al. (2016), given that the results concerning AOD use were reported separately, a mean effect size was calculated for each of these studies.

Fisher's z was calculated for each of the effect sizes to determine the presence of extreme data (i.e., Z smaller than −3.29 or greater than +3.29). We tested for publication bias by conducting a visual inspection of the funnel graph and then carrying out a trim-and-fill procedure (Duval and Tweedie, 2000; Sutton et al., 2000). If publication bias is detected, this method makes it possible to adjust the effect size by imputing the results of studies that were not published.

The analyses were conducted using a random-effects model which made it possible to take into account a greater variability between the studies than would have been possible using a fixed effects model (Borenstein et al., 2009). Heterogeneity was estimated using the Q test, which takes into account the difference in the effect size of studies concerning the mean (Borenstein et al., 2009). The I^2 was likewise used to determine what percentage of total variability in the effect sizes was caused by heterogeneity. A score of 25 % was associated with low heterogeneity, a score of 50 % with moderate heterogeneity, and 75 % with high heterogeneity (Higgins and Green, 2011).

2.4. Subgroup analyses and meta-regressions

Subgroup analyses were conducted to verify whether the efficacy of the experimental treatment varied as a function of the planned treatment and support length (18 months or 24 months or more), frequency/dose of treatment and support provided, nature of treatment and support, type of caregivers, type of addiction, and type of design. The meta-regression was used to verify the moderating effect of the continuous variables (the percentage of men, mean age, year of publication, difference of the intervention length between experimental and comparison groups, length of the basic treatment, and planned treatment and support length).

3. Results

3.1. Included studies

The flow chart (see Fig. 1) summarizes the identification, selection, and admissibility process of the studies. The research strategy allowed us to identify 1397 potentially relevant articles. The reasons for exclusion are mentioned in the flow chart. The process resulted in including 12 articles describing 13 studies (Öjehagen et al., 1992). All but 3 of the included studies came from the United States.

The studies comprised a total of 3598 participants, with the sample sizes varying from 36 to 622 participants. The characteristics of the included studies are presented in Table 1. The mean age of the participants was 39 years ($SD = 4.14$). When they are reported (the number of studies reporting this information is noted between parentheses), the characteristics of the participants in the studies included for this systematic review and meta-analysis show high rates of concomitance with mental health problems (43 %–75 %; $k = 5$), legal problems (44 %–100 %; $k = 7$), as well as high rates of previous treatment (51 %–100 %; $k = 5$) and considerable numbers of previous treatments from 0.67 ($SD = 1.94$) to 4.47 ($SD = 5.59$) ($k = 5$). As for the characteristics of the treatments and support, their planned length varied from 18 to 48 months. The treatments and support were provided in community-based ($k = 7$) or through monitoring ($k = 2$) and generally proposed a decreasing intensity as the person progressed in the program. That being said, the intensity proposed in the community-based treatments and support varied according to the participants' needs, with the exception of the MBT de Öjehagen et al. (1992). In the community-based treatments and support, the meeting characteristics varied (in person or by phone) and were based on motivational interviewing or cognitive behavioral therapy. As regards monitoring, contact was short in length (5–10 min) and took place by telephone.

The completion rate for long-term treatment and support varied considerably from one study to another (47–95 %, $k = 7$). Other studies reported the mean length of services in numbers of days, from 60.61 ($SD = 79.29$) to 256.2 ($SD = 247.1$) ($k = 3$) or the mean average of completed sessions, from 9.1 ($SD = 9.6$) to 26.0 ($SD = 12.8$) ($k = 2$). Accordingly, there is a difference between the planned treatment and support length and the actual, provided length of treatment. This difference is particularly noticeable in residential treatment which in the present study comprised therapeutic community and Oxford House models.

Before being assigned to the experimental and comparison groups, all the participants in the included studies received a basic treatment ranging from 1 to 12 months. All the participants from the same study received the same basic treatment. In addition to this basic treatment, participants in the experimental groups received long-term treatment or support. Half of the basic treatments ($k = 6$) occurred in specialized addiction treatment centres, 3 in prisons, 4 others in hospital settings (3 in psychiatric units and 1 in a medical center for veterans). Three studies only used an indicator for moderate consumption, 8 others only used an indicator for abstinence, and 2 studies used it for both. Table 2 shows how authors named and defined the moderate consumption indicators.

The results for the assessment of risk of bias are shown in Table 3. Overall, the studies show a moderate risk level. Given the type of interventions, it was impossible for participants not to know to which group they belonged, which is inevitable in the psychosocial field. The studies by Martin et al. (1999), Rus-Makovec and Čebašek-Travnik (2008), and Thurstin et al. (1987) showed a higher level of risk of bias. These three studies were not randomized and lacked information about how the results were measured and how missing data were treated. The study by Thurstin et al. (1987) showed an additional risk of bias related to the participants' self-selection; they were divided retrospectively based on whether or not they participated in AA.

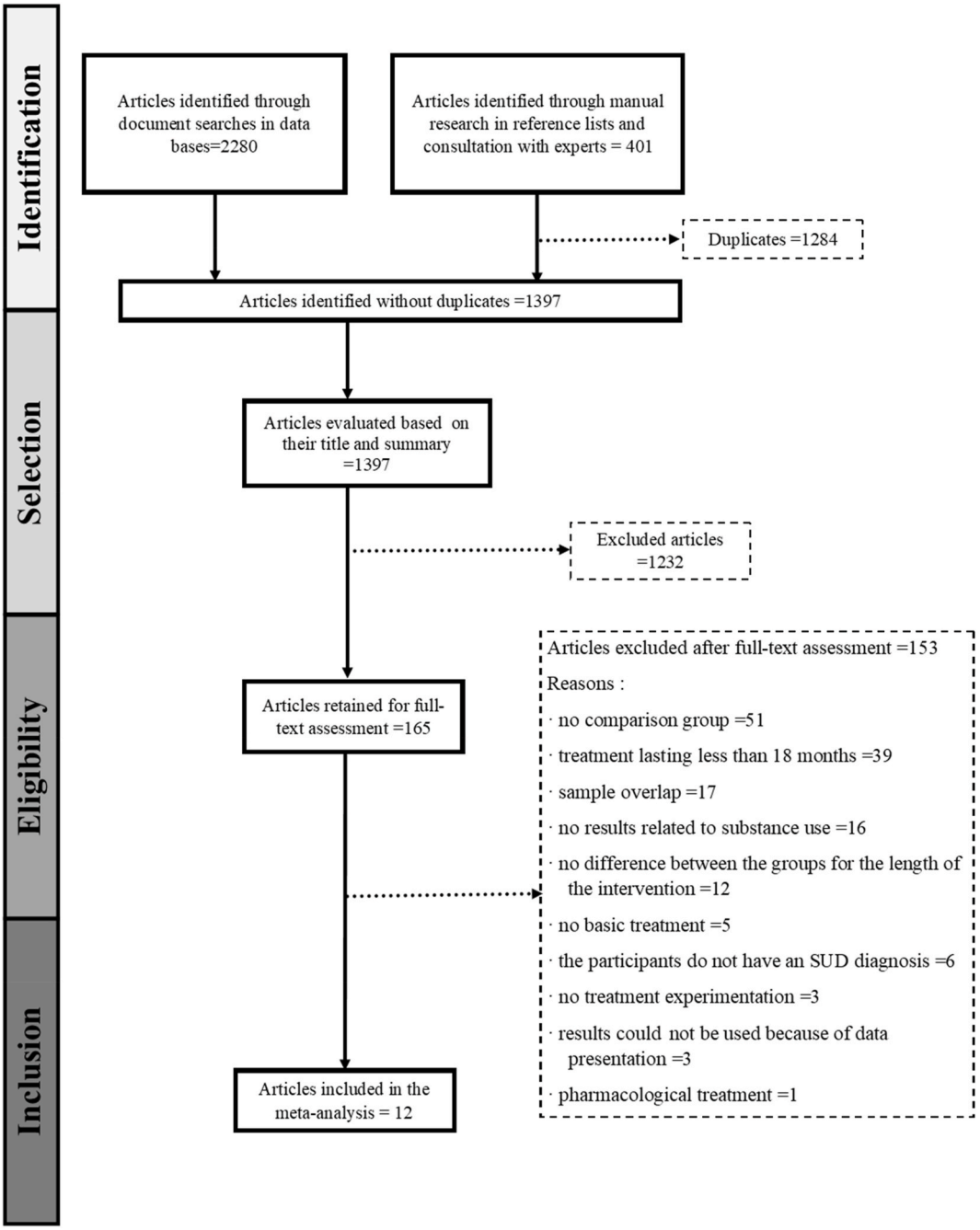

Fig. 1. PRISMA flow diagram of article selection.

3.2. Main results

Even though none of the effect sizes were considered as extreme data, we decided to exclude that of Thurstin et al. (1987) which reported that 100 % of the people in the treatment group consumed moderately (OR = 53.92 [CI 95 % = 3.14–925.36]), because this result was markedly different from the others. This decision was also based on the high risk of bias in this study, as reported above. The study's effect size for abstinence was however kept. The present study's analyses thus examine the 14 remaining effect sizes.

Overall, the results of this meta-analysis suggest that there were more people in the planned, long-term treatment and support groups (18 months or more) than in the comparison groups (shorter standard treatment) who abstained or consumed moderately (OR = 1.347 [CI 95 % = 1.087–1.668], $p < .006$). In other words, people who received the long-term treatment and support had a 23.9 % greater chance of being abstinent or consuming moderately than did people who received a shorter standard treatment. Fig. 2 shows the forest plot with the estimated effect size for each of the studies and their confidence interval. Three studies (Jason et al., 2015; Öjehagen et al., 1992 MBT and PT) had an effect size less than 1 indicating that, in these studies, there were more people in the control groups than in the long-term treatment and support groups who abstained or consumed moderately.

The analyses of the studies using the trim and fill method indicated the presence of publication bias in the results. A study had to be imputed to the right of the mean (see Fig. 3), which led to an overall adjusted effect size of OR = 1.460 (CI 95 % = 1.145–1.861). This adjustment suggests that people who received long-term treatment and support had a 24.4 % greater chance of abstaining or consuming moderately than did people who received the shorter standard treatment. The analyses

Table 1
Characteristics of included studies.

Authors (year)/ countries	Basic treatment		Long-term treatment					Population characteristics			SUD severity	
	Setting	Length (months)	Name of treatment/ approach	Type/intensity	Length (months)	Real quantity of services provided		Men (%)	Mental health problems (%)	Legal problems (%)	Previous treatment (%)	Mean number of past treatments M(SD)
						Completion (%)	M(SD)					
Dennis et al. (2003) [n]/USA	SATC[a]	1	RMC[b]/MI[c]	Community-based/Every 3 months, referral to therapy if needed	24	93	—	41	75	75	68	—
Dennis et al. (2012) [n]/USA	SATC	1.5	RMC/MI	Community-based/Every 3 months, referral to therapy if needed	48	95	—	54	53	83	62	—
Groh et al. (2009) [n]/USA	SATC	1	OH[d]/peer support	Residential/N.A[e]	24	—	256.2 (247.1) days	38	59	43.9	—	Inpatient 3.2 (2.1) Outpatient 0.8 (2.6)
Jason et al. (2015) [n]/USA	SATC	1	OH/caregiving peers	Residential/N.A.	24	—	91.61 (141.99) days	83	—	100	—	Alcohol 0.67 (1.94)
			TC[f]/caregiving peers			—	60.61 (79.29) days					Drugs 2.95 (3.38)
Jason et al. (2016)/USA	Prison or SATC	1,6	OH/caregiving peers	Residential/N.A.	24	—	131.0 (14.0) days	0	—	100	—	—
Martin et al. (1999)/USA	Prison	12	TC/caregiving peers	Residential/N.A.	18	65 (CREST)	—	86.5	—	100	100	—
McKay et al. (2010) [n]/USA	SATC	6	TM[g]/N.A.	Monitoring/Once a week for the 1st 8 weeks, every 2nd week for 44 weeks, once a month for the last 6 months	18	—	11.5 (9.7) sessions	64	49	—	—	Alcohol 3.35 (3.70)
McKay et al. (2010) [n]/USA (Continued)			TMC[h]/MI + CBT[i]	Community-based/At least once a week for the 1st 8 weeks, every 2nd week for 44 weeks, once a month for the last 6 months, and adjustable based on needs		—	9.1 (9.6) sessions					Drug 3.06 (3.78)
McKay et al. (2013) [n]/USA	SATC	6	TMC/MI + CBT	Community-based/At least once a week for the 1st 8 weeks, every 2nd week for 44 weeks, once a month for 6 months, once every 2 months for the last 6 months, and adjustable based on needs	24	—	15.5 (14.1) sessions	76	—	—	—	4.47 (5.59)
			TMC + [j]/MI + CBT				26.0 (12.8) sessions					
Öjehagen et al. (1992) [n]/Sweden	Hospital	12	MBT[k]/CBT	Community-based/Every 2 weeks for the 1st year and every 4 weeks for the 2nd year	24	50	—	83	—	—	51	—
			PT[l]/psycho-dynamics	Community-based/Adjustable based on needs		63						
	Hospital	3		Monitoring/Every 3, 6, 12, and 24 months	24	47	—	75	—	—	—	1.44 (0.75)

(*continued on next page*)

Table 1 (*continued*)

Authors (year)/ countries	Basic treatment		Long-term treatment					Population characteristics			SUD severity	
	Setting	Length (months)	Name of treatment/ approach	Type/intensity	Length (months)	Real quantity of services provided		Men (%)	Mental health problems (%)	Legal problems (%)	Previous treatment (%)	Mean number of past treatments M(SD)
						Completion (%)	M(SD)					
Rus-Makovec et al. (2008)/Slovenia			Contact by phone/N.A.									
Scott et al. (2017)[n]/USA	Prison	2.5	RMC/MI	Community-based/Once a month for the 1st 90 days, then every 3 months and more based on needs, referral to therapy if needed	36	97	—	0	43	100	94	—
Thurstin et al. (1987)/USA	Hospital	1	AA[m]/ caregiving peers	Community-based/N.A.	18	—	—	100	—	—	—	—

Note. Cells with a (–) correspond to missing information.

[a] SATC = Specialized Addiction Treatment Center.
[b] RMC = recovery management check-up.
[c] MI = motivational interviewing.
[d] OH = Oxford House.
[e] N.A. = not applicable.
[f] TC = therapeutic community.
[g] TM = telephone monitoring.
[h] TMC = telephone monitoring and counseling.
[i] CBT = cognitive behavioral therapy.
[j] TMC+ = Telephone monitoring and counseling plus incentives.
[k] MBT = multimodal behavioral therapy.
[l] PT = psychiatric treatment.
[m] AA = Alcoholics Anonymous.
[n] = randomized control trial.

Table 2
Definition of moderate consumption indicators.

Authors (year)	Name of the indicator in the study	Authors' definition
McKay et al. (2010)	No heavy alcohol use	Heavy alcohol use = five or more drinks/day for men, four or more drinks/day for women
McKay et al. (2013)	Abstinence composite	No cocaine use and no use of other drug and no heavy alcohol use (i.e., five or more drinks/day for men, four or more drinks/day for women) in a given segment of the follow-up (3-month periods in months 1–12, 6-month periods in months 13–24),
Öjehagen et al. (1992) [a]	Favorable drinking outcomes	<14 days of misuse in the last year misuse = days with a consumption of more than 4 drinks (e.g., 1 drink = 3.8 cl of 40 % liquor) during continuous drinking or more than 6 drinks on occasional drinking days
Scott et al. (2017) [b]	Less than weekly alcohol or other drug use	Self-reported alcohol and/or drug use in the quarter

[a] The article by Öjehagen et al., (1992) presented 2 studies.
[b] The authors used "weekly alcohol and/or drug use " in the article.

showed that there was moderate heterogeneity between the effect sizes ($Q = 22.385$ $p < .05$, $I^2 = 42$ %). Finally, the sensitivity analyses conducted after the assessment of risk of bias did not point to any difference in the results. All of the studies were thus kept for all of the analyses.

3.3. Moderation analyses

Table 4 shows the overall results and those for each of the moderator variables considered here. As regards the analysis of the subgroups, the results revealed that the efficacy of the long-term treatment and support did not vary according to the planned length of treatment and support (18 months or 24 months or more), frequency/dose of treatment, and support provided (residential, community-based, monitoring), nature of the treatment and support (comprehensive or specific), type of caregiver (peer or professional), type of addiction (alcohol or alcohol and drugs), and type of design (randomized or not). The meta-regressions likewise showed a lack of moderation regarding sex (male/female), mean age, year of publication, planned length, length of basic treatment, and difference in intervention length between the control and experimental groups.

4. Discussion

The objective of this systematic review and meta-analysis was to measure the efficacy of treatment and support planned for 18 months or more as compared to the shorter standard treatment that was usually provided to people with an SUD. To do so, the included studies had to assess efficacy concerning a use indicator by comparing the results obtained in a group that received a shorter length of service (basic treatment) to that of a group whose treatment was planned over a period of at least 18 months. The results suggest that the people who received a planned long-term treatment and support had a 23.9 % greater chance of abstaining or consuming moderately than did people who received a

Table 3
Assessment of risk of bias.

Authors(year)	Generation of a randomization sequence	Attribution secret	Performance biais	Detection biais	Attrition biais	Notification biais	Author biais
Dennis et al. (2003)	+	?	-	+	+	+	?
Dennis et al. (2012)	+	+	-	+	+	+	+
Groh et al. (2009)	+	+	-	?	?	+	+
Jason et al. (2015)	+	+	-	?	+	+	+
Jason et al. (2016)	-	-	-	?	+	+	+
Martin et al. (1999)	-	-	-	?	?	+	?
McKay et al. (2010)	+	+	-	+	+	+	?
McKay et al. (2013)	+	+	-	+	+	+	?
Öjehagen et al. (1992)	?	?	-	?	+	+	?
Rus-Makovec et al. (2008)	-	-	-	?	?	+	?
Scott et al. (2017)	+	?	-	?	+	+	?
Thurstin et al. (1987)	-	-	-	?	?	+	?

(+) Low risk, (-) High risk, (?) Unclear risk

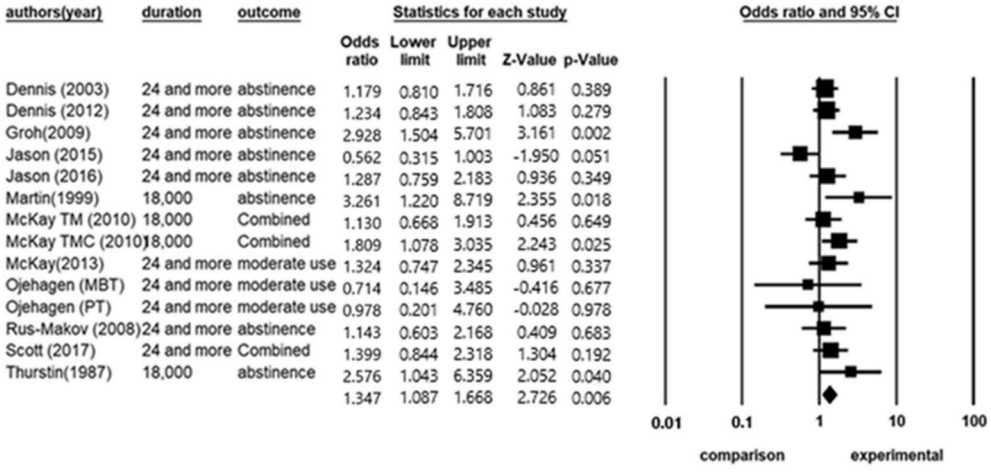

Fig. 2. Forest plot representing the effect sizes (substance use outcomes) and their confidence intervals (CI).

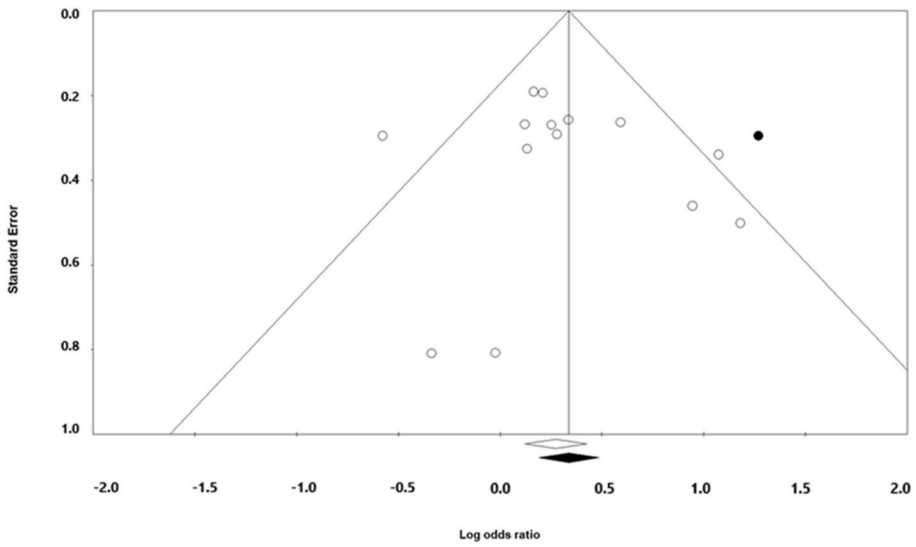

Fig. 3. Funnel plot of standard error by log odds ratio.

Table 4
Results of subgroup and meta-regression analyses for substance use outcomes.

Moderator	*k*	*N*	OR	95 % CI		Contrast *Q'*	Slope
				Lower	Upper		
All studies	14	3598	1.347**	1.087	1.668		
Planned length							
18 months	4	589	1.793**	1.161	2.770		
24 months	10	3009	1.222	0.965	1.546		
Contrast						2.313	
Frequency/dose							
Community-based	8	2081	1.350**	1.113	1.638		
Residential	4	726	1.545	0.702	3.401		
Monitoring	2	791	1.135	0.756	1.705		
Contrast						0.734	
Nature of treatment							
Comprehensive	6	1351	1.603	0.951	2.701		
Specific	8	2247	1.257*	1.039	1.520		
Contrast						0.736	
Caregivers							
Peers	5	871	1.687	0.855	3.327		
Professionals	9	2727	1.274**	1.066	1.522		
Contrast						0.614	
Type of SUD							
Alcohol	6	1177	1.403*	1.048	1.876		
Alcohol and drugs	8	2421	1.340	0.995	1.806		
Contrast						0.046	
Type of design							
Non-randomized	3	967	1.402	0.942	2.085		
Randomized	11	2631	1.330*	1.028	1.720		
Contrast						0.047	
% men	14						−0.001
Mean age	14						−0.023
Year of publication	14						−0.019
Planned length	14						−0.008
Length of basic treatment	14						0.022
Difference in intervention length	14						−0.008

$p < .05$, **$p < .01$, ***$p < .001$. CI, confidence interval; Inf, inferior, Sup, superior.

shorter standard treatment. Even though a publication bias was detected, it suggested a higher efficacy in the long-term treatments and support (24.4 %) than the effect size obtained before adjustment (OR = 1.347 [CI 95 % = 1.087–1.668], $p < .006$, adjusted OR = 1.460 [CI 95 % = 1.145–1.861]), we, therefore, obtained conservative results in favor of long-term treatment and support.

The results of this systematic review and meta-analysis are in keeping with those examining 12-month-long treatments (Bergman et al., 2015; Eastwood et al., 2018; Grella et al., 2010; Lash et al., 2007; Lemke et al., 2003; McKay et al., 2016). They confirm the tendency showing that long-term treatments and support make it possible to more greatly reduce consumption behavior than do shorter treatments. What is more, the results of this meta-analysis were obtained with participants with severe, complex problems, of which a large majority had mental health and legal problems, in addition to several episodes of previous treatment. The efficacy of the treatments and support, which were 18 months or longer with these participants, illustrates the need for long-term care continuity and allows us to affirm the importance of providing services well beyond the minimum 90-day threshold.

The moderation analyses regarding the length of long-term

treatment and support revealed that the treatments that lasted 24, 36, and 48 months did not report more people who were abstinent or moderate consumers than did those that were 18 months long. In other words, continuous services over time seemed to be more important than a specific service length since a similar efficacy was observed in both the 18 month treatments and those 24 months or more. Nonetheless, though all these measures were taken at the end of the treatments and support, none of these studies continued measuring the treatments' effect once these treatments came to an end. Several studies suggest moreover that the effects of treatment and support for people with a persistent SUD subside once the treatment is over, pointing to the importance of continuous long-term therapeutic contact (McLellan, 2002; Simoneau et al., 2018; White, 2012). Contrary to the paradigm underlying the acute care model, which supposes that a defined length of care time will help the SUD to subside, the reconceptualization of the SUD as a chronic problem leads us to reconsider the expectations we have for people with this profile (White et al., 2011). As with other chronic diseases of a physical nature where treatment is offered without time limits, it is expected that progress will continue as long as services are available (McLellan, 2003; McLellan et al., 2005).

Two of the 13 studies included in this systematic review and meta-analysis were comprised solely of women (Jason et al., 2016; Scott et al., 2017). The moderation analyses carried out as a function of the participants' sex did not, however, reveal any differences in the results. Several studies observed that women with an SUD followed substantially different trajectories than did the men, particularly concerning the importance of parenting and the impact of the traumatisms in their trajectory (Greenfield et al., 2011; McHugh et al., 2018). In this systematic review and meta-analysis, these characteristics were found in large proportions in the two samples composed exclusively of women, in addition to the legal problems they faced and the adoption of risk behaviors for HIV transmission (Jason et al., 2016; Scott et al., 2017). However, only Scott et al. (2017) study mentioned the use of treatment components that specifically addressed the issues faced by women. Women's long-term trajectories and their specific needs have not been greatly studied (Berglund, 2004; Covington, 2015). That being said, the few studies that have looked at this question reveal that recovery maintenance is undermined by a low recovery capital in terms of monetary and material resources, thereby resulting in food and residential precariousness (Gueta and Addad, 2015; Logan et al., 2020). Future studies should more precisely document the long-term AOD consumption and service use trajectories among women while identifying the characteristics specificities associated with specific groups (e.g., mothers, offenders, itinerants, etc.).

As for frequency/dose of treatment and support provided (residential, community-based, or monitoring), the results of the moderation analyses indicated that the efficacy did not vary as a function of treatment type, which prevented us from determining the superiority of one therapeutic approach or model over another. That being said, we expected that there would be a difference in favor of the community-based model compared to monitoring, since this latter model is not based on any therapeutic approach, there is no support provided, the contact time is short, the intensity is predetermined, and the only objective is to gather information concerning AOD consumption. On the other hand, the community-based treatments and support proposed a variable intensity of contact depending on needs, except for the MBT study of Öjehagen et al. (1992), and were based on motivational interviews and cognitive-behavioral approaches. These approaches are widely recognized for their efficacy for people with an SUD (Morgenstern and McKay, 2007). The number of studies corresponding to the monitoring category that were included in this meta-analysis may have been too small to allow us to detect variations in their efficacy. Moreover, McKay et al. (2010) noted that telephone monitoring and counseling (TMC)—a treatment corresponding to the community-based category in this systematic review and meta-analysis—was preferable to telephone monitoring (TM) in increasing abstinence and decreasing alcohol abuse. It is likewise possible that the choice of therapeutic success indicators, which are largely based on abstinence, were not sensitive enough to document differences in efficacy between types of models. While there was not a clear tendency in our results in favor of one model or another, the fact remains that a varying frequency and the redirection of people into treatment when their need is apparent would seem to be more consistent with the characteristics of the problem. In this regard, the study by Scott et al. (2005) shows the extent to which trajectories change from relapse to return to treatment, to a period of recovery, another return to relapse, and so on. Over a three-year period, 83 % of participants moved from one status to another, half of whom did so more than once. Consequently, the management of treatment for people with a long-term SUD should initially aim to lengthen the recovery periods rather than eliminate the fluctuation in status that seems to be a characteristic of chronicity (Maisto et al., 2018). Further research is needed to verify the role of several other variables, such as service intensity, treatment retention, and the type of treatment that would be best suited to people with a persistent SUD.

It would seem that a peer-based approach is recommended in long-term, residential treatment and support, since it was frequently indicated in the included studies corresponding to this treatment category. The results of the moderation analyses showed that there was no variation in treatment efficacy concerning caregivers (peers or professionals), which is consistent with the literature to the effect that testimonials and peer support are beneficial both in reducing AOD use and in promoting commitment to treatment (Bassuk et al., 2016; Tracy and Wallace, 2016). A therapeutic alliance with professionals and/or peers would appear to be one of the most important elements in ensuring treatment quality in the opinion of addiction service users (Lovejoy et al., 1995; Nordfjaern et al., 2010).

Finally, the moderation analyses showed no differences in the results concerning the nature of the treatment and support, which was coded either "comprehensive" when the intervention examined several areas of life (housing, family, couple, work, health, adaptability, etc.) in addition to SUD, or "specific" when the intervention only examined SUD. The results showed that the specific treatments had a significant effect size as compared to the effect size of the comprehensive treatments and support, which seem to be more heterogeneous, but this difference was not significant. These results are contrary to those suggested by the literature, namely that treatments involving several areas of life (comprehensive), in comparison to those focusing specifically on SUD, are more effective with people with a persistent SUD (Simoneau et al., 2018; White, 2008; White et al., 2011). Other more global indicators (e.g., quality of life, relationship quality, etc.) than those linked to consumption might have made it possible to demonstrate the greater value of comprehensive treatments and support as compared to specific treatments for people with a long-term SUD. Recovery-oriented services involve the development of recovery capital at several levels: at the individual level by cultivating one's personal strengths and resources; at the social level by integrating friends and family into the services; and at the community level by investing in meaningful activities such as employment, education, and volunteering (Cano et al., 2017; Dekkers et al., 2020).

4.1. Limitations

The results of this systematic review and meta-analysis are limited by the fact that the analyses carried out were based on the planned length of treatment and support, not on the actual length of the service provided. The data regarding the quantity of services provided in the included studies were too heterogeneous to be analyzed. Studies with more consistent results regarding treatment retention are needed. However, the data obtained in this meta-analysis clearly indicate that engaging people with persistent SUD in long-term treatment is advantageous with respect to the usual service provided. This is supported by studies showing that starting treatment without completing it generally results

in positive therapeutic effects (Butzin et al., 2002; Harley et al., 2018). In addition to this observation, a larger gap between the planned length and the actual length of services provided was observed in the residential treatments, suggesting that a large proportion of the people directed towards residential services did not actually use them in the long term. Of these treatments and supports, three used the Oxford House model where, unlike other long-term treatment models, the end is not planned; the participants can stay as long as they want as long as they respect the rules (Jason and Ferrari, 2010). The model responds clearly to the necessity to have a stable living environment after intensive therapy, an important condition to maintaining the recovery process (Gueta et al., 2015; Martinelli et al., 2020). That being said, the smaller gaps observed between the planned length of service and the actual length of service provided in the case of community-based treatment suggests that services provided to people with a chronic SUD should be more flexible regarding monitoring characteristics (community-based versus residential) so as to adapt to their changing needs during the recovery process. Accordingly, the provision of a continuous service over time whose intensity is personalized would seem to be well adapted given the persistent nature of the problem and the numerous possible trajectories for recovery (White et al., 2011).

Furthermore, the lack of certain data limits the results. The data related to SUD severity and its associated issues, whether they involve legal or mental health problems, were lacking or presented in different forms. Likewise, the data describing standard treatment were often brief compared to that of long-term treatment and support. The presentation of this data in a homogenous format would have made it possible to further our moderation analyses regarding the efficacy of the long-term treatments and support. Future studies of persistent SUDs should focus on a better description of the characteristics of the populations that they are studying by using homogenous severity formats and describing standard treatments as precisely as the experimental treatments. Moreover, given that social capital is a key component of the recovery process (Dekkers et al., 2020), other information about the social context and AA/NA membership should be documented.

Concerning the results format, dichotomous variables were favored given that the majority of the studies included here presented their results in this form (abstinence or not). The use of continuous variables would have been more appropriate to demonstrate the more subtle improvements among people with persistent SUD (Willenbring, 2014). Moreover, abstinence was selected as the results indicator since the majority of the studies chose this criterion to measure their intervention's efficacy. The predominance of this choice was probably related to the fact that almost all the studies included here came from the United States, where the dominant service model is based on abstinence (Lee, 2015; Lee & O'Malley, 2018; Tatarsky and Marlatt, 2010). That being said, conceiving the success of a treatment with a dichotomous measure of abstinence or non-abstinence is not consistent with a chronic conceptualization of SUD. Abstinence is a very high threshold to achieve for people with several concomitant problems and high SUD severity (White, 2008). The length of SUD remission trajectories likewise indicates that it is a long-term phenomenon (Dennis et al., 2005; Fleury et al., 2016). Babor et al. (1994) postulate moreover that indicators should opt for consumption frequency (e.g., the percentage of abstinent days) and severity (e.g., the amount consumed per day). Consequently, to better take into account the situations of people with a persistent SUD in this meta-analysis, we decided to also include all the indicators reporting a low consumption that did not hinder daily functioning. This choice also made room for more heterogeneity in the way the authors defined these indicators. A consensus regarding the operational definition of this indicator is necessary. Moreover, several issues remain even when abstinence or controlled consumption are achieved, including the resurgence of psychological symptoms, employment, social/family relationships, lodging, and health (Bacchus et al., 2000; Laudet and White, 2010; Nordfjaern et al., 2010), thereby indicating that the concept of SUD remission must be widened to include other indicators than consumption. In addition to severity and frequency of use indicators, the International Consortium for Health Outcomes Measures (2020) recommends considering a set of indicators that address global functioning in all areas of life, quality of life, and recovery. Originally developed in the mental health field, the concept of personal recovery is increasingly being adopted in addiction contexts to characterize SUD remission, as it accurately captures a range of changes in several areas of life, instead of focusing only on abstinence (Neale et al., 2014).

Finally, the results are limited by the quality of some studies, in particular that of Thurstin et al. (1987), which had several risks of bias, including a self-selection bias. Even though overall the results for the assessment of risk of bias indicate that there was a moderate risk and that the sensitivity analyses detected no differences between those studies with a greater risk as compared to those with a smaller risk, prudence is called for in interpreting the results.

5. Conclusions

The originality of this systematic review and meta-analysis was to have taken into account treatments and support lasting 18 months or more, whatever the model used, so as to measure their efficacy as compared to shorter standard treatments. The results led us to clearly opt in favor of the necessity of providing long-term services for people with persistent SUD. The use of these services should consider the characteristics of people with persistent SUD, in particular severity, chronicity, and complexity (Rush et al., 2019). Consequently, services should be adjusted according to changes in intensity, length of treatment and support should be personalized, and services should be organized in response to the complexity of each person's needs. Moreover, considering that recovery is a long-term process for people with persistent SUD, services must focus on long-term recovery goals and not on achieving abstinence after a single treatment episode (Martinelli et al., 2020). Services developed in a long-term perspective should also include mechanisms and strategies that promote retention in treatment. In this respect, the Case Management model has been shown to be particularly effective in promoting retention in substance abuse treatment and linkage with substance abuse services (Vanderplasschen, Rapp, De Maeyer & Van Den Noortgate, 2019).

It is also worth noting that the primary outcome of this meta-analysis (23.9 % improvement in favor of the long-term treatment group) is based largely on dichotomous abstinence measures, making it a very high threshold to achieve for people with several concomitant problems and high SUD severity (White, 2008) It is thus possible that a more comprehensive measure of daily functioning would have revealed an even larger difference between groups, indicating to policymakers that by extending the time of provided services but at a lower intensity they could expect further positive impacts. From this angle, internet-based services are an interesting complement to a long-term service provision with numerous possibilities: maintaining of synchronous and asynchronous contact, reaching people in rural areas, receiving personalized feedback reports, and monitoring the recovery process (Cucciare et al., 2009; Marsch et al., 2020). Given the range of treatment modalities that can be implemented to best meet the needs of people with a persistent SUD, further cost-effectiveness evaluation is needed to guide service providers and policymakers. However, it is already possible to implement long-term treatment services as there are low-cost models that have already been shown to be effective. Two studies of models included in this systematic review and meta-analysis (RMC and TMC) demonstrated moreover that a low-intensity, long-term intervention was a cost-effective and potentially cost-saving strategy given the social costs associated with SUD (McCollister et al., 2013; McCollister et al., 2016).

Future research should more precisely document the characteristics of participants with a persistent SUD by indicating the presence of mental health problems, social-legal problems, and all other elements related to social precariousness. Moreover, to coherently address the

persistence of the problem, the success indicators should not only comprise frequency and severity, they should also include indicators associated with the idea of recovery, such as lodging, employment, education, quality of life, daily functioning, and the social support network (Bassuk et al., 2016). This should be accomplished through simple, universal scales that can be used from one study to another (see ICHOM, 2020). Finally, future research should document the trajectories for addiction, services, and recovery in women with a persistent SUD.

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Recherche et intervention sur les substances psychoactives-Québec. There is no ID grant, it is a student scholarship to support the research process.

Appendix A

Search terms

AB (("Substanc* us*" OR "Substanc* us* disorder" OR "Substanc* related disorder" OR "Substanc* misus*" OR "Substanc* abus *" OR "Problem* substance* us* " OR "Substanc* addict*" OR "Substanc* dependenc*" OR "Drug* us* disorder" OR "Drug*related disorder" OR "Drug* misus* " OR "Drug* abus* " OR "Drug* addict*" OR "Drug* dependenc*" OR "Alcohol us* disorder " OR "Alcohol related disorder" OR "Alcohol misus*" OR "Alcohol abus*" OR "Alcohol addict*" OR "Alcohol dependenc*" OR "Alcoholism " OR alcoholic* OR "SUD" OR "AOD dependenc*" OR "AOD abus*" OR "AOD disorder*" OR "Drug* addict*" OR "Substanc* abus*" OR "Polydrug use " OR "cocaine" OR "marijuana" OR "marihuana" OR "hashish" OR "cannabis" OR "amphetamine" OR "mdma" OR "heroin" OR "narcotic*" OR "opiate" OR "opioid" OR "opium" OR "phencyclidine" OR "ecstasy" OR "salvia" OR "hallucinogen*" or "stimulant*" OR "inhalant*" OR "solvent*" OR "benzodiazepines" OR "depressant*" OR "sedative*" OR "speed" OR "poppers")
AND ("Long term follow up " OR "Aftercare " OR "Chronic care " OR "Continuing care" OR "Long term care" OR "recovery management checkups" OR "extended intervention*" OR "extended treatment*")
AND ("Case management" OR "step-down care" OR "stepped care " OR "Contingency management" OR "Treatment*" OR "Therapy" OR "Psychotherapy" OR "intervention*" OR "Addiction treatment "OR "Counseling" OR "Program*" OR "Service*" OR "Care")
AND ("effica*" OR "effectiveness" OR "outcomes" OR "evaluative study" OR "evaluation" OR "Pre post design" OR "impact")
NOT ("Assertive community treatment" OR "PACT" OR "methadone" OR "buprenorphine" OR "suboxone" OR "naltrexone"))

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