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12-step participation among dually-diagnosed individuals: A review of individual and contextual factors

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ABSTRACT

The frequent co-occurrence of substance abuse disorders along with psychiatric disorders creates a number of complexities and needs in terms of long-term treatment for individuals. 12-step groups might provide unique mechanisms by which dually-diagnosed individuals can maintain their abstinence and improve their psychological functioning. This paper reviews the literature on outpatient community 12-step participation among dually-diagnosed individuals, and also focuses on individual factors that may interact with treatment: homelessness, legal status, and ethnicity. A total of 59 articles was included in the review, with an emphasis on these individual factors and findings regarding mechanisms of action. Overall, findings from the studies reviewed suggest a general benefit of 12-step participation across these individual factors and some potential for dual-focus 12-step programs for dually-diagnosed individuals via social support and self-efficacy. However, methodological limitations and lack of research in the area of ethnicity limited some of the conclusions that can be made. Suggestions for further research are discussed.

Contents

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The co-occurrence of psychiatric disorders with substance abuse is commonly observed in both research and clinical practice. For example, the prevalence rate for any current mood and/or anxiety disorder that is not substance-induced among individuals seeking treatment for a substance use disorder ranges from 33% to 60%, depending on the disorder and substance abuse typology (Grant et al., 2004). Psychiatric disorders have been found to predict development of substance abuse problems (Zimmerman et al., 2003). Furthermore, when improvements in substance use outcomes have been found for dually-diagnosed individuals, the improvements are less substantial than for those with only substance abuse issues (e.g. Burns, Teesson, & O'Neill, 2005), and typically comorbid psychiatric disorders are associated with higher rates of relapse among recovering individuals (Kushner et al., 2005).

Research on individuals who are dually-diagnosed suggests that developing peer networks supportive of abstinence is an important aspect of recovery (Laudet, Magura, Vogel & Knight, 2004). Given limitations of traditional treatment, and increased vulnerability of dually-diagnosed individuals to negative outcomes, alternative supportive services are an important area for research and development (Vogel, Knight, Laudet, & Magura, 1998). For example, mutual-help environments might be beneficial for dually-diagnosed individuals (Magura, Knight et al., 2003). A key feature of these environments is social support, which might be a protective factor against negative psychological symptoms (e.g., Laudet, Magura, Vogel, & Knight, 2000a), and is also associated with maintaining abstinence from substance use (e.g., Moos, Brennan, & Moos, 1991). Prior research has also suggested that amount of social support received from mutual-help settings increases as a function of participation (Humphreys, Mankowski, Moos, & Finney, 1999; Ouimette, Moos, & Finney, 1998).

Bogenschutz, Geppert, and George (2006) conducted a comprehensive review of the quantitative literature on 12-step approaches for dually-diagnosed individuals. Their review found that dually-diagnosed individuals generally attend 12-step programs at a comparable rate to those with only substance use disorders; there is a consistent, positive association between 12-step participation and substance use outcomes among dually-diagnosed individuals; and specialized 12-step programs for dually-diagnosed individuals might be used differently than traditional 12-step programs by this population. Additionally, their review called for further research on individual factors that interact with 12-step utilization (Bogenschutz et al.).

One of the primary findings from Bogenschutz et al. (2006) was a differentiation between 12-step *programs* and *treatments*. While the data in their review suggest that 12-step programs, both traditional and modified, are utilized by individuals with dual-diagnoses and generally are associated with beneficial outcomes, there is less evidence from more rigorous efficacy and effectiveness studies for treatments with a 12-step orientation. As discussed by Bogenschutz et al., many of these clinical trials have failed to differentiate between effects of other (variable) intervention components, or lacked in methodological rigor. Furthermore, absence of experimental designs examining specialized 12-step programs, as well as little focus on mechanisms of action, have made the potential benefits of participation unclear.

An individual factor that might be highly related to 12-step participation and dual-diagnosis is homelessness. Rates of comorbid substance use and mental health problems are particularly high among homeless individuals. For example, the Urban Institute (1999) found that 86% of homeless individuals from a national sample reported the lifetime occurrence of a substance use or mental health problem. While that number was lower when asked about substance abuse or mental health problems within the previous month (66%), 30% of participants reported having problems with alcohol, drugs, *and* mental health issues during their lifetime (Urban Institute). Some earlier estimates find "severe" dual-diagnosis rates to be somewhat lower (e.g. 10–20%) among homeless individuals (Drake, Osher, & Wallach, 1991). Considering the unique stressors experienced by homeless individuals, identifying barriers to treatment as well as potentially beneficial interventions continues to be a high priority.

Another factor under current exploration when considering 12-step utilization and dual-diagnosis is criminal history. Ex-offenders often have mental health and/or substance abuse problems upon incarceration, which frequently have contributed to their criminal offenses and recidivism rates. For example, the Bureau of Justice Statistics (BJS) found that over 40% of offenders on probation or in local U.S. jails were under the influence of alcohol at the time of their offense (BJS, 1998), and that nearly 70% of inmates met the criteria for a substance use disorder (BJS, 2005). Estimates for how many incarcerated individuals have a dual-diagnosis vary, but one such estimate suggests approximately 26% of inmates with substance abuse problems had a lifetime Axis I disorder (Cote & Hodgins, 1990). While there is variability among in-prison and community treatment interventions for these individuals (Edens, Peters, & Hills, 1997), there are unique barriers to intervention among ex-offenders who have a dual-diagnosis upon community reintegration.

Finally, ethnicity as a factor in 12-step utilization among dually-diagnosed individuals is an important area of research with implications for treatment development. While some studies have examined a specific population, report descriptive demographic information, or make general comparisons between ethnic groups, ethnic factors are not often the central research question in the area of dual-diagnosis and 12-step interventions. It is also unclear the extent to which 12-step groups might or might not be culturally relevant for different ethnic groups. Jerrell and Wilson (1997) found that participants of color who were dually-diagnosed often were underserved by outpatient interventions and/or did not receive as many services, which may have influenced their outcomes. A goal of this review is to assess the degree to which ethnicity has been explored among dually-diagnosed individuals as a factor related to 12-step participation.

Comorbidity has become an important issue for both research and clinical practice due to potentially complex interactions between multiple individual factors and environmental factors. As a result, dually-diagnosed individuals have unique needs for recovery and often re-enter treatment in some capacity due to their increased vulnerability to relapse into substance use and/or psychiatric severity. Community reintegration beyond acute treatment services is crucial in order to provide effective interventions as well as improve the quality of life among this population. This article reviews the literature on 12-step participation among individuals who have been dually-diagnosed, with the goal of assisting in identifying factors associated with better access and outcomes to inform clinical practice and intervention development, and ultimately empowering this population through increased

quantity and quality of support within their communities. This review updates Bogenschutz et al.'s (2006) summary of research that covered articles through 2004, as well as examines in greater detail factors related to homelessness, criminal history, and ethnicity.

1. Method

1.1. Inclusion criteria and procedure

A comprehensive review of *Psychinfo*, *Social Science Citation Index*, and *Pubmed* was performed. The search terms included 12-step, dual-diagnosis, mutual help, self help, and comorbidity, which were used in various combinations. This investigation was limited to peer-reviewed journal articles, and included only empirical studies using qualitative and/or quantitative methods. In order to meet the inclusion criteria, each article needed to specify that it includes research on a dually-diagnosed population, and also assessed 12-step participation to some extent (or involved a 12-step research sample). This review only focused on outpatient, mutual-help 12-step groups. Various combinations of the terms homeless and offender were added to the review in an effort to identify additional articles relevant to these populations. Inclusion criteria were relaxed slightly with these two keywords in order not to exclude relevant articles, as the literature is sparse in this area at a high level of specificity. For example, if a study fulfilled all but one of the criteria, but only reported psychiatric symptoms instead of a diagnosis, it was included for its relevance to the subpopulation groups.

2. Results

Utilizing the inclusion criteria above, the review produced a total of 42 articles exploring dually-diagnosed individuals in outpatient 12-step settings. An additional 17 articles were found when using the keywords “homeless” and “offender” in various combinations with the other terms yielding a total of 59 articles. Because a large number of these articles were already summarized in Bogenschutz et al.'s (2006) review, the focus of the results for general findings regarding 12-step utilization among dually-diagnosed individuals is on the articles that were not included in the original review, or where qualitative data was not included. However, all articles found in the review were examined and population-specific findings for ethnicity, homelessness, and ex-offenders were recorded.

2.1. Research designs and samples

Demographic information for the studies included in the review is listed in Table 1. Several studies did not report extensive demographic information. Where ethnicity was reported, generally the predominant ethnicity in the sample was European-American (41%) or African-American (36%). In general, participants in the reviewed studies (where reported) were male (78%) and the majority had 12 or more years of education. Where means were reported, the average age of the samples in the review was 36.2 years. Finally, when the information was given, 66.7% of the samples were predominantly unemployed.

Information about research designs for the reviewed studies can be found in Table 2. While there were no publication date constraints for inclusion in the review, no studies were found prior to 1991 meeting the inclusion criteria. This is not surprising given the level of specificity of this review. The sample sizes ranged from 10 to 5060 (Mean $N = 566$; Median = 146). With regard to the design of each study, 36% of them were cross-sectional in nature, while the remaining 64% were longitudinal. Only 15.5% of the studies employed some kind of random treatment assignment, while the remainder had no treatment assignments but often compared subgroups of their sample, or employed non-random treatment assignments.

Table 2 also contains predominant diagnostic information for each of the study samples in the review, as well as information regarding homelessness, criminal history, and self-help outcomes. For studies where diagnostic status was reported, 35.2% had samples with predominantly schizophrenic individuals in them, followed by 27.8% with Mood Disorders. However, a number of studies stated that it was a dually-diagnosed sample, but did not give diagnostic details. Only 17 (28.8%) of the reviewed studies gave information about homelessness, which also tended to be mostly demographic and not a variable of interest regarding the outcomes of the studies. Regarding legal issues, 18 (30.5%) of the studies reported details about legal status, or looked at offenders specifically.

2.2. Outpatient 12-step groups and dual-diagnosis: recent findings

Since the previous review, a few additional studies have focused on mechanisms of action of specialized 12-step programs. For example, Magura, Cleland, Vogel, Knight, and Laudet (2007) examined participants of Double Trouble in Recovery (DTR), a specialized 12-step program for the dually-diagnosed. In a two-year longitudinal, within-subjects design, they examined self-efficacy for recovery (mental health symptoms), DTR affiliation (via attendance and types of involvement), psychiatric symptoms, and quality of life among participants in the program. Their primary finding was evidence for a mediational model, with DTR affiliation's relationship with quality of life outcomes being fully or partially mediated by self-efficacy. However, effect sizes were generally small, explaining around 5% of the variance in quality of life outcomes.

Two studies using the same sample were conducted to explore abstinence outcomes. First, Laudet, Magura, Cleland et al. (2004) explored ongoing DTR attendance as a predictor of abstinence over the two-year course of the study. Their findings revealed that

Table 1
Demographic information

Authors	Mean age	Gender	Predominant ethnicity	Marital status	Employment status	Educational status
Beals et al. (2006)	34.9	46.5% m	100% American Indian	42.1% unmarried	30.4% unemployed	77.2% HS or more
Bogenschutz (2005)	40.5	70% m	60% White			
Bogenschutz and Akin (2000)	36.1	63% m	51.9% European-American			
Brooks and Penn (2003)	34.2	58% m	69.6% European-American	94.6% unmarried	82.9% unemployed	
Brown et al. (2006)	48.8	92.4% m	74% European-American	60% unmarried		Mean 13.4 years
Brush and McGee (2000)	40.5	100% m	67% European-American			60.6% HS or more
Chen (2006)	36	100% m	71% Israeli Jews			
Chi et al. (2006)	38.7	35.6% m	85% European-American	65% unmarried	26% unemployed	86.2% HS or more
DiNitto et al. (2002)	33	47% m	59% European-American			Mean 11.2 years
DiNitto et al. (2001)	33	47% m	59% European-American			Mean 11.2 years
Easton et al. (2007)	38.5	100% m	49% European-American		22.7% unemployed	78.4% HS or more
Fichter et al. (1997)	43.1	100% m		99.3% unmarried	68% unemployed	
Gonzalez and Rosenheck (2002)	38.7	60.9% m	48.7% African-American	51% unmarried	Not categorized	
Grella (2003)	36.4	52.8% m	44% European-American	Over 50% unmarried		66.7% HS or more
Friedman et al. (2005)	35.5	58.3% m	83% European-American			
Herman et al. (2000)	33.2	73.9% m	76.9% African-American			
Herman et al. (1991)	33.5	73% m	45% African-American	94% unmarried	87% unemployed	52% HS or more
Hoff et al. (1999)		72% m	57.3% African-American			
Jerrell (1996)	52% 18–33	75% m	70% European-American			
Jerrell and Ridgely (1995)	55% 18–33	0% m	81% European-American			
Jerrell and Ridgely (1999a)	59% 18–33	77% m				
Jerrell and Ridgely (1999b)		75% m	70% European-American			
Jerrell and Wilson (1997)	52% ≤34	76.5% m	69.7% European-American			74% HS or more
Jordan et al. (2002)	33	76% m	68% African-American			
Kelly, McKellar, and Moos (2003)		100% m				
Kilbourne et al. (2002)	33.9	0% m	56.1% African-American	79.5% unmarried	82.2% unemployed	62.5% HS or more
Kingree (1995)	32	79.1% m	78% African-American			
Laudet, Cleland, Magura, Vogel, & Knight 2004	40.2	72% m	60% African-American			63% HS or more
Laudet, Magura et al. (2003)	40.8	73% m	58% African-American			61% HS or more
Laudet, Magura, Cleland et al. (2004)	40.8	73% m	58% African-American			61% HS or more
Laudet et al. (2000a)	39	72% m	58% African-American	92% unmarried		
Laudet et al. (2000b)	39	72% m	58% African-American	92% unmarried		59% HS or more
Laudet, Magura et al. (2003)	40	73% m	59% African-American	93% unmarried		59% HS or more
Laudet, Magura, Vogel et al. (2004)	39 [a]	72% m	58% African-American	92% unmarried		59% HS or more
Magura et al. (2007)	40.5	72% m	58% African-American	93% unmarried		60% HS or more
Magura, Knight et al. (2003)	41	73% m	58% African-American	93% unmarried		60% HS or more
Magura et al. (2002)	40	73% m	59% African-American	93% unmarried		
Magura, Laudet et al. (2003)	40	73% m	59% African-American	93% unmarried		33% HS or more
Miller et al. (1999)		74% m	89% European-American	65% unmarried		
Moggi, Ouimette, Moos, & Finney (1999)	43	100% m	58% European-American		80.2% unemployed	Mean 12.82 years
Moos, Finney, Ouimette, and Suchinsky (1999)	43		49% African-American	79% unmarried		Mean 12.7 years
Myrick and Brady (1997)	32.0	68% m	64% Non-white			50% HS or more
Ouimette et al. (1999)	Not reported for the full sample					
Ouimette et al. (2001)	Not reported for the full sample					
Ouimette et al. (2000)	44.8	100% m	57.6% European-American	59.2% unmarried	80.8% unemployed	Mean 12.8 years
Ouimette et al. (2003)	44.7	100% m	67% European-American	73% unmarried	82% unemployed	Mean 13.1 years
Penn and Brooks (2000)	34	58% m	70% European-American	80% unmarried	61% unemployed	
Pristach and Smith (1999)	35.5	65% m	70% European-American			Mean 11.7 years
Ridgely and Jerrell (1996)	Not reported for the sample					
Ritsher, McKellar, Finney, Otlingham, and Moos (2002)	42.3	100% m	44.4% European-American	81.5% unmarried		Mean 12.7 years
Severance (2004)		0% m				
Timko and Sempel (2004)	45.4	96% m	48.7% European-American	77.4% unmarried	16.1% unemployed	Mean 12.8 years
Trumbetta et al. (1999)	35.5	29.2% m	90% African-American	96% unmarried		72% HS or more
Vogel et al. (1998)	42 [a]	73% m	45% African-American		37% unemployed	66% HS or more
Westermeyer and Chitasombat (1996)	37.9	64% m	41.6% Hmong	24.1% unmarried		Mean 7.85 years
Westermeyer, Eames, and Nugent (1998)	31.1	63.4% m				Mean 12.4 years
Westermeyer, Kopka, and Nugent (1997)	31.5					Mean 12.4 years
Westermeyer and Schneekloth (1999)	30.5	79% m		66% unmarried	69% unemployed	Mean 12.6 years
Wright et al. (2002)		55% m	48% European-American			

[a] Median.

attendance, independent of demographic and psychiatric factors, predicted higher abstinence rates at the two-year follow-up. The next study expanded on this finding by examining a mediational model of participation in DTR, social support, and abstinence outcomes (Laudet, Cleland, Magura, Vogel, & Knight, 2004). Results indicated that higher social support partially mediated the significant association between length of participation in DTR and two-year follow-up outcomes for abstinence. Despite some of the design limitations in these studies, the results suggest that increased social support and self-efficacy, as a function of attendance and participation in DTR, might indirectly improve both mental health and substance use outcomes (Laudet, Cleland et al., 2004; Laudet, Magura, Cleland et al., 2004; Magura et al., 2007).

A study of the same sample used qualitative methods to explore participant perceptions about reasons for relapse and methods for quitting (Laudet, Magura, Vogel et al., 2004). More participants (45%) reported that they used 12-step groups to quit the last time, while 34% stated that regular treatment helped them to quit. Additionally, 69% of the participants reported that using made their psychiatric symptoms worse, although 12% reported that they often used to improve their psychiatric symptoms (Laudet, Magura et al., 2004). An earlier study by the same research group also asked DTR participants in qualitative interviews about the difference between traditional 12-step groups and DTR (Laudet, Magura, Vogel, & Knight, 2003). Of the 277 participants, 30% reported that traditional 12-step groups provided more of a "focus on addiction," whereas 32% reported that DTR provided more mutual support and identification than traditional 12-step groups. However, 34% reported that DTR was not any different from other 12-step programs. These findings suggest that dual-focus 12-step groups might be perceived as beneficial for some, but not all dually-diagnosed individuals (Laudet, Magura, Vogel, & Knight, 2003).

A study by Chi, Satre, and Weisner (2006) examined traditional 12-step groups as a predictor of abstinence among dually-diagnosed individuals. In their subsample of 747 participants starting an outpatient/day chemical dependency program, 104 were dually-diagnosed. At the one-year follow-up, Chi et al. found that the participants with comorbid disorders attended more 12-step meetings compared to those without comorbid disorders. Furthermore, the number of 12-step meetings that were attended, when controlling for psychiatric services and baseline characteristics, was correlated with higher rates of abstinence at the one-year follow-up among dually-diagnosed clients. Their rates of abstinence were comparable to those without a comorbid psychiatric diagnosis (Chi et al.).

In a randomized study of veterans with both a substance use disorder and major depressive disorder, Brown et al. (2006) compared a cognitive behavioral intervention with twelve step facilitation (TSF) therapy over the course of 24 weeks, and then employed at a three and six months follow-up. While their findings from treatment through all follow-ups did not find any significant effect of treatment type, the two interventions had different trends for both depressive symptoms and abstinence rates throughout the study. The cognitive-behavioral group appeared to have more stable, albeit slight, reductions in depressive symptoms and relatively stable abstinence percentages, while the TSF group had slightly lower rates of abstinence, and more variable depressive symptoms throughout the study. However, there was no significant effect of treatment type on these outcomes. While the results suggest a more stable treatment trajectory for the cognitive-behavioral intervention, the participants in that group were still able to utilize 12-step treatments, and 97% of participants in the whole sample were also receiving pharmacological treatment for depression (Brown et al.).

While Brown et al.'s findings suggest that alternative treatments (i.e., CBT) potentially could be beneficial in different ways for dually-diagnosed individuals compared to 12-step groups, Miller, Ninonuevo, Hoffmann, and Astrachan (1999) found that continued participation in self-help groups was associated with higher abstinence rates one-year later in a sample of individuals both with and without lifetime depression. Results did not differ between participants who had lifetime depression or those who did not (Miller et al.).

While there are relatively few new studies examining mechanisms of 12-step programs since Bogenshutz et al.'s (2006) review, progress has been made in identifying the processes by which these programs may be helpful for dually-diagnosed clients. In particular, self-efficacy (Magura et al., 2007) and social support (Laudet, Cleland et al., 2004) might be mediators of participation in 12-step groups and both mental health and substance use outcomes for dually-diagnosed individuals. Additionally, traditional and specialized 12-step programs both appear to have potentially beneficial impacts on participants who are a part of this population. While there continues to be a lack of clinical trials for this specific population, the results of the studies presented above may have more external validity at the expense of more experimentally rigorous approaches. More research continues to be needed to inform program implementation and development.

2.3. Homelessness

Out of the 59 total studies found through the literature searches, only 17 papers reported information about homelessness. The majority of these articles only reported current or lifetime homeless prevalence in the demographic section of their studies (Grella, 2003; Laudet et al., 2000a; Laudet et al., 2000b; Laudet, Magura, Vogel et al., 2003; Laudet, Magura, Cleland et al., 2004; Laudet, Magura et al., 2004; Laudet et al., 2000a,b; Magura, Laudet et al., 2003; Magura, Knight et al., 2003; Magura et al., 2007; Timko & Sempel, 2004), without exploring homelessness as a relevant variable in their analyses. See Table 2 for a summary of demographic information about homelessness that is provided in the full review. While there are certainly studies of homelessness in the literature, there are fewer that explore it at this level of specificity that includes both 12-step participation and dual-diagnosis.

Varying findings have been reported on use of 12-step programs among the homeless. A study of dually-diagnosed individuals admitted to an inpatient psychiatric unit conducted by Herman, Galanter, and Lifshutz (1991) compared histories of homeless individuals to those who were not homeless. Their analyses found no differences between the two groups in terms of recent substance use, demographic variables, or psychiatric diagnoses. However, homeless individuals were much more likely to have

Table 2
Design information and outcomes

Authors	Sample size	Research design and assignment	Predominant psychiatric diagnoses/comparison	Baseline status	Self-help outcomes
Beals et al. (2006)	2,825	Retrospective self-report	22.6% Depression or Anxiety disorders		
Bogenschutz (2005)	10	Prospective uncontrolled	80% Schizophrenia		+SU
Bogenschutz and Akin (2000)	81	Retrospective self-report	50.6% Schizophrenia or Schizoaffective disorders		−/=Involve (diagnosis)
Brooks and Penn (2003)	112	Prospective randomized	50.5% Mood disorders	50% previously incarcerated	+SU −Psych
Brown et al. (2006)	66	Prospective randomized	100% Major Depressive Disorder		=Psych =SU
Brush and McGee (2000)	100	Retrospective self-report	Not reported	100% homeless	
Chen (2006)	93	Prospective quasi-experimental	Only symptoms reported	100% offenders	+Psych
Chi et al. (2006)	104	Prospective quasi-experimental	72% Major Depression; Dual vs. SU only		+SU
DiNitto et al. (2002)	97	Prospective uncontrolled	74% Mood Disorders; Male vs. Female	56% on probation or parole	=Involve
DiNitto et al. (2001)	97	Prospective uncontrolled	74% Mood Disorders	55% on probation or parole	=Involve =SU
Easton et al. (2007)	78	Prospective randomized	14% Antisocial Personality Disorder	100% domestic violence offenders	=SU =Psych
Fichter et al. (1997)	146	Retrospective self-report	44.4% Affective disorders	100% homeless	
Friedman et al. (2005)	132	Retrospective self-report	100% Bipolar Disorder	68% legal offenses	
Gonzalez and Rosenheck (2002)	5060	Prospective quasi-experimental	Dual vs. SU only	Mean 37.8 days in past 60 Mean 1.6 days in jail or prison	+SU
Grella (2003)	400	Prospective quasi-experimental	63.7% Mood Disorders	82% homeless at some point in lifetime	=Involve (disorder) +SU
Herman et al. (2000)	429	Prospective randomized	28.1% Schizophrenia		
Herman et al. (1991)	100	Retrospective self-report	36% Personality disorders; Homeless vs. Not	46% homeless	+Involve (homeless)
Hoff et al. (1999)	352	Retrospective record review	82% Dually-diagnosed	100% individuals qualified for jail diversion	
Jerrell (1996)	132	Prospective quasi-experimental	100% Dually diagnosed		−SU −Psych
Jerrell and Ridgely (1995)	31	Prospective quasi-experimental	39% Schizophrenia or Schizoaffective disorder		−Psych
Jerrell and Ridgely (1999a)	132	Prospective quasi-experimental	100% Dually-diagnosed		−Psych
Jerrell and Ridgely (1999b)	132	Prospective quasi-experimental	76% Schizophrenia		
Jerrell and Wilson (1997)	132	Prospective quasi-experimental	75.8% Schizophrenia		−Psych
Jordan et al. (2002)	351	Prospective quasi-experimental	50% Schizophrenia or Schizoaffective		-Involve (disorder)
Kelly et al. (2003)	2161	Prospective quasi-experimental	MDD with SU vs. SU only		−Involve (MDD) +/=SU =Psych
Kilbourne et al. (2002)	974	Retrospective self-report	48.4% Depressive symptoms in previous 12 months	100% homeless	−/=Psych
Kingree (1995)	196	Retrospective self-report		Collected but not reported	−/=Psych
Laudet, Cleland, Magura, Vogel, and Knight (2004)	99	Prospective uncontrolled	43% Schizophrenia	9% homeless	+SU
Laudet, Magura, Cleland, Vogel, and Knight (2003)	276	Prospective uncontrolled	35% Schizophrenia		
Laudet et al. (2004)	233	Prospective uncontrolled	39% Schizophrenia		+SU
Laudet et al. (2000a)	310	Retrospective self-report	43% Schizophrenia	6% homeless 7% on probation or parole	
Laudet, Magura, Vogel, and Knight (2000b)	310	Retrospective self-report	43% Schizophrenia	6% homeless 7% on probation or parole	+SU +Psych
Laudet, Magura, Vogel, and Knight (2003)	277	Prospective uncontrolled	31% Schizophrenia	15% shelter or single-room occupancy	
Laudet, Magura, Vogel, and Knight (2004)	310	Retrospective self-report	35% Schizophrenia	6% homeless 7% on probation or parole	
Magura et al. (2007)	310	Prospective uncontrolled	39% Schizophrenia	5% homeless	+Psych
Magura, Knight et al. (2003)	276	Prospective uncontrolled	35% Schizophrenia	2% homeless 63% arrested as adults	+SU
Magura et al. (2002)	240	Prospective uncontrolled	48% Schizophrenia	11% homeless	+Psych
Magura, Laudet et al. (2003)	277	Prospective uncontrolled	31% Schizophrenia	5% homeless 66% arrested as adults	+SU
Miller et al. (1999)	2,029	Prospective uncontrolled	28% Lifetime major depression		+SU

Table 2 (*continued*)

Authors	Sample size	Research design and assignment	Predominant psychiatric diagnoses/comparison	Baseline status	Self-help outcomes
Moggi et al. (1999)	981	Prospective quasi-experimental	85.5% Non-psychotic disorders		+Psych
Moos, Finney, Ouimette, and Suchinsky (1999)	3018	Prospective quasi-experimental	35% Dually diagnosed	34% arrested in past 12 months	+SU +Psych
Myrick and Brady (1997)	44	Retrospective quasi-experimental	Social Phobia vs. SU only		−Involve (Social Phobia)
Ouimette et al. (2001)	1588	Prospective quasi-experimental	PTSD/SU vs. SU only		+Psych =Involve
Ouimette et al. (1999)	3018	Prospective quasi-experimental	Dual vs. SU only		+SU +Psych =Involve
Ouimette et al. (2000)	125	Prospective uncontrolled	100% PTSD and SU		+SU
Ouimette et al. (2003)	100	Prospective uncontrolled	100% PTSD and SU		+SU
Penn and Brooks (2000)	112	Prospective quasi-experimental	100% Dually diagnosed	50% previously incarcerated	+SU −Psych
Pristach and Smith (1999)	60	Retrospective self-report	33% Affective disorders		=Involve (diagnosis)
Ridgely and Jerrell (1996)	35	Prospective	Staff interviews; none reported		
Ritsher et al. (2002)	2595	Prospective quasi-experimental	Dual vs. SU only		+SU =Involve
Severance (2004)	40	Retrospective self-report	Not reported	100% incarcerated	
Timko and Sempel (2004)	230	Prospective uncontrolled	19% Major Depression	13.9% no stable living arrangement	+SU +Psych
Trumbetta et al. (1999)	130	Prospective uncontrolled	35.4% Major depression	100% homeless	+SU
Vogel et al. (1998)	52	Retrospective self-report	46% Unipolar Depression		
Westermeyer and Chitasombat (1996)	137	Retrospective self-report	Symptoms only; Compare ethnicity		−Involve (Hmong)
Westermeyer et al. (1998)	347	Retrospective chart review and self-report	Dysthymia vs. SU only		=Involve
Westermeyer et al. (1997)	411	Retrospective chart review and self-report	MDD vs. SU only		=Involve
Westermeyer and Schneekloth (1999)	325	Retrospective chart review and self-report	Schizophrenia/SU vs. SU only		=Involve
Wright et al. (2002)	40	Retrospective self-report	Dual vs. PD only	48% previous offenses	

Note. + indicates positive or beneficial findings.
− indicates negative or negative comparative findings.
= indicates equivalent or ambiguous findings.
Involve denotes group comparisons on self-help involvement or participation.
SU denotes substance use findings.
Psych denotes psychological variable findings.

attended a traditional 12-step program than those who were not homeless. Herman et al. suggest that mutual-help models of treatment might be less intrusive for homeless individuals and also more available. However, a contrasting finding was found in a study of homeless individuals with alcohol use disorders in Germany (Fichter, Quadflieg, Greifenhagen, Koniarcyzk, & Wolz, 1997). Fichter et al. found that in a sample with high levels of dual-diagnosis, homeless individuals rarely (15.8%) had attended a self-help group. Their comparisons to homeless individuals in the United States indicated a large drop in self-help attendance among the homeless in Germany (Fichter et al.). This suggests that 12-step attendance may vary internationally among homeless individuals, with higher utilization by the homeless in the United States.

Availability of substance abuse treatment may impact 12-step participation in the community in multiple ways. For example, Kilbourne, Herndon, Andersen, Wenzel, and Gelberg (2002) conducted a study of homeless women and assessed their psychiatric symptoms, substance use, and HIV risk behaviors. A counter-intuitive finding that they described was that women who had attended self-help meetings were more likely to have traded sex in the past than those who had not attended self-help meetings. However, the same analysis found that those who were unable to access substance abuse treatment were also more likely to have traded sex. Because women who used substances or had high psychiatric severity were much more likely to engage in risk behaviors such as trading sex, it is likely that attending 12-step groups was the only available treatment option when an acute intervention might have been more appropriate. The authors do not suggest that 12-step programs increase risk behaviors, but that a more intensive level of care might not have been available to the women in the study (Kilbourne et al.).

Few studies examined outcomes of 12-step programs for homeless individuals with dual-diagnoses. Kingree (1995) studied a sample of primarily African-American men and women who were entering residential substance abuse treatment. They examined prior homelessness as well as 12-step ideology beliefs as they related to treatment outcomes as potential moderators, while also exploring gender differences. Their primary finding with regard to prior homelessness was that it was associated with lower program completion rates, particularly for males. However, only 25% of the full sample actually completed treatment, and they measured it based on completing every single day of treatment versus anything less than 120 days. Interestingly, females in the

study who reported higher embracement of 12-step ideology also reported lower self-esteem. Causal mechanisms of this association cannot be inferred given the cross-sectional nature of the research design (Kingree), but potential gender differences in response to 12-step programs warrant further exploration. In fact, Brush and McGee (2000) found that the spirituality component of 12-step groups was an integral part of treatment for homeless males in recovery.

Another area of research among dually-diagnosed homeless individuals focuses on social networks, which are particularly relevant to 12-step groups (Trumbetta, Mueser, Quimby, Bebout, & Teague, 1999). Trumbetta et al.'s longitudinal study of homeless, dually-diagnosed individuals indicated that having fewer substance users in your network increased levels of abstinence 18 months later. Additionally, greater involvement in 12-step groups (frequency of contact with other members) was a characteristic of participants who reduced their alcohol use during the study. These findings suggest that even among homeless individuals with psychiatric disorders, developing peer networks supportive of abstinence is as important as it is for recovery in non-homeless populations (Laudet, Magura, Cleland et al., 2004; Laudet, Magura, Vogel et al., 2004). It is possible that 12-step groups in the community play a significant role in long-term recovery for homeless individuals.

The most comprehensive study of homeless individuals with dual-diagnoses found in this review was a comparative study of homeless individuals with and without comorbid psychiatric conditions (Gonzalez & Rosenheck, 2002). This large, one-year longitudinal study found significantly higher baseline difficulties in psychiatric problems, community adjustment, homelessness severity, and legal status for dual-diagnosis participants compared to single-diagnosis participants. Over 12 months, greater use of 12-step groups predicted better outcomes related to alcohol for the dually-diagnosed participants. However, dually-diagnosed participants showed less improvement overall than the single-diagnosis participants in the study over time, although when their use of services was more intensive, they showed similar levels of improvement to the single-diagnosis participants (Gonazalez & Rosenheck).

In summary, there is a lack of research looking specifically at dually-diagnosed, homeless individuals. However, the research suggests that this population uses 12-step programming (Herman et al., 1991), and benefits from improving social networks over time with more participation (Gonzalez & Rosenheck, 2002; Trumbetta et al., 1999). Some potential gender differences in reaction to 12-step participation and ideology has been suggested (e.g., Brush & McGee, 2000; Kingree, 1995), although more research is needed to support any specific hypotheses about differential benefits or detriments that 12-step groups have for homeless males and females. Overall, existing research seems to support the use of 12-step groups among this population, although there are a number of other service needs as well. In many cases, 12-step organizations in the community that are freely available may be the only available treatment for homeless individuals.

2.4. Ex-offenders and legal issues

Out of the 59 total studies found in the review, only 18 reported information about previous incarceration. The majority of these articles only reported general legal status in the demographic section of their studies without following up or exploring prior incarceration as a central research question (Gonzalez & Rosenheck, 2002; Laudet et al., 2000a,b; Laudet, Magura, Cleland et al., 2003; Laudet, Magura et al., 2003; Magura, Knight et al., 2003; Magura, Laudet et al., 2003; Ouimette, Moos, & Finney, 2003; Penn & Brooks, 2000). See Table 2 for a summary of basic information about legal status that is provided for the full review.

A descriptive study of individuals in a suburb within the United Kingdom also compared retrospective criminal histories of those who had a dual-diagnosis versus those who only had a psychiatric condition (Wright, Gournay, Glorney, & Thornicroft, 2002). About half of all participants in the study reported a lifetime offending history. Among the dually-diagnosed participants, 77% reported offending behavior compared to only 22% of the group with only psychiatric problems. While their analyses are limited by a small sample size ($n=40$), they suggest that there may be differences in dually-diagnosed individuals' offending behavior that might be attributable to substance use over time (Wright et al.), although how substance use and criminal behavior interact might be reciprocal in nature. A similar study by Friedman et al. (2005) examined offending rates among men and women with Bipolar Disorder. Many men (79%) and women (53%) had been previously charged with a crime in their sample, and the criminal history rates were higher than those of the general population (particularly for women with Bipolar Disorder; Friedman et al.).

Despite not examining 12-step characteristics, a study by Hoff, Rosenheck, Baranosky, Buchanan, and Zonana (1999) is worth mentioning. They evaluated both dually-diagnosed and non-dually diagnosed individuals who were involved in the criminal justice system and considered for a jail diversion program. Interestingly, they found that dually-diagnosed individuals were more likely to spend time in jail in the subsequent year, regardless of whether they received jail diversion or not. However, there was also a main-effect of jail diversion, such that those who were diverted spent fewer days incarcerated in the subsequent year than those not diverted, and this did not vary by diagnostic status. While Hoff et al. did not examine re-arrest rates, these findings suggest that dually-diagnosed individuals have more difficulty when placed into incarceration and that jail diversion might be appropriate when comprehensive treatment is the alternative.

With regard to 12-step program usage among ex-offenders, a qualitative study of female offenders indicated that there are a number of stressors anticipated by those who are nearing community reintegration (Severance, 2004). Aside from employment, family, and housing concerns, a number of participants expressed plans to engage in 12-step programming upon release for addictions. Interestingly, plans to seek other forms of treatment that might be more comprehensive were rarely mentioned, though the majority of inmates likely lack the resources to have other treatments readily available to them upon release (Severance). Additionally, Severance's qualitative analysis also indicated that spirituality (a component of 12-step programs) was also mentioned by inmates as a strategy for success upon community reintegration. Future research should explore why this component of an intervention might be particularly appealing to ex-offenders.

DiNitto, Webb, and Rubin (2002) conducted a study of dually-diagnosed individuals that included baseline and up to 90 days following discharge from inpatient treatment. In this sample, men tended to have more legal problems and more incarceration history at baseline than women, although both groups had similarly low rates of legal problems after 90 days. Additionally, men and women did not differ in rates of self-help group utilization (DiNitto et al.). DiNitto, Webb, Rubin, Morrison-Orton, and Wambach (2001) studied dually-diagnosed individuals following inpatient substance abuse treatment, of whom the majority were on probation or parole. They found that more 12-step group attendance in their sample was associated with fewer legal problems at the 90 day follow-up. While the findings reported in this section so far are very basic and do not include a long-term follow-up, they suggest that 12-step interventions might be useful for those with criminal backgrounds, at least in the short term.

A growing research trend related to legal issues among the dually-diagnosed has involved comparative studies that examine 12-step interventions versus other intervention types. For example, Ouimette, Gima, Moos, and Finney (1999) studied dually-diagnosed individuals in comparison to those with only substance use disorders. They compared cognitive-behavioral and 12-step approaches to treatment, and found that overall patients in 12-step programs had better substance use outcomes than the cognitive behavioral intervention. However, dual-diagnosis patients did not differ across intervention type. Additionally, among this population, attending more 12-step groups was associated with lower arrest rates at a one-year follow-up (Ouimette et al.). Moos, Finney, Ouimette, & Suchinsky (1999), however, found that self-help group attendance did not predict lower arrest rates, though it did predict reduced psychiatric symptoms when participants attended more meetings.

Brooks and Penn (2003) conducted a study of an intensive outpatient 12-step program versus a cognitive behavioral intervention for dually-diagnosed individuals. While half of the sample had been previously incarcerated, most of the sample experienced decreases in legal problems over time. There was no difference between treatment conditions for legal problems, indicating that both 12-step and cognitive behavioral interventions helped participants similarly in this domain (Brooks & Penn). Easton et al. (2007) conducted a different clinical trial comparing a 12-step facilitation treatment to an integrated treatment for substance use and violence for domestic violence offenders. While prevalence rates of comorbid diagnoses were relatively low (ranging from 5–14% of participants per disorder), not all diagnostic information was reported. Participants in both interventions had similarly lower levels of legal problems at the 12 week follow-up. Some evidence suggested that individuals in the integrated treatment had better outcomes for alcohol use over 12-weeks than the 12-step group, but otherwise there were few differences between the two groups (Easton et al.).

Aside from some of these more basic studies, few studies have explored mechanisms of action for 12-step programs among populations with criminal backgrounds. Chen (2006) conducted an in-prison study of incarcerated individuals who were enrolled in either Narcotics Anonymous only or Narcotics Anonymous with a 12-step spirituality component. Although there was no diagnostic information for psychiatric disorders in the sample, symptoms of negative emotions such as depression and anxiety were measured over time. The findings indicated that there were better and more stable decreases in all negative emotions (i.e., depression, anxiety, hostility) in the group that received the 12-step component compared to those in the Narcotics Anonymous only condition. Additionally, there was in increase in sense of coherence among those in the 12-step condition. These findings suggest that the spirituality component of 12-step programs might be a critical factor in reducing negative emotions and promoting positive emotions (Chen). While information about diagnoses was not available for this sample, it is possible that 12-step programs might provide a beneficial environment for psychiatric symptoms that are separate from substance use.

In summary, few studies have examined ex-offenders and 12-step use at the level of specificity to include dual-diagnosis status. In contrast, more studies gathered descriptive legal history from those who have been dually-diagnosed and were participating in interventions, or examined arrests or legal problems prospectively. While there are a number of in-prison studies of offenders, there are fewer specific studies that examined ex-offenders upon community reintegration, particularly with dual-diagnosis status as a variable. Considering the prevalence of dual-diagnosis among this population, and the additional barriers to reintegration that are faced, more research in this area is warranted, and in particular, more investigations are needed concerning program components that might account for potential change.

2.5. Ethnicity

Out of the 59 total studies found in the review, almost all of them reported basic demographic information that included ethnicity. However, the majority of these articles only reported ethnicity in the demographic section of their studies without assessing the influence of ethnicity on outcome. As indicated in Table 1, most samples were predominantly European-American (41%) or African-American (36%). The samples tended to be ethnically diverse, and in some cases there were population-specific studies based on ethnicity (e.g., Native American). Only 13 studies explore ethnicity beyond reporting it descriptively.

Most of these studies did basic comparative analyses between ethnic groups, often on outcome variables pertinent to each study. For example, Bogenschutz and Akin (2000) found no differences in lifetime 12-step attendance between Hispanic and non-Hispanic whites. Similarly, DiNitto et al. (2001) found no association between ethnic minority status and frequency of traditional self-help group attendance. Similarly, ethnicity was not correlated with attendance at a specialized 12-step program for dual-diagnosis over the course of a year (Laudet, Magura, Cleland et al., 2003) or with abstinence over the course of 2 years (Laudet, Magura et al., 2004). The only comparison that yielded a difference in 12-step participation was found by Jordan, Davidson, Herman, and Bootsmiller (2002), who reported that African-Americans with dual-diagnoses were more likely to attend traditional NA or AA meetings than European-American individuals with dual-diagnoses.

While this type of analysis is extremely limited, some findings are interesting given the dual-diagnosis status involved for each ethnic group. For example, in Hoff et al.'s (1999) study of jail diversion for dually-diagnosed individuals, there were no differences in arrest rates at follow-up between different ethnic groups, which is in contrast to disparities in arrest rates in the general

population. Additionally, Kilbourne et al. (2002) found that among homeless women, African-American women were less likely to have injected drugs but more likely to have had unprotected sex or traded sex than white women. However, both of these studies failed to examine ethnicity in relation to 12-step participation.

Aside from basic comparisons, there were 5 studies that looked at one ethnic population primarily, or where the focus of the study was on a specific ethnic comparison. Beals, Novins, Spicer, Whitesell, Mitchell, and Manson (2006) explored service usage among American Indians that included assessments of mental health problems and substance use disorders. A considerable portion of the sample had current or lifetime depressive or anxiety disorders (22.6%). Participants tended to seek help through treatment more often when they were men and when they had co-occurring problems (such as mental health issues). Use of 12-step programming was common among individuals with substance use disorders who identified more with white culture and who felt that spirituality was more important in their lives (Beals et al.).

With regard to a different ethnic group, the previously mentioned study of Israeli offenders (Chen, 2006) also found 12-step groups to be more beneficial than a mutual-support group without a spirituality component. Similar findings were reported for African-Americans homeless individuals (Trumbetta et al., 1999). With greater contact with 12-step groups, and a larger social network, there were more reductions in alcohol use over time in a sample that was 90% African-American and 92% female (Trumbetta et al.). However, while these basic studies suggest that 12-step groups are beneficial for ethnic minorities and that spirituality is an important component, the mechanisms of action have rarely been explored.

In terms of psychiatric outcomes, Westermeyer and Chitasombat (1996) compared opiate-dependent Hmong immigrants (refugees from Laos) to native-born Americans in a cross-cultural study of treatment utilization and history of addiction. Hmong individuals also experienced more symptoms of depression and phobic anxiety than native-born American users, which may be related to acculturation and refugee status. Hmong individuals also tended to smoke opium as opposed to use heroin by injections, which was more common among native-born Americans. Americans were much more likely to use 12-step programming compared to Hmong participants (Westermeyer and Chitasombat). Fichter et al.'s (1997) study of a German sample of homeless men also found low 12-step utilization and high rates of lifetime psychiatric comorbidity (64%) with alcohol dependence. These two studies suggest that 12-step groups may not be as culturally relevant given the low level of usage for some ethnic groups.

Finally, Jerrell and Wilson (1997) compared white and non-white (predominantly Hispanic) dual-diagnosis patients receiving 12-step and cognitive-behavioral interventions upon discharge from inpatient treatment. Non-white participants often did not receive as many services as white participants despite being assigned equally to treatment conditions, and often were underserved by the interventions that they received. Non-white participants began the study with lower psychological functioning levels and poorer community support systems than white participants. Additionally, clinicians reported that non-white participants often faced more stigmatization that was particularly devastating given their dual-diagnosis status (Jerrell & Wilson).

In summary, few basic ethnic comparisons have been made among dually-diagnosed samples. Furthermore, studies of 12-step participation that have focused on specific ethnic groups are variable, suggesting that some ethnic groups might benefit from 12-step programs while others may not find them as culturally relevant. However, due to the general lack of focus at this level of specificity in research on ethnicity, and a paucity of in-depth research examining cultural mechanisms within 12-step participation, few conclusions about ethnic factors can be made based on the findings of this review.

2.6. Overall findings

Table 2 includes outcomes that are summarized for self-help involvement based on the primary findings from each study. Based on the summary in Table 2 of the findings, the majority (19) of the studies reported positive outcomes or associations for self-help involvement with abstinence (out of 24 reporting). The findings for psychological outcomes were more varied, although the article predominantly (9 articles out of 21) reported positive outcomes or associations of self-help with psychological functioning variables. In most cases (10 out of 15), group membership was not associated with participation in self-help activities. However, in a few cases (e.g., homelessness or diagnostic group), group membership did predict level of involvement.

3. Discussion

In summary, this review examined 59 studies that contained qualitative and/or quantitative data regarding dual-diagnosis and 12-step participation. Additionally, information specific to ethnicity, homelessness, and ex-offender issues was a primary focus. First, the most note-worthy findings will be discussed, followed by the limitations of the studies and this review, as well as conclusions and suggestions for future research in this area.

3.1. Primary findings

Findings from this review suggest that 12-step participation generally leads to beneficial outcomes for individuals who are dually-diagnosed. As an extension of the findings from Bogenschutz et al.'s (2006) review, several potential mechanisms of action by which individuals improve in their sobriety and psychological functioning have been identified. First, increased social support via more involvement in dual-focus 12-step groups appears to lead to beneficial outcomes for both mental health (Laudet et al., 2000a) and substance use outcomes (Laudet, Magura, Cleland et al., 2004; Laudet, Cleland et al., 2004). This mediational role of social support has been reported in the general 12-step literature frequently (Groh, Jason, & Keys, 2008), but this is the first time that similar findings have been reported for a dually-diagnosed sample.

Additionally, increased self-efficacy also plays a mediational role between participation and outcomes for dually-diagnosed individuals with respect to dual-focus 12-step groups (Magura et al., 2007). This finding, as it relates to specialized programs, is interesting because dually-diagnosed individuals face more barriers to sobriety due to psychological and socioeconomic burdens (Laudet et al., 2000b), so enhancement of self-efficacy in these programs is a strong finding. Exactly who benefits from specialized 12-step programs such as DTR is unclear, especially given qualitative findings that had somewhat mixed results for perceptions of how different DTR is from traditional 12-step groups. However, a substantial portion of DTR members felt increased peer identification and support surrounding mental health problems was attributable to the program (Laudet, Magura, Vogel et al., 2003), suggesting that some participants might gain more from this type of a group compared to a regular 12-step program.

While traditional 12-step participation appears to be generally well-attended and beneficial for dually-diagnosed clients (e.g., Pristach & Smith, 1999), evidence from studies other than dual-focus 12-step groups seem to suggest that more comprehensive service models that address the multiple co-occurring problem domains are the most appropriate. For example, Easton et al.'s (2007) comparison of 12-step versus integrated treatment for substance use and domestic violence yielded somewhat similar results, although a few outcomes suggested that the integrated treatment might have been more effective overall. Hence, traditional 12-step programs can have beneficial functions and build support, but might not be able to assist with all types of problems given that the focus is generally limited to sobriety. For a dually-diagnosed population, it is critical to gain support at all levels of co-occurring problems.

A primary finding from studies that examined homeless populations was that 12-step participation tends to be higher among homeless individuals than others in the United States (Herman et al., 1991), and this may be a function of what treatments are available to homeless individuals with few resources. Interestingly, Kilbourne et al.'s (2002) findings that homeless women who had previously attended 12-step groups had more sexual risk behaviors than those who had not, illustrate this lack of availability. It is unlikely that 12-step programming promotes sexual risk behaviors, and much more likely that there were barriers to other forms of treatment or access to resources for these individuals.

Generally, outcome studies suggested positive results of 12-step participation on abstinence outcomes (e.g., Gonzalez & Rosenheck, 2002) among dually-diagnosed homeless individuals. Trumbetta et al.'s (1999) social network analysis suggests that generating more support (via increased network size) is critical for this population, and 12-step participation appears to contribute to this. However, some findings suggested potential gender differences in response to 12-step participation (Kingree, 1995), which warrants further exploration. Overall, 12-step participation appears to be a good resource for these individuals, although previous research suggests that other types of community-level support (particularly with housing and more immediate needs) are needed in addition to this component (Drake et al., 1991).

With regard to ex-offenders, studies frequently reported only criminal histories of a dual-diagnosis sample and legal outcomes for the entire sample. In general, there were high rates of previous criminal history in the samples reviewed. Overall, 12-step participation appeared to have a positive association with desirable legal outcomes such as lower arrest rates (Brooks & Penn, 2003; Ouimette et al., 1999). Given the higher re-arrest rate of dually-diagnosed ex-offenders (e.g., Hoff et al., 1999) and the generally high availability of 12-step programs; participation should continue to be encouraged.

The primary finding related to mechanisms of action in 12-step groups for ex-offenders was that spirituality was a salient component of recovery. The in-prison studies from this review that examined spirituality qualitatively (Severance, 2004) and quantitatively (Chen, 2006) suggested that offenders discuss 12-step and spirituality as planned strategies for success in reintegration. Chen's well-designed study clearly highlighted that the 12-step spirituality component plays a critical role in mutual-help groups, given the more stable and beneficial outcomes for mental health and group cohesion compared to mutual-help groups without this component.

However, the benefits of spirituality as a component of mutual-help groups may vary by individual beliefs and ethnicity. For example, Native Americans tended to only attend 12-step programming when they identified more with white culture and valued spirituality (Beals et al., 2006). Because of cultural and ethnic differences related to these values, 12-step participation may not always be an appropriate approach compared to mutual-help groups without a spirituality component. The current review found almost no differences in 12-step participation among ethnicities, although in one case African-Americans were reportedly more frequent users (Jordan et al., 2002). However, the vast majority of the studies reviewed included samples that were predominantly European-American or African-American, and few looked at specific ethnicities.

Overall, this review found few studies involving ethnic factors related to 12-step participation and dual-diagnosis. The main finding from Jerrell and Wilson (1997) was that dually-diagnosed non-white individuals experience considerably more barriers to treatment, and are often underserved by programs that are offered. There appears to be some ethnic and cultural variation in the types of psychological problems that certain cultures may have. For example, non-native U.S. cultures might experience more depression and phobic anxiety in certain contexts (Westermeyer & Chitasombat, 1996) due to acculturation factors. In addition, 12-step programming might not be culturally relevant for some groups, given low rates of utilization observed in some studies (e.g., Fichter et al., 1997).

3.2. Limitations and research suggestions

There were a number of issues in this review that make interpretation of the findings tentative. The literature is somewhat limited at the level of specificity for the three individual factors reviewed (i.e., homelessness, ex-offenders, ethnicity) in conjunction with 12-step participation among dually-diagnosed individuals. Because of this, some of the articles reviewed for those particular areas were admitted with relaxed inclusion criteria, but did not meet all specified criteria. However, these articles

were included given prevalence of dual-diagnosis and these co-occurring problems. Furthermore, the majority of studies did not go beyond exploring basic diagnostic information as demographics in their analysis sections and simply used a comprehensive "dual-diagnosis" group. This is problematic because there are likely differences between people who exhibit severe psychopathology and those who have conditions where their functioning is not as severely impaired. Future research in the dual-diagnosis area should include these types of comparisons to more adequately address treatment options and mechanisms of 12-step programming that are beneficial (or detrimental) for particular diagnostic groups.

Additionally, methodological limitations were frequently present in the reviewed studies. Although the majority of the studies were longitudinal in nature (64%), almost all studies relied on convenience samples and a very small percentage (15.5%) employed some kind of assignment protocol. Typically, studies were designed to make comparisons between a dually-diagnosed group and a substance abuse only group, which is informative yet limited. Moreover, several of these studies were drawn from a few research groups using the same data, which makes the size even smaller.

Furthermore, several of these studies are outcome-based effectiveness studies that employed a number of treatment variables. Typically studies were not able to tease apart the effect of other treatment and support systems on participants in the studies. Additionally, most of the reviewed studies explored associative effectiveness, without investigating mechanisms and processes involved within 12-step groups that may vary across ethnic groups, diagnostic status, and other relevant variables. Beyond the need for more research in the area of ethnicity and culture, there is a need to determine what about these interventions might make them beneficial, and for what groups these processes tend to work for (and not work for) while considering individual factors. Although there were a few qualitative studies in this review, more research using this methodology is the next step in exploring 12-step group participation, and how individual factors interact with the group processes. Finally, there is a need for more studies exploring the influence of varying community-level variables such as legal system practices, housing policies and reintegration support. Particularly with the individual factors explored in this review, community and societal-level issues create systemic barriers to recovery and maintenance, and these factors are rarely explored.

Additionally, it is possible that these group processes might have unique relevance for dually-diagnosed individuals. For example, Longabaugh, Beattie, Noel, Stout, and Malloy (1993) proposed a model of social support that has two basic components. Abstinence-specific social support is believed to promote abstinence, while general social support is posited to promote general psychological functioning. Perhaps for dually-diagnosed individuals, the types of social support that they receive via participation in 12-step groups is differently received or given than for individuals with substance use issues only. Moreover, it is possible that dual-focus groups might enhance the general social support that is received compared to traditional 12-step groups. However, further exploration of this area is needed in research in order to build accurate models for interventions while taking into account individual factors beyond an associative level.

4. Conclusions

Overall, it appears that 12-step programming remains a useful tool for individuals who are dual-diagnosed. While most 12-step groups are focused solely on abstinence, the processes involved also can have positive psychological benefits. The advent of specialized 12-step groups such as DTR has begun to demonstrate advantages of more comprehensive efforts to provide dually-diagnosed individuals with support and mutual understanding. However, it remains unclear what individual factors might interact with these group processes, although the evidence suggests that some members might get more benefit from the groups than others.

An examination of ethnicity, homelessness, and criminal history as factors in this review suggested many important areas for future research. The potential benefits of both traditional and specialized 12-step group involvement seem to be relatively consistent in research findings, although these types of programs might not be culturally relevant for some groups of people. Future research would benefit from more in-depth understanding of the processes involved in group participation, and who these processes are most likely to benefit.

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