Empirical Studies on Alcoholics Anonymous 2011-2014

Overview

Extensive research has been conducted on AA for over fifty years. In order to assess the current status of research findings and to provide references for use by others, this review is based on studies indexed in Medline and Psychinfo during the period from 2011 – 2014 in effect covering the major issues which have been the focus of empirical investigation.

In the most recent studies on AA, there has been a marked increase in assessing the relationship of gender and ethnicity to 12-step program involvement. Specific aspects of program participation which may exert direct and indirect effects on substance use and clinical outcomes related to risk for relapse among 12-step members in early and long term recovery have emerged. There has been a major focus on identifying potential mechanisms underlying success in AA recovery particularly as they relate to changes in various aspects of spirituality/religiosity (S/R), adaptive social networks, and abstinence self-efficacy as well as how such mechanisms may differ as a function of gender and illness severity. Interventions to promote AA participation among special populations have also been developed. In addition, there has been considerable research on AA participation and outcomes on adolescent and young adult samples. There have also been new instruments developed for use in these populations. Program outcomes relative to clients with dual diagnosis continue to be a focus of investigation among both adult and adolescent populations. Highlights from these study findings are presented below.

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Empirical Research on Alcoholics Anonymous 2011-2014

1. Alcoholics Anonymous Meeting Attendance

AA meeting attendance has long been a major focus in research and can provide a basic index of program involvement. There are a growing number of studies with long-term follow-up which mainly involve treatment seeking samples. Project MATCH, a multisite randomized clinical trial of three psychosocial treatments, Twelve Step Facilitation (TSF), Cognitive Behavior Therapy (CBT) and Motivational Enhancement therapy (MET) with two treatment arms (i.e., aftercare and outpatient) continues to be a rich source of in-treatment and extensive follow-up data not only for tracking AA meeting attendance but also for variables relating to adaptive social networks and abstinence self-efficacy among others. Below are some of the major findings presented on attendance based on the Project MATCH patient samples as well as results reported in relation to other treatment and non-treatment client samples.

Magura et al. (2013) using Project MATCH panel data applied structural equation modeling techniques with cross-lagged partial regression coefficients to analyze potential reciprocal causation between AA participation and drinking outcomes through 15 months after intake separately for those patients in the outpatient arm and those in the aftercare condition. For the outpatient sample, the findings were consistent with AA attendance leading to increases in alcohol abstinence and reducing drinking problems, whereas a causal effect in the reverse direction was unsupported. In the aftercare condition, AA attendance appeared to lead to better outcomes also.

In a secondary analysis of Project MATCH data, Magura et al. (2013) applied propensity score matching to identify latent AA-related subgroups and to estimate an unconfounded effect of AA attendance on drinking outcomes. They found that participants who consistently attended AA solely due to their exposure to TSF had better drinking outcomes than equivalent subjects who did not consistently attend AA but would have so attended had they been exposed to TSF.

Stout et al. (2012) found that an increase in pro-abstinence social network members predicted the percentage of days abstinent at months 15 and 19 post Project MATCH treatment. AA attendance was predictive of abstinence related outcomes over and above that predicted by social network variables.

Pagano et al. (2013) investigated the course and impact of meeting attendance, AA-related helping, and step-work, on long-term outcomes. Data were derived from treatment seeking alcoholics recruited from an outpatient site in Project MATCH and followed for 10 years post treatment. Controlling for baseline and time-varying variables, results showed significant direct effects of AA-related helping and meeting attendance on reduced alcohol use.

Kingree and Thompson (2011) examined the relationship between AA participation in terms of AA meeting attendance and having a sponsor, and abstinence from alcohol and drugs. Measures of AA participation were taken at treatment enrollment and 3-month follow-up. Abstinence was assessed at baseline and at 6-month follow-up. Meeting attendance was unrelated to abstinence. Having a sponsor at 3 months was associated prospectively with abstinence from alcohol at the 6-month follow-up.

Witbrodt et al. (2012) found that over a 7-year period any pattern of AA attendance, even if it declines or is never high for a particular 12-month period, is better than little or no attendance in relation to abstinence. Greater initial attendance carries added value. In addition, there was benefit for maintaining a sponsor over time above that found for attendance.

Witbrodt et al (2014) explored causal relationships between post-treatment 12-step attendance and abstinence at multiple waves and examined indirect paths leading from treatment initiation to abstinence 9 years later. A total of 1945 adults seeking help for alcohol/drug use from integrated healthcare organizations and outpatient treatment programs were followed at 1-, 5-, 7- and 9-years. Path modeling with cross-lagged partial regression coefficients was used to test causal relationships. Cross-lagged paths indicated greater 12-step attendance during years 1 and 5 were related to past 30 day abstinence at years 5 and 7 respectively suggesting 12-step attendance leads to abstinence but not vice versa well into the post-treatment period.

Tonigan and Beatty (2011) examined the temporal relationship between alcohol and illicit drug use among 12-step program participants. Subjects were interviewed at intake and at 3-month intervals for 1 year. Twelve-step attendance was predictive of reductions in substance use. These reductions were not moderated by illicit substance use disorders or alcohol problem severity. The frequency and intensity of drinking were contingent on whether participants sustained 12-step program affiliation. These findings suggest that 12-step participation may serve as a protective factor after substance use occurs.

Baltieri and Filho (2012) found that weekly/more frequent AA attendance was positively correlated with retention in formal treatment among a Brazilian sample of men with alcohol drinking problems in outpatient treatment.

1.1 Race/Ethnicity and AA Participation

Goebert and Nishimura (2011) found no differences in utilization of AA among native Hawaiians, Asian-Americans, and European-Americans from two treatment facilities in Hawaii. Tonigan et al. (2013) found that American Indian and non-Hispanic whites in outpatient substance use treatment had similar trajectories of community-based 12-step meeting attendance and improved drinking outcomes over a 9-month period, suggesting the groups derive similar benefit from program participation. In contrast, Avalos and Mulia (2012) found the relationship between AA attendance and abstinence differed by ethnicity among dependent and problem drinkers in chemical dependency treatment across a 7 year period. The relationship between AA attendance and abstinence was stronger for whites than blacks. Among non-attenders, blacks were more likely than whites to be abstinent. Post hoc statistical analyses suggest that this ethnic difference may be due to greater religiosity and "drier" social networks among blacks.

Young (2011) analyzed AA members' reports of "hitting bottom" and found racial differences in self-identification of hitting bottom and in antecedents to program entry. Whites were more likely to identify with a high-bottom than non-whites. High bottoms more likely entered AA via member introduction. Lower bottoms were associated with polydrug use, constant drinking, and alcohol-related problems and more likely entered AA via court order.

1.2 Womens' 12-Step Program Participation

Sanders (2011) assessed differences between women in AA and NA in their perceptions of the 12-step program experience. She reported that attendees in these 12-step groups share the

persistent stigma and shame that addicted women often experience. Sanders et al. (2014) reported that women in both AA and NA have creatively adapted the 12 steps to meet their gender specific needs. These needs may be psychological in nature but are also reinforced and shaped by cultural gender role ideals. Reframing the 12 steps can be a direct response to the 12-step philosopy that advocates turning your will over to God or a HP. The AA principle of surrender may pose a challenge to some women in AA with a history of adverse experiences linked to a personal sense of powerlessness. Women's reframing of the 12 steps may also enable them to address hitting bottom. Hitting bottom for women may be qualitatively different than that experienced by men upon entry to AA/NA. According to Sanders, men may be more likely to experience trouble with the law, work, or home whereas among women, hitting bottom may involve feelings of intense shame regarding their failure to fulfill the role of caregiver.

Two studies were conducted on women's participation in 12-step programs as part of the the National Institute on Drug Abuse (NIDA) research program in the Clinical Trials Network (CTN). Pinto et al. (2011) assessed whether 12-step meeting attendance was associated with retention in the Women and Trauma project. Women with higher attendance at 12-step meetings had better retention rates. Morgan-Lopez et al. (2013) examined 12-step participation among women enrolled in Seeking Safety (SS), a treatment for comorbid PTSD and substance use. Significant reductions in alcohol use among women in the SS condition compared to health education were observed and were highest for those women who participated in 12-step meetings.

1.3 Women and Criminal Justice System Involvement

Johnson et al., (2014) tested a pilot intervention which linked unsentenced female pretrial jail detainees with a 12-step volunteer. At one month after release, the women had less alcohol and drug use and related problems than they did before incarceration. Schonbrun et al. (2011) studied incarcerated women with alcohol use problems and followed them up 6 months post release. Weekly or greater AA attendance following incarceration was associated with reductions in alcohol use and problems associated with drinking.

1.4 Gender Differences in AA Program Participation

Witbrodt and Delucchi (2011) assessed gender differences in AA meeting attendance and practices among clients in formal treatment from entry to 7 year follow-up. No gender differences were found in meeting attendance or engaging in AA practices in cross-sectional data analyses conducted at year 1, 3, 5, and 7. However, there were gender differences across time with men less likely to be abstinent and also more likely to reduce their AA participation across time. Gender interacted with drug use severity such that women with higher drug severity were less likely to participate in AA.

1.5 Interaction of Gender and AA Membership

Krentzman et al. (2012) recruited alcohol dependent adults from four sites to determine whether the relationship between AA membership and sobriety would differ as a function of gender. AA membership significantly increased the odds of achieving a year of sobriety and this relationship was stronger for women than men. Extroversion did not moderate the association between gender and sobriety.

2. AA Participation and Adult Attachment

Jenkins and Tonigan (2011) assessed the relationship of anxiety and avoidance dimensions of adult attachment to subsequent 12-step program involvement, and alcohol use. Attachment avoidance was associated with lower rates of 12-step meeting attendance, 12-step behaviors and a lower probability of acquiring a sponsor. Attachment anxiety did not predict subsequent 12-step group engagement.

3. AA Participation and Group Cohesiveness/Interpersonal Social Climate

Rice and Tonigan (2012) examined how a nonspecific factor, perceived AA-related group cohesiveness, was related to AA involvement. Perceived AA group cohesion predicted increased AA attendance, the practice of prescribed AA activities, and self-reported AA usefulness. As increases in the size of abstinence-based social networks partially explain the association between 12-step attendance and increased abstinence, Rynes et al. (2013) investigated whether the quality of social interactions in 12-step groups also predicted substance use outcomes. Participants' perceptions of group engagedness was predictive of increased 12-step related behavior and decreased alcohol use.

4. Spirituality/Religiosity in AA

Spirituality is central to Alcoholics Anonymous (AA) as demonstrated in the 12 steps that members apply in working the program as well as in the Twelve Traditions that pertain to the operation of the AA groups. To better understand the spiritual basis of AA recovery, a number of cross-sectional and longitudinal studies have assessed how relevant S/R characteristics relate to AA program participation and abstinence. Although many of these studies continue to focus on individuals in treatment or those being followed up after discharge, there are a number of survey studies that have been conducted on long-term, committed AA/NA members independent of formal treatment addressing S/R predictors of substance use as well as clinical outcomes relevant to risk for relapse. Of note, the experience of spiritual awakening in AA has been the focus of a number of studies to characterize its underlying dimensions and association with recovery outcomes. In addition, a number of recent studies on S/R characteristics which may mediate the relationship between AA program participation and alcohol use have been conducted with more diverse samples intended to capture a broader representation of AA membership.

4.1 Spirituality/Religiosity Studies on Community-Based AA Samples

In a sample of 144 physicians at a conference of doctors in AA recovery, 81% reported having had a spiritual awakening (Galanter et al., 2013). The majority (60%) described themselves as spiritual and not religious. Having had a spiritual awakening was associated with a longer period of recent abstinence and with the absence of alcohol craving during the previous week. In a subsequent study of long-term AA members who reported having had such an awakening, 67% reported no craving for alcohol or drugs. Their awakening had most often taken place gradually, while they were working the steps and right after bottoming out. Their responses reflected a major experiential transformation, including highly significant changes: decreased craving and depression and increases in service to other AA members. A factor analysis of items endorsed by respondents as characterizing their first spiritual awakening experience in AA revealed 6 underlying dimensions: positive mood, need for abstinence,

interpersonal relatedness, distinctive sensory experience, connection to God, and personal meaning.

In a study of Narcotics Anonymous conducted with the cooperation of the Narcotics Anonymous World Service Office (NAWSO), 527 NA members from 3 states were administered a survey similar to that employed with the AA member sample (Galanter et al., 2013). Similar to the physician AA member sample, 84% reported a spiritual awakening. Again, most viewed themselves as spiritual and not religious (65%). Those reporting feeling God's presence on a daily basis (54% of the total sample) had a longer duration of abstinence, a lower level of depression and were more likely to report the absence of craving for substances. In another study of NA members in which the NAWSO agreed to select a diverse group of US meetings which were likely to have attendees who were veterans, a survey was administered to a total of 508 members in 5 states (Galanter et al., in press). Those having had a spiritual awakening (i.e., 82%) had been sober longer, had a higher level of affiliative feelings toward group members, were more likely to have sponsored more than 5 fellow members, and experienced less craving for substances and lower depression in the week prior to survey completion. Sixty-four percent reported feeling God's presence on a daily basis.

Krentzman et al. (2011) sought to identify S/R predictors of AA membership in a sample of individuals with at least one year of abstinence drawn from community-based AA meetings and formal treatment settings. Having more positive views of God in addition to perceiving more negative consequences of drinking were associated with self-identification as an AA member.

4.2 Spirituality/Religiosity and Sponsorship

Individuals who were sponsored by others in AA were more likely to engage in a range of AA practices (Young, 2012), to report a greater degree of spiritual surrender and to pray/meditate more frequently than unsponsored members (Young, 2013). Individuals who assumed a sponsorship role were more likely to hold S/R beliefs (Young, 2012a) and pray/meditate more frequently than nonsponsors (Young, 2012b).

4.3 Spirituality/Religiosity Characteristics as Mediators

In order to test for S/R variables which may mediate the effects of AA participation on alcohol use, Kelly et al. (2011) analyzed data from Project MATCH. The Religious Background and Behavior (RBB) questionnaire was used to generate a composite score combining S/R self-designation, God consciousness (GC) and formal practice (FP) components that was then used in the mediational analyses. Attendance in AA was consistently associated with improved subsequent alcohol drinking outcomes through 15-month follow-up. This relationship was found to be partially mediated by increases in S/R. Tonigan et al. (2013) noted that the Project MATCH sample used by Kelly et al. may have limited AA member generalizability in that the participants were mostly non-Hispanic white males without comorbid substance use disorders. To address whether the Kelly et al. findings could be replicated with a broader sample, Tonigan et al. employed the same research design (i.e., fully time-lagged) with a sample of 12-step program attendees recruited from outpatient treatment centers, community shelters, and AA meetings. Clients were assessed at baseline and quarterly over a 9-month period in order to assess changes in S/R characteristics that may be predictive of abstinence. The target AA sample were those in early recovery (one had to be attending AA not more than 16 weeks). Changes in God consciousness predicted increased percent days abstinent even after controlling for

concurrent formal treatment-seeking. The mediational analysis on 12-step meeting attendance and 9-month drinking outcome indicated that God consciousness accounted for 22% of the direct effect of AA attendance on subsequent percent days abstinent. Krentzman et al. (2013) tested potential mediating effects of multiple S/R characteristics pertaining to formal religious practices, daily spiritual experiences, forgiveness of self and others, religious coping, and purpose in life. Only one S/R variable, religious practices, was found to mediate the relationship between AA involvement and alcohol use.

5. Changes in Social Networks, Self-Efficacy, Selfishness, Impulsivity as Mediators

Kelly et al. (2011) again using Project MATCH data collected at intake, 3, 9, and 15 months found that greater AA attendance was associated with decreases in pro-drinking social ties and increases in pro-abstinent social ties. Lagged mediational analyses showed that through reductions in pro-drinking network ties and to a lesser extent, increases in pro-abstinent ties, that AA exerted a positive effect on abstinence and to a lesser effect on drinking intensity. AA appears to facilitate recovery by mobilizing adaptive changes in the social networks of individuals exhibiting a broad range of impairment.

Rynes and Tonigan (2012) tested whether having a sponsor may have a positive effect on drinking outcomes through increasing one's abstinence-based social network. Their results, contrary to prior studies, suggested that the prospective association between sponsorship and abstinence is not explained by increases in the abstinence-based social network. Based on the finding obtained by Young (2012b), sponsorship may operate through strengthening spiritual practices. He found that sponsored members had a greater frequency of prayer/meditation.

Kelly, Hoeppner et al. (2011) tested multiple mediators simultaneously to help determine the most influential pathway using Project MATCH data. They conducted a prospective, statistically controlled, naturalistic investigation to examine the extent to which previously identified mechanisms mediated AA attendance effects on alcohol outcomes controlling for baseline outcome values, mediators, treatment and other confounders. Mediators of outcomes at 9-month and 15-month follow-ups were tested separately for each of the treatment arms. Among outpatients, the effect of AA attendance on alcohol use outcomes was explained primarily by adaptive social network changes and increases in social abstinence self-efficacy. Among more impaired aftercare patients, in addition to mediation through adaptive network changes and increases in social self-efficacy, AA led to better outcomes through increasing S/R and by reducing negative affect. The degree to which mediators explained the relationship between AA and outcomes ranged from 43% to 67%. The authors conclude while AA facilitates recovery by mobilizing several processes simultaneously, it is changes in social factors which appear to be of primary importance.

Kelly and Hoeppner (2013) tested whether gender mediated the effect of AA attendance on drinking outcomes. Using the Project MATCH data, they tested multiple mediator models with self-efficacy, depression, social networks, and S/R to see if they explained AA's effects differently for men and women controlling for baseline values of mediators, treatment and other confounders. A different pattern of findings emerged depending on the outcome variables. For percent days abstinent, the proportion of AA's effect accounted for by the mediators was similar for men and women, i.e., approximately one-half. A different pattern emerged for drinks per drinking days with the mediators showing a greater effect for men than women (70% vs. 41%).

Changes in social factors seem more important for men whereas negative affect may be more important for women.

Tonigan et al. (2013) tested the assumption that 12-step attendance is associated with increased abstinence through reducing selfishness. They conducted a study with early AA participants recruited from treatment and community-based AA groups in which they interviewed them at intake, 3, 6, and 9 months. AA attendance predicted increased abstinence and reduced drinking intensity. Twelve-Step program participants had higher levels of pathological narcissism (PN) relative to general population samples and their PN remained elevated. PN was unrelated to 12-step meeting attendance.

Blonigen et al. (2011) examined whether decreases in impulsivity could explain the relationship between AA attendance and outcomes involving alcohol use and psychosocial functioning in a naturalistic study in which individuals were assessed at baseline, 1, 8, and 16 years later. Participants initiated help-seeking through the alcohol intervention system (detox, info and referral centers). Controlling for changes in drinking patterns, decreases in impulsivity were associated with fewer alcohol use problems, better coping, and greater social support and self-efficacy at year 1, and better coping and greater social support at year 8. Decreases in impulsivity mediated associations between longer AA duration and improvements on all year 1 outcomes and indirect effects were moderated by participant age. Longer AA duration was associated with a significant decrease in impulsivity for younger (i.e. 25 years of age or younger) but not older subjects. Timko et al. (2011) found that decreases in impulsivity mediated the association between increased AA participation and reductions in driving while intoxicated at one year follow-up among individuals with alcohol use problems in outpatient treatment.

6. Alcoholics Anonymous in Special Populations

6.1 Dually Diagnosed

Bogenschutz et al. (2014) added a 12-session 12-step facilitation therapy adapted from Project MATCH for individuals with dual diagnosis. Greater participation in the intervention was associated with decreased alcohol use.

Rosenblum et al. (2014) randomly assigned clients with substance use problems and co-occurring mental disorders to either a dual-focus 12-step recovery group (DTR) or a waiting list control group and followed them up for 3-6 months. Multilevel model regression was used to analyze the nested effect of participants within 8 facilities. Regression imputation was used to adjust for drug use under-reporting. In intent-to-treat analyses, DTR clients used alcohol and substances fewer days and reported better mental health functioning and fewer substance use related problems than clients in the control condition.

6.2 Adults Living with HIV/AIDS

Orwat et al. (2011) examined the relationship of predisposing characteristics and enabling resources to AA/NA meeting attendance. In a secondary analysis of prospective data from the HIV-Longitudinal Interrelationships of Viruses and Ethanol Study, female gender was inversely related to meeting attendance, as were social support systems for alcohol/drugs. Presence of the HCV antibody, drug dependence diagnosis, and homelessness were associated with higher odds of attendance. They concluded that non-substance abuse related barriers to AA/NA group attendance exist for those living with HIV.

6.3 Adults in Methadone Maintenance Treatment

White et al. (2014) evaluated 322 methadone maintenance patients and found no association between past year 12-step meeting attendance or other activities and abstinence. More than 70% of patients reported that the 12-step program was helpful but they reported lower levels of involvement in key 12-step program components. Possible barriers to participation include the stigma attached to being on methadone, reluctance to obtain a program sponsor and resistance to share personal experiences.

7. Strategies for Referral to 12-Step Programs

Manning et al. (2012) conducted a randomized clinical trial in which inpatients undergoing treatment for substance dependence were assigned to one of three 12-step group referral conditions: (1) 12-step peer, (2) doctor referral, and (3) no intervention and then followed up for 3 months after discharge. The peer intervention was associated with greater meeting attendance during treatment and post-discharge. Abstinence rates did not differ across conditions possibly because the follow-up period was too early to observe different clinical outcomes.

Rynes and Tonigan (2012) assessed how AA members recruited from the community differ in their 12-step attendance from AA members recruited from substance abuse treatment. The relationship between meeting attendance and abstinence was comparable among groups, however, those members recruited from the community-based AA clubs had higher AA attendance rates and a higher proportion of alcohol abstinent days than did all other participants.

8. Alcoholics Anonymous Storytelling as Self-Transformative

Lederman et al. (2011) conducted a qualitative study in which thematic data analysis was conducted on the question of how sharing one's story of recovery with other alcoholics promotes sobriety among a sample of individuals in recovery from alcoholism who participate in 12-step programs. Their results suggested five pathways relating to the intrapersonal impact of AA narrative on the storyteller: (1) being reminded of a painful past, (2) reinforcing one's recovery, (3) losing the sense of what is known in AA as "terminal uniqueness" or denial, (4) developing one's relationship with self, and (5) helping others.

9. Recovery Resources, Coping, Trajectories of Alcohol Use

Majer et al. (2012) examined 12-step involvement in relation to level of coping strategies. Participants who were categorically involved in a set of 12-step activities reported lower levels of emotion-focused coping strategies and higher levels of social support coping strategies and self-efficacy for abstinence compared with those who were not involved. Twelve-step meeting attendance was unrelated to outcomes. Majer et al. suggest that categorical involvement in 12-step activities equips recovering alcoholics/addicts with active coping strategies for their ongoing recovery. Majer et al (2013) followed up a sample of patients following treatment for substance dependence in aftercare (Oxford House or usual care). Participants who were actively involved in 12-step activities were more likely to maintain continuous abstinence over a two year period. The Oxford House condition and categorical involvement in a set of 12-step activities were independently associated with continuous abstinence from both alcohol and illicit drugs.

Cranford et al. (2014) analyzed trajectories of change in alcohol use over time periods ranging from 2.5 to 3 years in a sample of adults with a current alcohol use disorder, three-fourths of whom were entering treatment. The results from latent class growth analyses of drinks per drinking day indicated five trajectory classes: (1) moderate baseline – slow decline, (2) heavy baseline - stable abstinent, (3) heavy baseline to slow decline, (4) heaviest baseline to steep decline, (5) heaviest baseline to stable heavy. Treatment modality, AA involvement, and purpose in life were associated with diverse trajectories of drinking behavior. AA involvement was associated with higher odds of membership in trajectory classes that showed declines in drinking from baseline. Perceived purpose in life predicted lower odds of membership in the heaviest baseline to stable heavy class. AA involvement predicted different pathways of recovery characterized by stable abstinence, steep declines, and/or slower declines in drinking over time. Higher purpose in life may protect against chronic heavy drinking by strengthening motivations to pursue goals that are unrelated to substance use.

10. Alcoholics Anonymous and Narcotics Anonymous in Adolescents and Young Adults

10.1 Clinical Profile – age, nonattendance, prior religiosity

Galanter et al. (2012) found that among committed AA members, those younger than 21 years of age compared to those between the ages of 22-39 were more likely to have been hospitalized, been outpatients in treatment for alcohol or drug abuse and report use of multiple substances of abuse. Kelly, Dow, Yeterian, and Myers (2011) assessed an outpatient sample with regard to negative experiences in AA/NA. They concluded that youth experiences at meetings should be monitored as 22% reported at least one negative experience with a greater number reported in NA. However, their reasons for discontinuation or nonattendance were unrelated to these negative experiences. In a sample of emerging adults aged 18-24 in residential treatment, Kelly, Stout, and Slaymaker (2012) found over a 12-month period that 12-step attendance declined to just over once per week at 12 months from a peak of 3 times per week at the 3-month follow-up. Active 12-step involvement was associated with positive treatment outcomes. Considering oneself a 12-step member and verbal participation during meetings predicted improved subsequent drinking outcomes.

10.2 Gender differences in Young Adults

Klein and Slaymaker (2011) examined 12-step involvement and its impact on outcome during the first 6 months following treatment among a sample of young adults attending 12-step-based residential treatment. Men and women had similar patterns of meeting attendance and engagement in 12-step practices. However, the variables predictive of drinking outcomes at 6 months differed by gender. Frequency of meeting attendance predicted drinking days for women whereas among men, 12-step experiences such as getting a sponsor and considering oneself an AA member predicted drinking days.

10.3 Mediating Variables in Adolescents and Young Adults

Kelly, Pagano, Stout, and Johnson (2011) assessed the interrelationships among religiosity, 12-step work, helping behaviors, narcissism and abstinence related outcomes among court-referred adolescents in a 2-month residential treatment program. Increased step work mediated the effect of religious practices on increased abstinence. AA/NA helping mediated the effect of religiosity on reduced craving and narcissistic entitlement. These findings provide empirical support consistent with religious practices yielding improved treatment outcomes.

Labbe et al. (2013) evaluated young adults (18-24 years old) enrolled in a naturalistic study of residential treatment effectiveness at intake, 3, 6, and 12 months. They looked at the age composition of attended groups and used HLM to test the moderating effect of age composition on percent days abstinent concurrently and in lagged models controlling for confounds. A significant three-way interaction between attendance, age composition, and time was detected in the concurrent but not lagged model. Specifically, a similar age composition was helpful early in post-treatment among low 12-step program meeting attendees, but became detrimental over time. Labbe et al. suggest that once engaged, gradual integration into the broader mixed-age range of 12-step meetings may be beneficial wherein it is possible that older members may convey the nature of sober experiences needed to carry young adults forward into long-term recovery.

10.4 Cost Benefit Analysis of Twelve Step Attendance in Adolescence

Mundt et al. (2012) analyzed alcohol and drug related costs as well as total medical care costs among a sample of adolescents in four Kaiser Permanente drug treatment programs in Northern California. Twelve-step meeting attendance and health care costs were assessed over five years. Each additional 12-step meeting attended was associated with an incremental medical cost reduction of 4.7% or $145 per year per additional 12-step meeting attended. The medical cost offset was largely due to reductions in hospital inpatient days, psychiatric visits, and alcohol/drug treatment costs.

11. Twelve Step Program Instrument Development

With the exception of the General Alcoholics Anonymous Tool of Recovery (Greenfield and Tonigan, 2012) the following instruments were developed with samples of adolescents/young adults.

11.1 Multidimensional Measure of Mutual Help Activity

Kelly et al. (2011) developed a multidimensional instrument of 12-step program experience administered in a structured interview format in two clinical samples of young adults and adolescents. The instrument generates information on program participation across seven dimensions and specific fellowships including AA, NA, and Cocaine Anonymous.

11.2 General Alcoholics Anonymous Tool of Recovery (GAATOR)

Greenfield and Tonigan (2013) explored the underlying factor structure of the GAATOR, a 24 item self-report measure of behaviors associated with the 12 steps of AA that was administered at 3 and 9 months after study entry. Two factors emerged at both time points, one reflecting concrete behavioral activities such as taking inventory and making amends labeled as "behavioral step work," and the other related to introspective AA practices such as surrender and contact with a Higher Power labeled "spiritual step work," Greenfield and Tonigan suggest that the characterization of steps 1-3 as surrender, steps 4-9 as action steps, and steps 10-12 as maintenance may not optimally describe the function of the 12 steps. An alternative explanatory framework as supported by factor analytic findings of the GAATOR might correspond to Higher Power, Self-Inventory, and Other Inventory.

11.3 Service to Others in Sobriety Questionnaire (SOS)

Pagano et al. (2013) validated a brief adolescent self-report questionnaire, the SOS, in a sample of substance-dependent juvenile offenders. Evidence for the validity of the questionnaire was demonstrated by corroboration of SOS scores with counselor-reports and the pattern of correlations with measures of prosocial behaviors and narcissism. In addition, the SOS was associated with less craving for substances and higher psychosocial functioning.

11.4 The Twelve Promises Questionnaire (TPQ)

Kelly and Greene (2013) developed a 26-item self-report questionnaire designed to assess participants' endorsement of the cognitive, affective, and behavioral elements suggested by each of the Twelve Promises as described in the AA literature. Based on a factor analysis of the responses consistent across three administrations, two factors were identified – "psychological well being" and "freedom from craving." This instrument encompasses AA specific program outcomes that may yield a broader measure of recovery that extends beyond cessation of alcohol use.

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