"We Do Recover"

Scientific Studies on Narcotics Anonymous

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Narcotics Anonymous (NA) rose in the mid-twentieth century amidst rising addiction to opioids and other drug-related problems among adolescents and young adults in the United States. Drawing upon the experience of Alcoholics Anonymous (AA) and other NA predecessors (e.g., Habit-Forming Drugs, Hypes and Alcoholics, Addicts Anonymous), NA grew within two developmental tracks—one in New York City (1949) and a second enduring one in southern California (1953). Following its near-death as an organization in the late 1950s, NA flourished and today exists as a significant recovery support resource in many communities and countries.[1]

A large body of literature exists on AA due to its longevity (85 years), progressive growth, international dispersion, integration into professionally directed addiction treatment, and its continuing adaptation to other problems of living. Additionally, a substantial body of scientific research exists on the potential role of AA participation as a predictor of long-term recovery outcomes, including a recently published systematic review of the most methodologically rigorous AA studies.[2] Twelve-Step groups for dependence on drugs other than alcohol and secular and religious recovery mutual aid adjuncts or alternatives to AA have received far less public, professional, and scientific scrutiny (See Table 1 for representative groups and founding dates). The paucity of research attention to these adaptations and alternatives is surprising given their number and, in some cases, their growth and international reach.

Table 1: Sampling of AA Adaptations and Alternatives

AA Adaptations for Drugs other than Alcohol and Co-occurring Conditions	Secular and Religious Adjuncts or Alternatives to AA
Narcotics Anonymous (NY) (1950)	Calix Society (1947)
Habit Forming Drugs (1951)	Alcoholics Victorious (1948)
Hypes and Alcoholics (early 1950s)	Synanon (1958)
Narcotics Anonymous (CA) (1953)	Alcoholics Anonymous for Atheists and Agnostics ("Quad A") (1974)
All Addicts Anonymous (1959)	Women for Sobriety (1975)
Potsmokers Anonymous (1968)	

[1] White, W., Budnick, C., & Pickard, B. (2011). Narcotics Anonymous: Its history and culture. *Counselor*, 12(2), 10-15, 22-27, 36-39, 46-50.

[2] Kelly, J. F., Humphreys, K., & Ferri, M. (2020). Alcoholics Anonymous and other 12-step programs for alcohol use disorder. *Cochrane Database of Systematic Reviews* 2020, Issue 3. Art. No.: CD012880. DOI: 10.1002/14651858.CD012880.pub2. This review concluded: "There is high quality evidence that manualized AA/TSF interventions are more effective than other established treatments, such as CBT, for increasing abstinence. Non-manualized AA/TSF may perform as well as these other established treatments. AA/TSF interventions, both manualized and non-manualized, may be at least as effective as other treatments for other alcohol-related outcomes. AA/TSF probably produces substantial healthcare cost savings among people with alcohol use disorder." P. 2

AA Adaptations for Drugs other than Alcohol and Co-occurring Conditions	Secular and Religious Adjuncts or Alternatives to AA
Drug Abusers Anonymous (1972) Pills Anonymous (1975) Chemically Dependent Anonymous (1980) Cocaine Anonymous (1982) Dual Disorder Anonymous (1982) Nicotine Anonymous (1985) Benzodiazepines Anonymous (1989) Double Trouble in Recovery (1989) Marijuana Anonymous (1989) Methadone Anonymous (1991) Crystal Meth Anonymous (1995) Dual Diagnosis Anonymous (1998) Prescription Drugs Anonymous (1998) Heroin Anonymous (2004) Opiates Anonymous (2013) Medication-Assisted Recovery Anonymous (MARA) (2018)	Alcoholics for Christ (1977) Overcomers Outreach (1977) Jewish Alcoholics, Chemically Dependent People and Significant Others (JACS, 1979) Secular Organization for Sobriety (1985) Addictions Victorious (1986) Rational Recovery (1986) Addicts Victorious (1987) Overcomers in Christ (1987) Men for Sobriety (1988) Millati Islami (1989) Celebrate Recovery (1991) Christians in Recovery (1992) 16 Step Empowerment & Discovery Groups (1992) Moderation Management (1994) Self Management and Recovery Training--SMART Recovery (1994) LifeRing Secular Recovery (1999) Buddhist Recovery Network (2008) Harm Reduction, Abstinence, and Moderation Support Network (2009) Refuge Recovery (2009) Recovery Dharma (2019)

As long-tenured researchers of addiction recovery mutual aid in the United States, the authors regularly receive questions from service professionals, policy makers, and affected individuals and families about the scientific status of 12-Step and alternative groups. The present paper reviews conclusions drawn from scientific studies of NA—a recovery mutual aid organization that defines itself as:

> *…a fellowship or society of men and women for whom drugs had become a major problem. We are recovered addicts who meet regularly to help each other stay clean. This is a program of complete abstinence from all drugs. There is only "One" requirement for membership, the honest desire to stop using.*[3]

Review Methods

The scope of our review centers on scientific studies that evaluate the role of NA participation in the resolution of substance use disorders (SUDs) and related problems. Excluded from the review are most of NA's own literature, descriptive or theoretical

[3] *Narcotics Anonymous* (1982). Sun Valley, CA: C.A.R.E.N.A. Publishing Company, p. 6.

papers related to NA's program of recovery, NA- and 12-Step-related commentaries, books and book chapters on NA, and articles on NA that have appeared in addiction professional trade journals, recovery magazines, or in the popular press or social media. Our focus is on the question, "What is known about Narcotics Anonymous from the standpoint of science?"

The authors identified published, peer-reviewed NA-related studies using electronic bibliographic search engines (PubMed/Medline, PsychInfo, Cochrane Library, Campbell Collaboration Library, WorldWideScience, ResearchGate, and Google Scholar) and an unpublished NA research bibliography.[4] The scope of our review originally centered on NA studies conducted in the U.S., but the paucity of these studies led to the inclusion of studies from other countries in which full articles or abstracts were available in, or could be translated into, English. The authors obtained copies of published reports with the assistance of our own research assistants and the Substance Use Librarians and Information Specialists (SALIS) network. A brief abstract of each study was prepared highlighting the main study findings. (These abstracts are available as an appendix to this paper at www.williamwhitepapers.com). The authors then organized the results of the review around key topical questions. The search process revealed three bodies of literature:

1) 10 early (1951-1989) references/descriptions of NA as a recovery support resource,
2) 74 published studies specifically on NA, 69 of which were able to be acquired and reviewed in English, and
3) 158 published studies of "12-Step programs" (available in English) that included NA but did not separate study findings on NA from AA, CA, or other 12-Step programs.

In the discussions below, "NA Research" refers to focused studies of NA membership, and "12-Step research" refers to studies in which NA participation was included along with AA and other non-AA 12-Step participation without isolation of NA data. Also included in the review of "12-Step studies" are "12-Step Facilitation" (TSF) approaches to SUD treatment. TSF is a professional intervention refined from early models of 12-Step oriented addiction treatment that derives its primary effects from enhancing engagement and continuing participation in NA and other 12-Step groups. To the greatest extent possible, we present the findings and conclusions of these studies in the words of their respective authors.

Major Findings

When did formal scientific studies of NA begin?

[4] White, W., Budnick, C., & Pickard, B. (2011). Narcotics Anonymous: A chronology of the scientific and professional literature. Posted at www.williamwhitepapers.com. Revised 12/25/2015.

Brief announcements of NA's existence as a potential recovery support resource first appeared in medical and legal journals in the 1950s and early 1960s,[5] but detailed descriptions of the NA program and the first qualitative and quantitative studies of NA did not appear until the 1980s.[6] NA studies in the scientific literature increased exponentially in the decades that followed, but constituted only a small fraction of studies conducted on AA. Of the 227 NA and related 12-Step studies included in this review, 188 were published after 2000 and 105 were published between 2010 and 2020.

How limited are the geographical locations in which NA research studies have been conducted?

The majority of published NA-focused scientific studies were set in the Islamic Republic of Iran, the United States, the United Kingdom, or Australia. The present review also includes studies from Greece, India, Israel, and Norway. Scientific knowledge about NA owes much to the dramatic increase in NA-related studies conducted in the Islamic Republic of Iran. Worldwide research on NA has grown but remains limited, particularly in Latin American, African, and Central and East Asian countries. We anticipate a proliferation of NA studies as the presence and visibility of NA groups continue to expand in these and other countries.

What is the relative growth and availability of NA in the U.S. and Internationally?

According to NA World Services, Inc. (NAWS), there are presently (2020) 71,000 weekly NA meetings in 144 countries.[7] NAWS does not report the estimated number of total NA members. The number of available NA meetings worldwide has more than doubled in the past 15 years.[8] A 2013 article commemorating NA's 60th anniversary documented the growth of NA by meeting growth and international dispersion. The graphs below update that data.[9]

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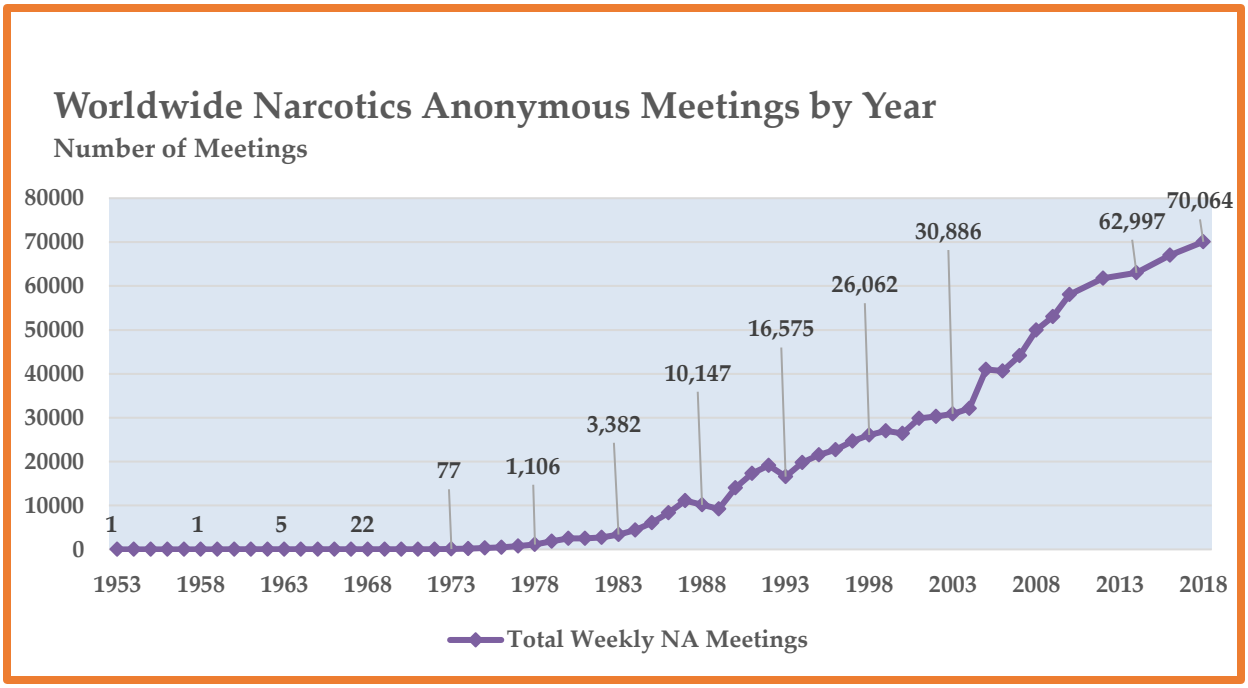
[5] Anonymous. (1951). Narcotics Anonymous. *American Journal of Public Health*, 41, p. 254; Fraser, H. F., & Grider, J. A. (1953). Treatment of drug addiction. *American Journal of Medicine*, May, 571-577; Winick, C. (1957). Narcotics addiction and its treatment. *Law and Contemporary Problems*, 22(1), 9-33; Rasor, B. (1965). The institutional treatment of the narcotic addict. *Journal of the Mississippi State Medical Association*, 6, 11-14.

[6] Hawkins, D. J. (1980). Some suggestions for "Self-Help" approaches with street drug abusers. *Journal of Psychedelic Drugs*, 12(2), 131-137; Narcotics Anonymous. (1985). *Journal of the American Medical Association*, 254(21), 3037; Peyrot, M. (1985). Narcotics Anonymous: Its history, structure, and approach. *International Journal of the Addictions*, 20(10), 1509-1522. Wells, B. (1987). Narcotics Anonymous (NA): The phenomenal growth of an important resource. *British Journal of Addiction*, 82(6), 581-582. Nichols, H. (1988). Narcotics Anonymous. Journal of Substance Abuse Treatment, 5(3), 195-196; Nurco, D. (1981). The self-help movement and narcotics addicts; American Journal of Drug and Alcohol Abuse, 8(2), 139-151; McCown, W. (1989). The relationship between impulsivity, empathy and involvement in Twelve Step self-help substance abuse treatment groups. British Journal of Addiction, 84, 391-393.

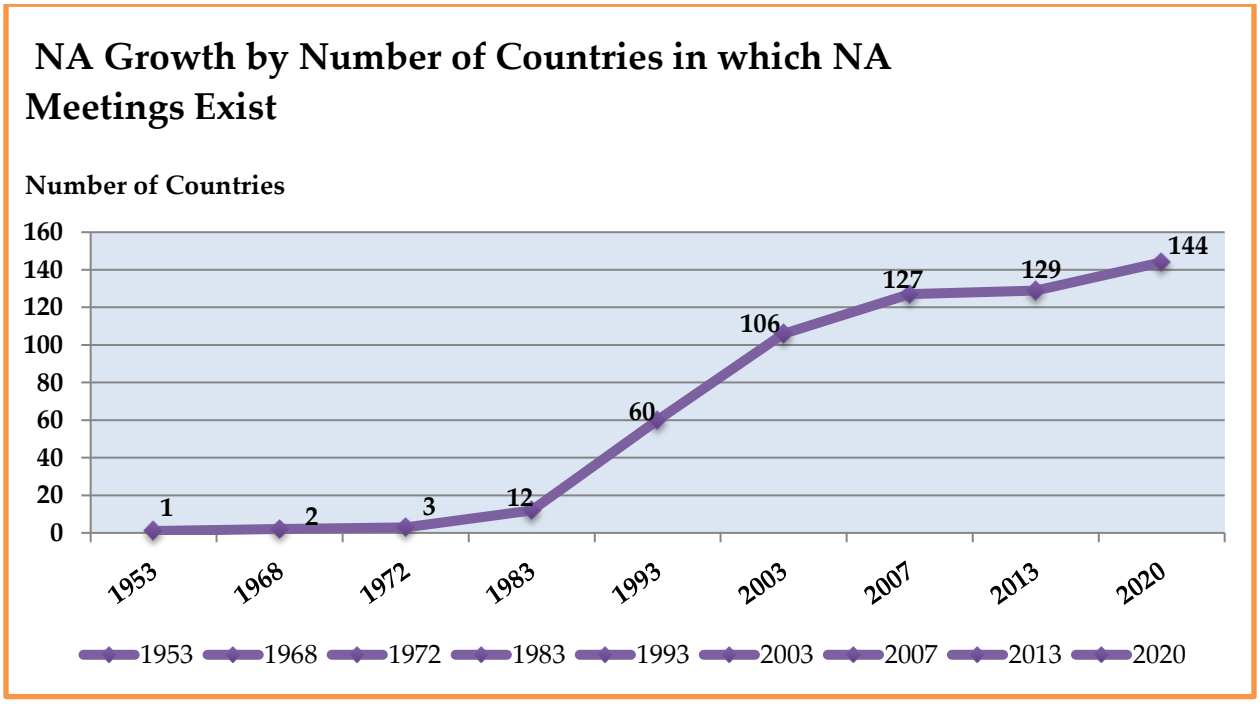
[7] Narcotics Anonymous World Services, Inc. Public Relations Office, Personal Communication, January 31, 2020.

[8] White, W., Budnick, C., & Pickard, B. (2013). Narcotics Anonymous comes of age: A 60th anniversary professional tribute. *Counselor*, 14(5), 54-57.

[9] Ibid.



Sources: NAWS, Inc. (Growth of NA Video and personal communications with NAWS; updated with assistance of Chris Budnick)



Sources: White, Budnick, & Pickard, 2011; personal communications with NAWS; updated with assistance of Chris Budnick)

Only limited population-based data are available on NA utilization in the U.S. and worldwide. A 1993 U.S. population survey concluded that 12-step programs were the most widely diffused and utilized form of group help in the U.S., but did not report data specific to NA.[10] A 2007 survey of U.S. adults with past year SUDs found that 2% of those diagnosed with a "drug abuse" disorder sought help from a 12-Step program, as did 18.8% of those with a diagnosis of "drug dependence," however, NA help seeking was not specifically reported.[11] A subsequent survey reported that 6.4% of the adult population had attended self-help meetings for a substance use problem (with again no breakdown by particular mutual aid fellowship).[12] A 2004 policy paper on recovery mutual aid groups in the U.S. estimated NA membership at 185,000 members.[13] In 2010, SAMHSA reported that 2.3 million American adults had sought help for a substance use problem through a mutual aid group such as AA or NA during the previous 12 months, but did not provide NA-specific data.[14]

The most recent source on NA participation in the U.S. population is a 2017 alcohol and other drug resolution study conducted by Kelly and colleagues. In this survey of 39,809 U.S. adults (63.4% response rate), 9.1% of the U.S. population (an estimated 22.35 million adults) reported having resolved an alcohol or other drug problem in their lifetime. Of this population, 53.9% had sought some form of help with problem resolution and among the 45.1% of help-seeking group who cited mutual aid involvement, 17.5% (or an estimated 2,108,163 U.S. adults) reported using NA as a recovery support during their lifetime.[15] In this sample of U.S. adults who had resolved an AOD problem, 2.88% reported attending NA meetings in the 90 days prior to the survey, which would produce an estimate of 643,680 U.S. adults reporting recent use of the NA program as an aid to recovery. These estimates do not include adolescent NA members or incarcerated persons participating in institutional NA meetings.

In summary, NA has experienced substantial worldwide growth and adaptation across diverse cultural, political, and religious contexts.[16] NA meeting growth in the U.S.

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[10] Room, R., & Greenfield, T. (1993). Alcoholics anonymous, other 12-step movements and psychotherapy in the US population, 1990. *Addiction*, 88(4), 555-562.

[11] Compton, W. M., Thomas, Y. F., Stinson, F. S., & Grant, B. F. (2007). Prevalence, correlates, disability and comorbidity of DSM-IV drug abuse and dependence in the United States: Results from the National Epidemiologic Survey on Alcohol and related conditions. *Archives of General Psychiatry*, 64(5), 566-576.

[12] Kessler, R. C., Mickelson, K. D., & Zhao, S. (1997). Patterns and correlates of self-help group membership in the United States. *Social Policy*, *27*(3), 27-45.

[13] Humphreys, K., Wing, S., McCarty, D., Chappel, J., Galant, L., Haberle, B.,…Weiss, R. (2004). Self-help organizations for alcohol and drug problems: Toward evidence-based practice and policy. *Journal of Substance Abuse Treatment*, *26*(3), 151-158.

[14] SAMHSA (2010) *Substance Abuse and Mental Health Services Administration. Results from the 2009 National Survey on Drug Use and Health: Volume 1. Summary of national findings (NSDUH Series H-38A, HHS Publication No. SMA 10-4856)*. Rockville, MD: Office of Applied Statistics.

[15] Kelly, J. F., Bergman, B., Hoeppner, B., & White, W. L. (2017). Prevalence, pathways, and predictors of recovery from drug and alcohol problems in the United States Population: Implications for practice, research, and policy. *Drug and Alcohol Dependence*, 181, 162-169.

[16] Ronel, N. (1997). The universality of a self-help program of American origin: Narcotics Anonymous in Israel. *Social Work Health Care*, 25(3), 87-101; 70. Galanter, M., White, W., & Hunter, B. (2019). Cross-cultural acceptability of the Twelve Step model: A comparison of Narcotics Anonymous in the USA and Iran. *Journal of Addiction Medicine*. Apr 1. doi: 10.1097/ADM.0000000000000526' Flora, K., Raftopoulos, A., & Pontikes, T. K.

and growing varieties of NA meeting formats position NA as an increasingly important recovery management resource.

Who participates in NA?

NA World Services (NAWS) has conducted a periodic NA membership survey since 1996. In 2018, 28,495 members responded to the survey at the 2018 World Convention of NA, online, or by mail. Data from the 2018 survey portrays NA membership as relatively balanced by age (under 21-1%, 21-30-14%, 31-40-25%, 41-50-20%, 51-60-25%, over 60-15%) and gender (41% female) and ethnically diverse (30% non-Caucasian). Members averaged attending 2.19 meetings per week. Only 7% of members were unemployed at the time of the survey.[17] It is noteworthy that 12-Step membership surveys capture only a portion of people who report participation in 12-Step groups in general population surveys. NA membership survey numbers are thus not an estimate of current NA membership, and NA survey results may or may not reflect the characteristics of total NA membership. These fellowship surveys do constitute the largest direct sampling of NA member characteristics.

The 2018 NAWS membership survey results are comparable to those reported in an earlier independent survey of 396 NA members in 10 NA group meetings in U.S. states. In that survey, 71.5% of respondents were male; the mean age was 38.1 years; 31.8% were non-white, and 87% reported prior SUD treatment.[18]

In a 2009 review of the membership profile of seven recovery mutual aid societies (AA, NA, Cocaine Anonymous, Secular Organizations for Sobriety, Women for Sobriety, LifeRing Secular Recovery, and Moderation Management), NA ranked first or second in representation of women, people of color, and youth.[19] Available NA studies outside the U.S confirm age and gender diversity within NA membership.[20]

Given the opportunistic sampling involved in these formal studies and NA's own survey results, it is currently unclear how well such results represent typical NA participants across the whole organization. Those surveyed while attending an NA World Convention, for example, might be the most motivated, committed, and more stable NA participants, introducing a bias in such membership profile estimates. Additional population-based studies of NA participants are needed to provide a more complete profile of NA membership. Available data do suggest that NA is reaching and retaining a very diverse membership of people who find NA a useful program of long-term recovery support.

(2010). Current status of Narcotics Anonymous and Alcoholics Anonymous in Greece: Factors influencing member enrollment. *Journal of Groups in Addiction & Recovery*, 5(3-4), 226-239.

[17] NA World Services (2018). 2018 Membership Survey. Accessed February 1, 2020 at https://www.na.org/admin/include/spaw2/uploads/pdf/conference/project/2301_MS_2018_Nov19.pdf

[18] Galanter, M., Dermatis, H., Post, S., & Santucci, C. (2013). Abstinence from drugs of abuse in community-based members of Narcotics Anonymous. *Journal of Studies on Alcohol and Drugs*, 74(1), 1-4.

[19] White, W. (2009). *Peer-based Addiction Recovery Support: History, Theory, Practice, and Scientific Evaluation*. Chicago, IL Great Lakes: Addiction Technology Transfer Center and Philadelphia Department of Behavioral Health and Mental Retardation Services.

[20] Antonis, R., & Katerina, F. (2005). An initial imprinting of the self-help groups of Narcotics Anonymous and Alcoholics Anonymous in Greece: The demographic facts. *International Journal of Self Help and Self Care*, 3(3/4), 193-212.

How common is 12-Step co-attendance?

Only limited data are available on co-attendance across 12-Step groups. In the 2018 NA membership survey, 32% of members reported also attending meetings of another 12-Step fellowship.[21] In a 2005 study of AA members, Tonigan and Toscova found that 29% of those surveyed attended at least one non-AA 12-Step meeting in the prior 90 days.[22] Gossop and colleagues, in a 2008 study of 142 people admitted for treatment of drug dependency in the UK, found that 13% of those assessed at one-year follow-up were attending both NA and AA.[23]

People seeking help for significant substance-related problems often use multiple sources of help either concurrently or sequentially. Such service combinations and sequences make isolating the long-term effects of one intervention within this mix a significant methodological challenge. Further research studies are needed to determine the effects of co-attending two or more recovery mutual aid groups, including co-attendance of 12-Step groups and secular and religious recovery mutual aid organizations. Theoretically, co-attendance versus single group participation could produce no measurable differences in outcomes, additive effects (better outcomes than participating in either group alone), antagonistic effects (worse outcomes than participating in either group alone), or synergistic effects (dramatically enhanced effects beyond what could be expected from known effects of participating in each group).

How do people get to NA?

The 2018 NA membership survey reported the following primary influences on first NA meeting attendance (with more than one influence reported): NA member (49%), treatment or counseling facility (45%), family (32%), NA service effort (14%), NA literature (13%), AA member or group (10%), and other (13%).[24] Table 2 summarizes research studies of factors related to attraction to NA and 12-Step programs.

Table 2: Research Studies on NA Attraction Factors
Janowsky and colleagues in a follow-up study of patients admitted for SUD detoxification found post-detoxification mutual aid participation associated with key personality factors: persistence, comfort with strangers, low shyness, and lower fear of uncertainty, which in turn predicted higher rates of abstinence.[25]

[21] NA World Services (2018). 2018 Membership Survey. Accessed February 1, 2020 at https://www.na.org/admin/include/spaw2/uploads/pdf/conference/project/2301_MS_2018_Nov19.pdf

[22] Tonigan, J. S., & Toscova, R. (2005). 12-step migration: A comparison of member characteristics and practices. *Alcoholism: Clinical and Experimental Research*, 29(5, Supplement), 385.

[23] Gossop, M., Stewart, D., & Marsden, J. (2008). Attendance at Narcotics Anonymous and Alcoholics Anonymous meetings, frequency of attendance and substance use outcomes after residential treatment for drug dependence: A 5-year follow-up study. *Addiction*, 103(1), 119-125

[24] NA World Services (2018). 2018 Membership Survey. Accessed February 1, 2020 at https://www.na.org/admin/include/spaw2/uploads/pdf/conference/project/2301_MS_2018_Nov19.pdf

[25] Janowsky, D. S., Boone, A., Morter, S., & Howe, L. (1999). Personality and alcohol/substance-use disorder patient relapse and attendance at self-help group meetings. *Alcohol and Alcoholism*, 34(3), 359-69.

Table 2: Research Studies on NA Attraction Factors
Weiss and colleagues identified the following factors related to 12-Step attendance in a sample of patients in treatment for cocaine dependency: unemployment, absence of religious preference, high SUD problem severity, and prior treatment for SUD-related problems.[26] Mankowski and colleagues surveyed 3,018 patients admitted for SUD treatment at intake and one-year follow-up. The majority of discharged patients participated in NA or AA meetings and related 12-Step activities. Retention at one year in NA/AA was associated with pre-treatment 12-Step involvement, religious beliefs and behavior, belief in addiction as a disease, and belief in the necessity for abstinence.[27] Best and colleagues surveyed 12-Step attitudes of 200 patients undergoing inpatient detoxification. Compared to alcohol users, users of other drugs expressed more positive attitudes toward and desire to participate in 12-Step programs.[28] Brown and colleagues, in a study of attraction and levels of participation within AA and NA, concluded that "12-Step groups are more likely to be selected by clients with more severe histories of drug use and criminal activity, i.e., those most in need of the support to behavior change those groups provide."[29] Tuten and colleagues surveyed 102 patients undergoing drug detoxification in Baltimore regarding their continuing care preferences. NA was the third most expected and desired aftercare resource among those being detoxified, suggesting a relatively positive view of NA among active drug users.[30] Atkins and Hawdon surveyed 924 self-identified people in recovery. "Religious respondents were more likely to participate in 12-step groups [AA and NA] and Women for Sobriety. Nonreligious respondents were significantly less likely to participate in 12-step groups."[31] Davey-Rothwell and colleagues surveyed 931 members of an HIV prevention network regarding recovery mutual aid participation. "Participants who reported that most or all of their drug partners attended 12-step groups were over ten times more

[26] Weiss, R. D., Griffin, M. L., Gallop, R., Luborsky, L., Siqueland, L., Frank, A., Onken, L. S., Daley, D. C., & Gastfriend, D. R. (2000). Predictors of self-help group attendance in cocaine dependent patients. *Journal of Studies on Alcohol*, 61(5), 714-719.

[27] Mankowski, E. S., Humphreys, K., & Moos, R. H. (2001). Individual and contextual predictors of involvement in twelve-step self-help groups after substance abuse treatment. *American Journal of Community Psychology*, 29(4), 537-563.

[28] Best, D. W., Harris, J. C., Gossop, M., Manning, V. C., Man, L. H., Marshall, J., & Strang, J. (2001). Are the Twelve Steps more acceptable to drug users than to drinkers? A comparison of experiences of and attitudes to Alcoholics Anonymous (AA) and Narcotics Anonymous (NA) among 200 substance misusers attending inpatient detoxification. *European Addiction Research*, 7(2), 69-77.

[29] Brown, B. S., O'Grady, K. E., Farrell, E., Flechner, I. S., & Nurco, D. N. (2001). Factors associated with the frequency of 12-Step attendance by drug abuse clients. *American Journal of Drug and Alcohol Abuse*, 27(1), 147-160.

[30] Tuten, M., Jones, H. E., Lertch, E. W., & M. L. Stitzer (2007). Aftercare plans of inpatients undergoing detoxification. *The American Journal of Drug and Alcohol Abuse*, 33, 547–555.

[31] Atkins, Jr., R. G., & Hawdon, J. E. (2007). Religiosity and participation in mutual-aid support groups for addiction. *Journal of Substance Abuse Treatment*, 33(3), 321-331.

Table 2: Research Studies on NA Attraction Factors

likely to be frequent attenders compared to individuals who did not go to Narcotics Anonymous (NA)."[32]

Manning and colleagues investigated 12-Step participation among 151 patients in SUD treatment. "Attendance at 12-Step SHGs is associated with greater rates of abstinence, and active referral, especially by 12-Step peers, increases 12-Step SHG attendance rates."[33]

Hatch-Maillette and colleagues conducted a follow-up study of 471 patients admitted to 12-Step Facilitation treatment for cocaine or methamphetamine use disorders. "Drug of choice was associated with differential days of Alcoholics Anonymous (AA) and Narcotics Anonymous (NA) attendance among those who reported attending, and cocaine users reported more days of attending AA or NA at 1-, 3-, and 6-month follow-ups than did methamphetamine users. Pre-randomization measures of perceived benefit of 12-step groups predicted 12-step attendance at 3- and 6-month follow-ups."[34]

Hay and colleagues surveyed 235 non-medical opioid users regarding their perceptions of helping resources. Respondents noted that their first avenues of help would be, in order of preference, a physician, one-on-one counseling, or a 12-Step group.[35]

In summary, active drug users have a generally positive view of NA and seek help through NA through a variety of influences, including contact with an NA member, referral by a treatment agency, or encouragement from family members. Attraction or aversion to NA depend upon such factors as personality, problem severity, degree of religious orientation, and social network norms.

People with substance use disorders often combine alcohol and other drugs across the trajectory of their addiction career, which may provide expanded choices in their subsequent selection of a recovery mutual aid resource. Kelly and colleagues conducted a one-year follow-up study of young adults in SUD treatment to evaluate the potential match/mismatch between an individual's primary substance, their participation in AA or NA, and any related differences in recovery outcomes. In this treatment sample of 279 young adults, those with a primary drug of opiates, cannabis, or stimulants attended more NA than AA meetings, but attended more AA meetings in their critical first three months of recovery. The study authors noted, "While this [early AA participation] presented a conceivable mismatch between their primary substance and AA's alcohol-specific recovery emphasis, the mismatch was not associated with

[32] Davey-Rothwell, M.A., Kuramoto, J., & Latkin, C. A. (2008) Social networks, norms, and 12-Step group participation. *The American Journal of Drug and Alcohol Abuse*, 34: 185–193.

[33] Manning, V., Best, D., Faulkner, N., Titherington, E., Morinan, A., Keaney, F., ... , & Strang, J. (2012). Does active referral by a doctor or 12-Step peer improve 12-Step meeting attendance? Results from a pilot randomised control trial. *Drug and Alcohol Dependence*, 126(1), 131-137.

[34] Hatch-Maillette, M., Wells, E. A., Doyle, S. R., Brigham, G. S., Daley, D., DiCenzo, J., . . . Perl, H. I. (2016). Predictors of 12-step attendance and participation for individuals with stimulant use disorders. *Journal of Substance Abuse Treatment*, 68, 74–82. doi:10.1016/j.jsat.2016.06.007

[35] Hay, K. R., Huhn, A. S., Tompkins, A., & Dunn, K. E. (2019). Recovery goals and long-term treatment preference in persons who engage in nonmedical opioid use. *Journal of Addiction Medicine*, 13(4), 300-305.

subsequently lower rates of 12-Step attendance or involvement nor derived recovery benefit in terms of abstinence."[36] This finding may be particularly relevant for individuals with opioid, stimulant, or cannabis use disorders living in communities where AA is ubiquitous but NA meetings are absent or limited.

What are the major obstacles to NA participation?

A number of studies have examine obstacles to initial NA (or more frequently the broader category of 12-Step) participation and retention. Obstacles to attraction and retention within include the following:

- NA's expectation of alcohol abstinence[37]
- low or no religious orientation[38] and objections to perceived religious nature of NA's program of recovery[39] (although other studies with large samples conclude that religious and nonreligious persons exhibit similar rates of NA attraction and retention)[40]
- concepts of powerlessness, surrender, and higher power[41]
- social anxiety[42], and
- NA's perceived opposition to the use of maintenance medications as a support for recovery from opioid use disorders (and restrictions in some NA groups on

[36] Kelly, J. F., Greene, M. C., & Bergman, B. C. (2014). Do drug-dependent patients attending Alcoholics Anonymous rather than Narcotics Anonymous do as well? A prospective, lagged, matching analysis. *Alcohol and Alcoholism*, 49(6), 645-653.

[37] Christo, G., & Franey, C. (1995). Drug users' spiritual beliefs, locus of control and the disease concept in relation to Narcotics Anonymous attendance and six-month outcomes. *Drug and Alcohol Dependence*, 38(1), 51-56.

[38] Kelly, J. F., Pagano, M. E., Stout, R. L., & Johnson, S. M. (2011). Influence of religiosity on 12-Step participation and treatment response among substance-dependent adolescents. *Journal of Studies on Alcohol and Drugs*, 72, 1000-1011; Gaston, R. S., Best, D., Day, E., & White, W. (2010). Perceptions of 12-Step interventions among UK substance-misuse patients attending residential inpatient treatment in a UK treatment setting. *Journal of Groups in Addiction & Recovery*, 5, 306–323.

[39] Day, E., Wall, R., Chohan, G. & Seddon, J. (2015) Perceptions of professional drug treatment staff in England about client barriers to Narcotics Anonymous attendance, Addiction Research & Theory, 23, 3, 223-230; Vederhus, J. K., Laudet, A., Kristensen, O., & Clausen, T. (2010). Obstacles to 12-step group participation as seen by addiction professionals: Comparing Norway to the United States. *Journal of Substance Abuse Treatment*, 39(3), 210-217.

[40] Winzelberg, A., & Humphreys, K. (1999). Should patients' religiosity influence clinicians' referral to 12-Step self-help groups? Evidence from a study of 3,018 male substance abuse patients. *Journal of Consulting & Clinical Psychology*, 67(5), 790-794.

[41] Ibid; Smith, D. E., Buxton, M. E., Bilal, R., & Seymour R. B. (1993). Cultural points of resistance to the 12-Step recovery process. *Journal of Psychoactive Drugs*, 25(1), 97-108; Matheson, J. L., & McCollum, E. E. (2008). Using metaphors to explore the experiences of powerlessness among women in 12-Step recovery. *Substance Use & Misuse*, 43:1027–1044; Kingston, S., Knight, E., Williams, J., & Gordon, H. (2015). How do young adults view 12-Step programs? A qualitative study. *Journal of Addictive Diseases*, 34(4), 311-322.

[42] Book, S. W., Thomas, S. E., Dempsey, J. P., & Randall, P. K. (2009). Social anxiety impacts willingness to participate in addiction treatment. *Addictive Behaviors*, 34, 474-476.

levels of participation for members using methadone, buprenorphine, or naltrexone as a recovery support)[43]

Studies of the role of spiritual beliefs as a potential barrier to NA participation have resulted in mixed findings, with some finding that spiritual beliefs are unrelated to NA attendance[44] and others noting that spiritual dimensions dissuade participation. Professionals are less likely to refer individuals with lower religious orientation to 12-Step groups, but positive substance use outcomes of 12-Step participation are not dependent upon religious orientation.[45]

In some countries, the proportion of 12-Step exposure prior to people seeking professional treatment remains relatively low. Day and colleagues, in a study of 200 consecutive admission to an addiction treatment unit in the UK, found that: "A minority of the sample had ever attended an AA meeting (31%) or an NA meeting (41%) [in their lifetime], and only 14% and 24% had attended an AA or NA meeting respectively in the past year."[46]

The existence of barriers to NA and other recovery mutual aid group participation suggests the need for clinicians to assess an individual's past experiences with such groups, evaluate present beliefs and feelings about mutual aid participation, explore potential recovery support options, provide orientation related to group principles and practices, and monitor individual responses to mutual aid participation. In reviewing the larger body of research on professional referral to recovery mutual aid groups, the authors are struck by three key findings:

1) There appears to be a direct relationship between clinician attitudes toward recovery support groups and participation rates, with successful referral rates declining as the clinician's attitudinal ambivalence or negativity towards such groups rises.[47]
2) The use of assertive rather than passive referral procedures dramatically increases successful linkage to recovery mutual aid groups.[48]
3) Linking people to recovery mutual aid groups during treatment produces far greater levels of affiliation and participation than referring to such groups as a post-treatment continuing care activity.[49]

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[43] White, W. (2011). *Narcotics Anonymous and the pharmacotherapeutic treatment of opioid addicti*on. Chicago, IL: Great Lakes Addiction Technology Transfer Center and Philadelphia Department of Behavioral Health and Intellectual disability Services.

[44] Christo, G. (1999). Narcotics Anonymous as aftercare. Executive Summary No. 62. London: The Centre for Research on Drugs and Health Behaviour.

[45] Winzelberg, A., & Humphreys, K. (1999). Should patients' religiosity influence clinicians' referral to 12-Step self-help groups? Evidence from a study of 3,018 male substance abuse patients. *Journal of Consulting & Clinical Psychology*, 67(5), 790-794.

[46] Day, E. Kirberg, S., & Metrebian, N. (2019). Affiliation to alcoholics anonymous or narcotics anonymous among patients attending an English specialist addiction service. *Drugs and Alcohol Today*, 19(4), 257-269.

[47] Laudet, A., & White, W. (2005). An exploratory investigation of the association between clinicians' attitudes toward twelve-step groups and referral rates. Alcoholism Treatment Quarterly, 23(1), 31-45.

[48] Timko, C., DeBenedetti, A., & Billow, R. (2006). Intensive referral to 12-Step self-help groups and 6-month substance use disorder outcomes. *Addiction*, 101, 678-688.

[49] Moos R. H., & Moos B. S. (2004). Help-seeking careers: Connections between participation in professional treatment and Alcoholics Anonymous. *Journal of Substance Abuse Treatment*, 26, 167-173; Moos, R. H., & Moos, B.

What is the retention/dropout rate within NA?

Only a limited number of studies have examined the issue of retention within NA. Table 3 summarizes published studies on NA or NA-inclusive 12-Step retention/dropout.

Table 3: Studies of NA Retention/Dropout Rates

Fiorentine and Hillhouse studied the relationship between acceptance of 12-step ideology and sustained participation in 12-Step meetings. They found that "…acceptance of Twelve-Step ideology, particularly strong agreement with the need for frequent, lifelong attendance at Twelve-Step meetings, and the need to surrender to a "higher power" are significant predictors of weekly or more frequent attendance at Twelve-Step meetings independent from other potentially mediating variables."[50]

In a study of 3,018 patients one year after discharge from SUD treatment, Mankowski and co-investigators found that 1-year retention in 12-Step groups was linked to more pre-treatment 12-step group involvement, religious beliefs and behavior, belief in the disease model of addiction, and abstinence as a goal for treatment.[51]

Toumbourou and colleagues followed 91 NA members in Australia from their first contact with NA and at 3-month intervals for a year. Fifty-eight percent of those followed maintained at least weekly NA meeting attendance for one year.[52]

Kelly and Moos conducted a study of 12-Step retention and dropout of 2,518 male SUD patients who had attended 12-step groups in the 90 days prior to or during treatment. The dropout rate at 1-year follow-up was 40%. The odds of substance use and related problems were three times greater for those who had dropped out compared to those who attended 12-Step meeting to the one-year follow-up.[53]

Cloud and colleagues, in a qualitative study of 12-Step (NA and AA) affiliation and retention, found three dimensions of ambivalence critical to retention: 1) resolving any incongruence between personal beliefs and 12-Step beliefs, values, and practices, 2) adjusting to the 12-Step social environment, e.g., finding person-meeting fit, and 3) mastering the time and logistical demands of meeting attendance.[54]

Kelly and colleagues reviewed the 12-Step participation rate over 8 years of patients who had undergone inpatient adolescent SUD treatment. AA and NA

S. (2006). Participation in treatment and Alcoholics Anonymous: A 16-year follow-up of initially untreated individuals. *Journal of Clinical Psychology*, 62(6), 735-750.

[50] Fiorentine, R., & Hillhouse, M. P. (2000). Exploring the additive effects of drug misuse treatment and Twelve-Step involvement: Does Twelve-Step ideology matter? *Substance Use & Misuse*, 35(3), 367-397.

[51] Mankowski, E. S., Humphreys, K., & Moos, R. H. (2001). Individual and contextual predictors of involvement in twelve-step self-help groups after substance abuse treatment. *American Journal of Community Psychology*, 29(4), 537-563.

[52] Toumbourou, J. W., Hamilton, M., U'Ren, A., Stevens-Jones, P., & Storey, G. (2002). Narcotics Anonymous participation and changes in substance use and social support. *Journal of Substance Abuse Treatment*, 23(1), 61-66.)

[53] Kelly, J. F., & Moos, R. (2003). Dropout from 12-step self-help groups: Prevalence, predictors, and counteracting treatment influences*. Journal of Substance Abuse Treatment*, 24(3), 241-250.

[54] Cloud. R. N., Rowan, N., Wulff, D., & Golder, S. (2008) Posttreatment 12-Step program affiliation and dropout: Theoretical model and qualitative exploration, *Journal of Social Work Practice in the Addictions*, 7(4), 49-74.

Table 3: Studies of NA Retention/Dropout Rates
participation was common in months following discharge but declined sharply and steadily over 8 years. Patients with more severe SUDs were more likely to sustain participation. The most common reason reported for discontinuation was lack of a perceived fit between the adolescent and AA/NA.[55] Khodabandeh and co-investigators compared participation rates in a sample of NA members and a sample of methadone maintenance treatment (MMT) patients over two years in Iran. The two-year retention rate for NA was 84% compared to a 74% retention rate in MMT.[56] Unique aspects of NA practices In the Islamic Republic of Iran could have led to the high NA retention rate noted in this study.[57] Kendra and colleagues, in a follow-up study of 345 patients entering a VA SUD treatment program, found that satisfaction with 12-Step participation at 6-months predicted higher rates of 1-year 12-Step participation, lower medical and psychiatric severity, and higher rates of abstinence.[58]

Data are not yet available comparing the characteristics of NA dropouts with those who maintain prolonged participation in NA, nor are data available for the variability of patterns of NA engagement and disengagement over time. The latter is important as some people experience such cycles (partial recovery) before experiencing prolonged NA participation and recovery stability. Some NA members may also disengage from active NA participation while migrating to other recovery fellowships or sustaining recovery via other mechanisms of support (disengaged style of recovery).[59]

Dropout rates from NA are comparable to those in AA (approximately 40% at one-year follow-up)[60] and are lower than dropout rates of other interventions into alcohol and other drug problems as well as rates of adherence to prescribed management of other chronic health conditions. In general, attrition in SUD and health care interventions increases with duration of the intervention, with NA dropout rates usually calculated at one year or longer. In the case of addiction treatment in the United States, which usually transpires over 30-90 days, only 43.4% of admitted patients successfully complete

[55] Kelly, J. F., Brown, S. A., Abrantes, A., Kahler, C. W., & Myers, M. (2008). Social recovery model: An 8-year investigation of adolescent 12-step group involvement following inpatient treatment. *Alcoholism: Clinical and Experimental Research*, 32(8), 1468-1478; Kelly, J. F.; Myers, M. G., & Rodolico, J. (2008). What do adolescents exposed to Alcoholics Anonymous think about 12-step groups? *Substance Abuse*, 29(2), 53-62.

[56] Khodabandeh, F., Kahani, S., Shadnia, S., & Abdollahi, M. (2012). Comparison of the Efficacy of methadone maintenance Therapy vs. Narcotics Anonymous in the treatment of opioid addiction: A 2-Year Survey. *International Journal of Pharmacology*, 8(5), 1811-7775.

[57] Galanter, M., White, W., & Hunter, B. (2019). Cross-cultural acceptability of the Twelve Step model: A comparison of Narcotics Anonymous in the USA and Iran. *Journal of Addiction Medicine*. Apr 1. doi: 10.1097/ADM.0000000000000526. [Epub ahead of print]

[58] Kendra, M. S., Weingardt, K. R., Cucciare, M. A., & Timko, C. (2015). Satisfaction with substance use treatment and 12-step groups predicts outcomes. *Addictive Behaviors*, 40, 27-32.

[59] White, W., & Kurtz, E. (2006). The varieties of recovery experience. *International Journal of Self Help and Self Care*, 3(1-2), 21-61.

[60] Kelly, J. F., & Moos, R. (2003). Dropout from 12-step self-help groups: Prevalence, predictors, and counteracting treatment influences. Journal of Substance Abuse Treatment, 24(3), 241-250; Tonigan, J. S., Connors, G. J., & Miller, W. R. (2003). *Participation and involvement in Alcoholics Anonymous. In T.F. Babor & F.K. DelBoca(Eds.), Treatment* matching in alcoholism (pp. 184-204). New York: Cambridge University Press.

treatment. Thirty-four percent of patients admitted to addiction treatment in 2015 either dropped out prior to treatment completion or were administratively discharged by the facility prior to treatment completion. Only 5.2% of admitted patients remain involved in addiction treatment for more than one year,[61] and the majority of patients completing a primary course of addiction treatment do not participate in sustained continuing care activities delivered by addiction professionals.[62]

The retention rate within NA is also superior to rates of adherence to prescribed care for other medical conditions marked by severity, complexity, and chronicity, e.g., the less than 30% adherence rates to diet and behavioral changes prescribed for adult onset asthma, diabetes, and hypertension.[63]

In summary, dropout rates following initial NA contact are similar to those experienced in other recovery mutual aid contexts and are superior to completion rates in addiction treatment and post-treatment continuing care programs as well as rates of sustained participation in recovery management of other chronic health disorders. In terms of practice implications, we would suggest two key implications. First, existing dropout rates call for professional encouragement of sustained mutual aid involvement, close monitoring of responses to mutual aid participation, and re-linkage or exploration of recovery mutual aid group alternatives when needed. Second, disengagement from mutual aid participation increases risk of addiction recurrence in the absence of alternative recovery support resources suggesting the need for close clinical monitoring and heightened levels of clinical contact. Further studies are needed on the trajectory of outcomes following disengagement from active participation in NA and other recovery mutual aid groups.

What are the effects of NA participation on drug use and remission / recovery from substance use disorders?

Studies of the effects of addiction-related helping interventions are generally measured by: 1) changes in the frequency, intensity, and consequences of drug use, 2) SUD remission (abstinence or deceleration of drug use to a level no longer meeting SUD diagnostic criteria), or recovery (remission plus larger changes in global health and social functioning).

Seen as a whole, the effects of NA participation vary across individuals and across the same individuals at different points of their addiction and recovery careers. At any point in time, aggregate responses to NA could be divided into non-responders (no measurable effects of participation), partial responders (reduced frequency and intensity of AOD use and related problems without full SUD remission), remitted

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[61] Substance Abuse and Mental Health Services Administration, Treatment Episode Data Set (TEDS) Discharges, 2015. Rockville, MD: Substance Abuse and Mental Health Services Administration, 2018. Accessed February 13, 2020 at https://wwwdasis.samhsa.gov/dasis2/teds_pubs/TEDS/Discharges/TED_D_2015/teds_d_2015_codebook.pdf

[62] McKay, J. R. (2009). Continuing care research: What we've learned and where we're going. *Journal of Substance Abuse Treatment*, 36(2), 131-145.

[63] McLellan, A. T., Lewis, D. C., O'Brien, C. P, & Kleber, H. D. (2000). Drug dependence, a chronic medical illness: Implications for treatment, insurance, and outcomes evaluation. *Journal of the American Medical Association*, 284(13), 1689-1695.

responders (full SUD remission), and exemplary responders (full SUD remission/recovery accompanied by dramatic improvements in global health, social functioning, and civic contribution. Studies to date have not clearly assessed these multiple levels of outcome, but there are studies of NA that have assessed changes in substance use. We will summarize these results for NA-specific studies, 12-Step group studies that included NA participants including studies of 12-Step facilitation that included NA linkage, and systematic NA and 12-Step research reviews.

NA-Specific Studies

Of the 69 NA-specific studies published in peer-reviewed journals identified through the literature search, 13 evaluated the specific effects of NA participation on drug use or SUD remission. All 13 papers reported that NA participation was associated with decreased drug use and increased rates of abstinence. The more methodologically rigorous of these studies include the following. Christo, in a six-month follow-up of 101 patients admitted to abstinence-based SUD treatment, concluded that "NA self-help groups offer free post-treatment psychological support and NA attendance is associated with less drug use after leaving a protective treatment setting."[64] Crossen-White and Gavin, in a follow-up study of 21 drug offenders referred to various recovery support resources, concluded that "Those who had remained clean [drug abstinent] throughout the period since their interview in 1998 had used NA extensively and consistently."[65] Toumbourou and colleagues conducted baseline and one-year follow-up interviews with 981 NA members in Australia and concluded: "The findings demonstrated an association between self-help participation and both reductions in substance use problems and also improvement in social support."[66] Toumbouro and Hamilton in a more detailed analysis of this data concluded: "this level of self-help attendance [at least weekly NA meeting attendance] demonstrated a number of advantages including a four-fold reduction in alcohol and drug use and improvements in social support."[67] Tajjalli and Kheiri, comparing 30 NA members and 30 actively addicted individuals in Iran, found that NA participation decreased stress and depression, increased abstinence motivation, and decreased addiction recurrence.[68] Ghodrati and colleagues in a study comparing outcomes of 300 patients in Iran based on their participation or non-participation in NA following drug detoxification concluded that NA participation increased duration of SUD remission.[69] Shiraly and Taghva, in an Iranian study

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[64] Christo, G. (1998). Narcotics Anonymous as aftercare: The statistics. *Addiction Counseling World*, 9(51), 22-26.
[65] Crossen-White, H., & Galvin, K. (2002). A follow-up study of drug misusers who received an intervention from a local arrest referral scheme. *Health Policy*, 61, 153–171.
[66] Toumbourou, J. W., Hamilton, M., U'Ren, A., Stevens-Jones, P., & Storey, G. (2002). Narcotics Anonymous participation and changes in substance use and social support. *Journal of Substance Abuse Treatment*, 23(1), 61-66.
[67] Toumbourou, J. W., & Hamilton, M. (2003). The early impact of involvement in Narcotics Anonymous self-help groups. A report from the Role of Self-Help Groups in Drug Treatment Research Project. Turning Point Alcohol and Drug Centre.
[68] Tajalli, F. B., & Kheiri, L. (2010). Locus of control in substance related and NA. *Procedia-Social and Behavioral Sciences*, 5, 1414-1417.
[69] Ghodrati, T. A., Sahbaei, F., Nabavi, S. J., & Zare, M. (2013). Comparing continuity quit addiction time in participant persons and non participant persons in Narcotics Anonymous in City of Mashhad in 2012. *Medical Sciences Journal*, 23(3), 201-5.

comparing 367 chronic opioid users who achieved past-year remission with 187 active chronic opioid users, concluded: "sustained remission was associated with Narcotics Anonymous."[70]

12-Step Studies

Of the 158 published 12-Step evaluation papers identified in the present review that included NA members within their study samples, 31 evaluated the specific effects of 12-Step group participation on drug use or SUD remission. All 31 of these studies found positive effects of 12-Step participation on reductions in drug use and increased rates of abstinence at follow-up. Table 4 displays a representative sampling of the findings and conclusions (quoted from the study authors) from those studies with the largest number of research subjects and longest periods of follow-up.

Table 4: Study Findings on Effects of NA Participation on Rates of Abstinence and SUD remission
"Attendance at aftercare meetings and attendance at Alcoholics Anonymous or Narcotics Anonymous meetings were significantly related to post-treatment abstinence." (Follow-up study of 50 patients discharged from SUD treatment)[71]
"Patients who complete day hospital substance abuse rehabilitation and then continue to participate in self-help groups are likely to have lower rates of alcohol and cocaine use during follow-up. Furthermore, the beneficial effect of self-help group participation does not appear to be strictly the result of motivation or some other patient characteristic." (Follow-up study of 180 alcohol- or cocaine-dependent male patients treated in a VA SUD program)[72]
"Of self-help attenders who actively participated, 55% initiated abstinence within the next month, compared with 40% of non-attenders and 38% of non-participating attenders." (Follow-up study of 519 cocaine-dependent patients admitted to psychotherapy)[73]
"…the findings suggest that weekly or more frequent 12-step participation is associated with drug and alcohol abstinence. Less-than-weekly participation is not associated with favorable drug and alcohol use outcomes, and participation in 12-step programs seems to be equally useful in maintaining abstinence from

[70] Shiraly, R., & Taghva, M. (2018). Factors associated with sustained remission among chronic opioid users. *Addict Health*, 10(2), 86-94.

[71] Johnsen, E., & Herringer, L. G. (1993). A note on the utilization of common support activities and relapse following substance abuse treatment. *The Journal of Psychology*, 127(1), 73-78.

[72] McKay, J. R., Alterman, A. I., McLellan, A. T., & Snider, E. C. (1994). Treatment goals, continuity of care, and outcome in a day hospital substance abuse rehabilitation program. *American Journal of Psychiatry*, 151(2), 254-259.

[73] Weiss, R. D., Griffin, M. L., Najavits, L. M., Hufford, C., Kogan, J., Thompson, H. J., . . . Siqueland, L. (1996). Self-help activities in cocaine dependent patients entering treatment: results from NIDA collaborative cocaine treatment study. *Drug and Alcohol Dependence*, 43(1-2), 79-86.

Table 4: Study Findings on Effects of NA Participation on Rates of Abstinence and SUD remission
both illicit drug and alcohol use." (24-month follow-up study of 356 patients admitted to outpatient SUD treatment)[74] "The majority of participants became involved in self-help groups after inpatient treatment, and this involvement predicted reduced substance use at 1-year follow-up. Both enhanced friendship networks and increased active coping responses appeared to mediate these effects." (Study of the effects of self-help groups on 2,337 male veterans treated for SUD).[75] "The strong after-treatment self-help effect in the two residential and inpatient modalities suggests these programs can improve treatment outcomes by making referral to after-treatment self-help participation a standard practice and installing mechanisms to increase the likelihood of attendance at least twice weekly during the year after treatment." (One-year follow-up study of 927 patients treated for cocaine dependence)[76] "The duration of outpatient mental health care and the level of self-help involvement are independently associated with less substance use and more positive social functioning." (One-year follow-up study of 2,376 patients treated for a substance use disorder)[77] "Continuous SH [self-help] participation was associated with lowest AOD use at followup, while non-attendance was linked to highest use, even after controlling for length of formal treatment and participants' perceived severity of their AOD problem. Results suggest that both SH and formal substance abuse treatment are independently associated with reduced AOD use." (30-month follow-up study of adults admitted to SUD treatment)[78] "Results indicate that, in this community-based program, self-help affiliation increased as a function of exposure to 12-Step oriented treatment programming, and significantly predicted better outcome among patients with

[74] Fiorentine, R. (1999). After drug treatment: Are 12-step programs effective in maintaining abstinence? *American Journal of Drug and Alcohol Abuse*, 25(1), 93-116.

[75] Humphreys, K., Mankowski, E. S., Moos, R. H., & Finney, J. W. (1999). Do enhanced friendship networks and active coping mediate the effect of self-help groups on substance Abuse? *Annals of Behavioral Medicine*, 21(1), 54-60.

[76] Etheridge, R. M., Craddock, S. G., Hubbard, R. L., & Rounds-Bryant, J. L. (1999). The relationship of counseling and self-help participation to patient outcomes in DATOS. *Drug and Alcohol Dependence*, 57(2), 99-112.

[77] Moos, R., Schaefer, J., Andrassy, J. & Moos, B. (2001). Outpatient mental health care, self-help groups, and patients' one-year treatment outcomes. *Journal of Clinical Psychology*, 57(3), 273-287.

[78] Kissin, W., McLeod, C. & McKay, J. (2003). The longitudinal relationship between self-help group attendance and course of recovery. *Evaluation and Program Planning*, 26(3), 311-323.

Table 4: Study Findings on Effects of NA Participation on Rates of Abstinence and SUD remission
high levels of problem severity." ((6-month follow-up study of 252 patients admitted to outpatient SUD treatment)[79] "Twelve-step group attendance did not predict subsequent drug use. However, active 12-step participation in a given month predicted less cocaine use in the next month. Moreover, patients who increased their 12-step participation during the first 3 months of treatment had significantly less cocaine use and lower ASI [Addiction Severity Index] Drug Use Composite scores in the subsequent 3 months. Finally, Individual Drug Counseling, based on a 12-step model, and increasing levels of 12-step participation each offered discrete benefits." (Study of the effects of recovery mutual aid participation (AA, NA, CA) on the clinical outcomes of 487 cocaine-dependent outpatients)[80] "…the number of 12-step meetings attended and number of prescribed 12-step activities engaged in similarly predicted abstinence for alcoholics, drug addicts, and those dependent on both alcohol and drugs." (Study of abstinence predictors for 302 SUD patients followed up at 6 and 12 months)[81] "Patterns of change in proximal outcomes were similar across the two program types. After discharge, attendance at 12-step groups, but not outpatient treatment, was associated with greater maintenance on most proximal outcomes….Having a sponsor, reading 12-step materials, attending 12-step meetings, and having an abstinence goal appeared to mediate the greater effects of 12-step programs (relative to CB programs) on abstinence." (Study of 1,873 male veterans seeking SUD treatment at five CB-oriented [cognitive-behavioral] and five 12-step-oriented VA inpatient/residential SUD programs.)[82] "More 12-step meeting attendance and involvement were related to abstinence at 6 months." (Outcome study of 345 patients admitted to outpatient SUD treatment)[83] "…the improved alcohol outcomes of NA / AA attenders suggests that the effectiveness of existing treatment services may be improved by initiatives that

[79] Morgenstern, J., Bux, D. A., Jr., Labouvie, E., Morgan, T., Blanchard, K. A., & Muench, F. (2003). Examining mechanisms of action in 12-Step community outpatient treatment. *Drug and Alcohol Dependence*, 72(3), 237-247.
[80] Weiss, R. D., Griffin, M., Gallop, R. J., Najavits, L. M., Arlene, F., Crits-Christoph, P., Thase, M. E., Blaine, J., Gastfriend, D. R., & Luborsky, L. (2005). The effect of 12-Step self-help group attendance and participation on drug use outcomes among cocaine-dependent patients. *Drug and Alcohol Dependence*, 77(2), 177-184.
[81] Witbrodt, J., & Kaskutas, L. A. (2005). Does diagnosis matter? Differential effects of 12-step participation and social networks on abstinence. *American Journal of Drug and Alcohol Abuse*, 31(4), 685-707.
[82] Johnson, J. E., Finney, J. W., & Moos, R. H. (2006). End-of-treatment outcomes in cognitive-behavioral treatment and 12-step substance use treatment programs: Do they differ and do they predict 1-year outcomes? *Journal of Substance Abuse Treatment*, 31(1), 41-50.
[83] Timko, C., Billow, R., & DeBenedetti, A. (2006). Determinants of 12-step group affiliation and moderators of the affiliation-abstinence relationship. *Drug & Alcohol Dependence*, 83(2), 111-21.

Table 4: Study Findings on Effects of NA Participation on Rates of Abstinence and SUD remission
lead to increased involvement and engagement with such groups." (Follow-up interviews at 1, 2, and 4-5 years of 142 patients admitted to SUD treatment in the UK)[84] "…the only difference in clinical outcomes was a substantially higher abstinence rate among patients treated in 12-step (49.5%) versus CB (37.0%) programs." (A 2-year outcome study comparing 12-Step versus cognitive behavioral (CB) SUD treatment with 887 patients in each group)[85] "Increases in 12-step involvement from baseline to follow-up predicted higher odds of total abstinence at follow-up, and this relationship was partially explained by increases in spirituality." (1-year follow-up study of 733 patients admitted to SUD treatment)[86] "Findings highlight the importance of 12-step involvement, (low) stress, and spirituality as factors that enhance the likelihood of positive recovery outcomes and of global functioning." (Study of 312 inner-city residents in SUD recovery in New York City)[87] "At 3 years, 68 adolescents (19%) reported attending any 12-Step meetings, and 49 (14%) reported involvement in at least one of seven 12-Step activities, in the previous 6 months….12-Step activity involvement was associated significantly with 30-day alcohol and drug abstinence." (3-year follow-up study of 357 adolescents admitted to SUD treatment)[88] "Patients abstinent at 1-year post-treatment who attended 12-step self-help group meetings were no more likely to be abstinent at 4 years than abstinent patients who did not attend. However, for patients not abstinent at 1 year, a significant improvement in abstinence rates at 4 years emerged for those who attended 12-step self-help groups compared to those who did not (42% vs.

[84] Gossop, M., Stewart, D., & Marsden, J. (2007). Attendance at Narcotics Anonymous and Alcoholics Anonymous meetings, frequency of attendance and substance use outcomes after residential treatment for drug dependence: A 5-year follow-up study. *Addiction*, 103(1), 119-125.

[85] Humphreys, K., & Moos, R.H. (2007). Encouraging posttreatment self-help group involvement to reduce demand for continuing care services: Two year clinical and utilization outcomes. *Alcoholism: Clinical and Experimental Research*, 31(1), 64-68.

[86] Zemore, S. E. (2007). A role for spiritual change in the benefits of 12-Step involvement. *Alcoholism: Clinical & Experimental Research*, 31(10 Suppl), 76s-79s.

[87] Laudet, A. B., & White, W. L. (2008) Recovery capital as prospective predictor of sustained recovery, life satisfaction and stress among former poly-substance users. *Substance Use and Misuse*, 43(1), 27-54.

[88] Chi, F. W., Kaskutas, L. A., Sterling, S., Campbell, C. I., & Weisner, C. (2009). Twelve-Step affiliation and 3-year substance use outcomes among adolescents: social support and religious service attendance as potential mediators. *Addiction*, 104(6), 927-939.

Table 4: Study Findings on Effects of NA Participation on Rates of Abstinence and SUD remission
28.9%).” (4-year follow-up study of 1,683 patients admitted for SUD treatment in 88 community residential facilities).[89] “Robust connection with twelve-step groups appears to be associated with better long-term outcomes among adolescents with substance use disorders.” (1-3 year follow-up study of 391 adolescents admitted to SUD treatment)[90] “Consistent with a sustained benefit for 12-step exposure, abstinence patterns aligned much like attendance profiles.” (Linear relationship between 12-Step attendance and abstinence at follow-up in a 9-year follow-up study of 1825 patients admitted to SUD treatment)[91] “Compared with TAU [treatment as usual], STAGE-12 participants had significantly greater odds of self-reported stimulant abstinence during the active 8-week treatment phase...STAGE-12 participants had lower Addiction Severity Index Drug Composite scores at and a significant reduction from baseline to the 3-month FU [follow-up]…” (3 and 6-month follow-up study comparing treatment as usual to a 12-step facilitative intervention in 471 patients entering treatment for a stimulant use disorder)[92] “[The study] found beneficial effects for attendance, but stronger effects, which increased over time, for active involvement…. Ubiquitous 12-step organizations may provide a supportive recovery context for this high-risk population at a developmental stage where non-using/sober peers are at a premium.” (3, 6, and 12-month follow-up study of 303 young adults admitted to SUD treatment)[93] “Findings suggest that categorical involvement in a set of 12-step activities and communal-living settings such as Oxford Houses are independent factors associated with continuous abstinence from both alcohol and illicit drugs among substance dependent persons.” (Follow-up study of 12-Step involvement following discharge of 150 adults from SUD treatment).[94]

[89] McKellar, J. D., Harris, A. H., & Moos, R. H. (2009). Patients' abstinence status affects the benefits of 12-step self-help group participation on substance use disorder outcomes. *Drug & Alcohol Dependence*, 99(1-3), 115-22.
[90] Chi, F. W., Campbell, C. I., Sterling, S., & Weisner, C. (2012). Twelve-Step attendance trajectories over 7 years among adolescents entering substance use treatment in an integrated health plan. *Addiction*, 107, 933-942.
[91] Witbrodt, J., Mertens, J., Kaskutas, L. A., Bond, J., Chi, F., & Weisner, C. (2012). Do 12-step meeting trajectories over 9 years predict abstinence? *Journal of Substance Abuse Treatment*, 43(1), 30-43.
[92] Donovan, D. M., Daley, D. C., Brigham, G. S., Hodgkins, C. C., Perl, H. I., Garrett, S. B., ... , & Kelly, T. M. (2013). Stimulant abuser groups to engage in 12-Step: A multisite trial in the National Institute on Drug Abuse Clinical Trials Network. *Journal of Substance Abuse Treatment*, 44(1), 103-114.
[93] Kelly, J. F., Stout, R. L., & Slaymaker, V. (2013). Emerging adults’ treatment options in relation to 12-step mutual help attendance and active involvement. *Drug Alcohol Dependence*, 129(1-2), 151-157.
[94] Majer, J. M., Jason, L. A., Aase, D. M., Droege, J. R., & Ferrari, J. R. (2013). Categorical 12-Step involvement and continuous abstinence at two-years. *Journal of Substance Abuse Treatment*, 44(1), 46–51.

Table 4: Study Findings on Effects of NA Participation on Rates of Abstinence and SUD remission
"12-Step meeting attendance and having a sponsor were the only strong and consistent predictors of abstinence across time points, though other activities (i.e., use of a home group, befriending members, service work, and reading the literature) were significant in some analyses." (1-year follow-up study of 508 patients admitted to SUD treatment)[95]
"Those achieving high exposure to STAGE-12 [12-Step Facilitation] compared with those with less exposure, demonstrated: (1) higher odds of self-reported abstinence from and lower rates of stimulant drug use; (2) lower probabilities of stimulant positive urines; (3) higher odds of self-reported abstinence from and lower rates of non-stimulant drug use….Most of these differences declined over time from early treatment to 180-day follow-up, but two (attending any versus no 12-Step meetings, and active involvement in 12-Step activities) were still significant by the last follow-up visit." (Follow-up study of 234 patients in treatment for a stimulant use disorder who were randomly assigned to treatment as usual or 12-Step Facilitation)[96]
"…greater 12-step attendance during years 1 and 5 were casually related to past-30-day abstinence at years 5 and 7 respectfully, suggesting 12-step attendance leads to abstinence (but not vice versa) well into the post-treatment period….For outpatient clients, results reinforce the value of lengthier treatment duration and 12-step attendance in year 1." (9-year follow-up study of 1945 adults seeking help for an alcohol or drug use disorder)[97]
"Greater AA/NA participation was associated with substance use goal and readiness to change, and less substance use."[98] (Follow-up study of 489 adults treated for cocaine dependence in intensive outpatient treatment programs)
"Hours of individual counseling and 12-Step participation significantly predicted abstinence at follow-up…Findings suggest that greater levels of individual therapy and 12-Step participation may be beneficial for individuals receiving

[95] Zemore, S., Subbaraman, M., & Tonigan, J. S. (2013). Involvement in 12-step activities and treatment outcomes. *Substance Abuse*, 34(1), 60-69.

[96] Wells, E. A., Donovan, D. M., Daley, D. C., Doyle, S. R., Brigham, G., Garrett, S. B., & Walker, R. (2014). Is level of exposure to a 12-step facilitation therapy associated with treatment outcome? *Journal of Substance Abuse Treatment*, 47(4), 265–274

[97] Witbrodt, J., Yu, Y., Bond, J., Chi, F. Weisner, C., & Mertens, J. (2014) Alcohol and drug treatment involvement, 12-step attendance and abstinence: 9-year cross-lagged analysis of adults in an integrated health plan. *Journal of Substance Abuse Treatment*, 46(4), 412–419.

[98] Lookatch, S. J., Schepens Wimberly, A., & Mckay, J. R. (2019). Effects of social support and 12-step involvement on recovery among people in continuing care for cocaine dependence. *Substance Use & Misuse*, July.

Table 4: Study Findings on Effects of NA Participation on Rates of Abstinence and SUD remission
medication treatment for OUD [opioid use disorder]." (3-month follow-up study of 570 individuals in medication-assisted treatment for an opioid use disorder)[99]

Published Reviews of NA, 12-Step (inclusive of NA), and 12-Step Facilitation Research

In our review of the literature on NA, we located 12 published reviews in the scientific literature on the effects of NA, 12-Step, or 12-Step Facilitation on drug use and related outcomes. Table 5 presents the major conclusions drawn from these reviews in their order of publication.

Table 5: NA-Inclusive Reviews of the Effects of 12-Step Participation on Rates of Abstinence and SUD Remission
"Twelve-step-facilitation (TSF) interventions have been found to be more effective than comparison treatments in increasing patients' 12-step group involvement and in promoting abstinence."[100]
"Regarding subpopulations, current evidence suggests non- or less-religious individuals benefit as much from self-help groups as more religious individuals and women become as involved and benefit as much as men. However, participation in, and effects from, traditional self-help groups for dually diagnosed patients may be moderated by type of psychiatric comorbidity. Some youth appear to benefit, but remain largely unstudied. Dropout and nonattendance rates are high, despite clinical recommendations to attend."[101]
"This expert consensus statement reviews evidence on the effectiveness of drug and alcohol self-help groups and presents potential implications for clinicians, treatment program managers and policymakers. Because longitudinal studies associate self-help group involvement with reduced substance use, improved psychosocial functioning, and lessened health care costs, there are humane and practical reasons to develop self-help group supportive policies. Policies described here that could be implemented by clinicians and program managers include making greater use of empirically-validated self-help group referral methods in both specialty and non-specialty treatment settings and developing a menu of locally available self-help

[99] Harvey, L., Fan, W., Cano, M.A., Vaughan, E., Arbona, C., Essa, S., Sanchez, H., & de Dios, M. A. (2020). Psychosocial intervention utilization and substance abuse treatment outcomes in a multisite sample of individuals who use opioids. *Journal of Substance Abuse Treatment*, January 25, DOI:https://doi.org/10.1016/j.jsat.2020.01.016 570

[100] Humphreys, K. (1999). Professional interventions that facilitate 12-step self-help group involvement. *Alcohol Research and Health*, 23, 93-98.

[101] Kelly, J. F. (2003). Self-help for substance-use disorders: History, effectiveness, knowledge gaps, and research opportunities. *Clinical Psychology Review*, 23, 639-663.

Table 5: NA-Inclusive Reviews of the Effects of 12-Step Participation on Rates of Abstinence and SUD Remission

group options that are responsive to client's needs, preferences, and cultural background."[102]

"Although involvement in 12-Step fellowship improves outcome, many individuals do not engage on their own in 12-Step activities, and there are high rates of dropout from such groups. There are a number of evidence-based therapies available to assist clinicians in facilitating 12-Step involvement; however, these have not been used with methamphetamine abusers.... More actively integrating 12-Step approaches into the treatment process may provide low- or no-cost options for methamphetamine abusers and increase the capacity for providing treatment."[103]

"…freely available AA and NA networks could provide a cost-effective long-term therapeutic adjunct to professional SUD approaches for youth."[104]

"Twelve-step programs represent a readily available resource for individuals with substance use disorders. These programs have demonstrated considerable effectiveness in helping substance abusers achieve and maintain abstinence and improve their overall psychosocial functioning and recovery….it is possible to increase twelve-step involvement and that doing so results in reduced substance use."[105]

"…freely available MHG organizations may play an increasingly important role as their availability grows and evidence of their effectiveness continues to emerge. We encourage health care providers to inform their patients about these organizations, to help them give them a fair try, and to monitor patients' responses."[106]

"AA/ NA participation is a valuable modality of substance abuse treatment for teens and much can be done to increase teen participation, though more research is needed."[107]

[102] Humphreys, K., Wing, S., McCarty, D., Chappel, J., Galant, L., Haberle, B.,… & Weiss, R. (2004). Self-help organizations for alcohol and drug problems: Toward evidence-based practice and policy. *Journal of Substance Abuse Treatment*, 26(3), 151-8.

[103] Donovan, D. M., & Wells, E. A. (2007). 'Tweaking 12-Step': the potential role of 12-Step self-help group involvement in methamphetamine recovery. *Addiction*, 102(Suppl 1), 121-129.

[104] Kelly, J. F., & Myers, M. G. (2007). Adolescents' participation in Alcoholics Anonymous and Narcotics Anonymous: Review, implications and future directions. *Journal of Psychoactive Drugs*, 39(3), 259-269.

[105] Donovan, D. M., & Floyd, A. S. (2008). Facilitating involvement in Twelve-Step programs. In M. Galanter, & L.A. Kaskutas (Eds.), *Recent Developments in Alcoholism, Research on Alcoholics Anonymous and Spirituality in Addiction Recovery*, 18(2) (pp. 303-320).

[106] Kelly, J. F., & Yeterian, J. D. (2008). Mutual help groups. In W. T. O'Donohue & N. A. Cummings (Eds.), *Evidence-based Adjunctive Treatments* (p. 61–105).

[107] Sussman, S. (2010). A review of Alcoholics Anonymous/ Narcotics Anonymous programs for teens. *Evaluation and the Health Professions*, 33(1), 26-55.

Table 5: NA-Inclusive Reviews of the Effects of 12-Step Participation on Rates of Abstinence and SUD Remission
"Results indicated that self-help group attendance appears to reduce alcohol and drug use, including abstinence. However, the lack of methodological rigor in these studies precludes definitive conclusions."[108] "The power to detect a difference between the 12-step interventions and alternative psychosocial interventions was low and the estimated effect sizes were small. Many studies failed to adjust for the fact that the intervention is administered to groups, and so may overestimate effects. Given all these shortcomings, further evidence regarding the effectiveness of this type of intervention, especially in self-help groups, is needed….12-step programs for reducing illicit drug use are neither better nor worse than other interventions."[109] "Though not the only model for post-treatment recovery support, research to date suggests that similar to adults, adolescents' involvement in 12-step groups predicts improved AOD use outcomes, and greater participation (i.e., frequency, duration, and extent of involvement) predicts abstinence and SUD remission better than attendance alone. Moreover, 12-step participation reduces the associated healthcare costs for adolescents with SUD. Despite these benefits, in 2015 <2% of AA's and NA's total membership comprised people under 21 years old."[110] "Manualized AA/TSF interventions usually produced higher rates of continuous abstinence than the other established treatments investigated. Non-manualized AA/TSF performed as well as other established treatments. AA/TSF may be superior to other treatments for increasing the percentage of days of abstinence, particularly in the longer-term. AA/TSF probably performs as well as other treatments for reducing the intensity of drinking (of alcohol). AA/TSF probably performs as well as other treatments for alcohol-related consequences and addiction severity. Four of the five economics studies found substantial cost-saving benefits for AA/TSF, which indicate that AA/TSF interventions probably reduce healthcare costs substantially."[111]

The 12 reviews summarized above report generally consistently positive effects of NA participation. Twelve-Step (inclusive of NA), and 12-Step Facilitation outcomes (abstinence-related) are superior or equivalent when comparing these interventions with

[108]Bekkering,G. E., Mariën,D., Parylo, O., & Hannes, K. (2016). The effectiveness of self-help groups for adolescent substance misuse: A systematic review. *Journal of Child & Adolescent Substance Abuse*, (25(3).

[109] Bøg, M., Filges, T, Brännström, L., Jørgensen, A-M. K., & Fredrikksson, M. K. (2017) 12-step programs for reducing illicit drug use. *Campbell Systematic Reviews*, https://doi.org/10.4073/csr.2017.2.

[110] Nash, A. (2020). The Twelve Steps and adolescent recovery: A concise review. *Substance Abuse Research and Treatment*, 14, 1-6.

[111] Kelly, J. F., Humphreys, K., & Ferri, M. (2020). Alcoholics Anonymous and other 12-step programs for alcohol use disorder. *Cochrane Database of Systematic Reviews 2020*, Issue 3. Art. No.: CD012880. DOI: 10.1002/14651858.CD012880.pub2.

alternative recovery support methods. The reviews include a near-universal call for more NA-related studies of greater methodological rigor.

In summary, NA studies, NA-inclusive 12-Step studies, and published reviews of 12-Step research (including Twelve-Step Facilitation treatment approaches) all report a strong association between NA participation and reduced drug use and increased rates of abstinence. Confirmation and clarification of this relationship awaits additional studies of increased methodological rigor using larger and more diverse population samples, including non-treatment samples. The available evidence suggests the potential value of NA participation in recovery initiation and long-term recovery maintenance.

What is the average duration of continuous recovery among NA members?

One way of measuring the effects of NA participation is to ascertain the average duration of continuous drug abstinence among NA members. In a 2018 survey of 28,495 NA members conducted by NA World Services, members with a wide variety of past primary drug choices reported an average of 11.4 years of continuous abstinence at the time of the survey, with 85% of members reporting five or more years of stable recovery.[112]

In an earlier 2013 independent survey of NA members in 10 U.S. states, respondents reported past drugs of choice as cocaine (28.5%), heroin (27.5%), other opiates (13.4%), methamphetamine (12.9%), alcohol (8.6%), marijuana (6.6%), and other stimulants (2.5%). Surveyed members first encountered NA at an average age of 26.9 and had been abstinent from drugs for an average of 5.7 years at the time of the 2013 survey.[113]

In the early stages of NA development within communities and countries, professional concerns about NA include the lack of long-term abstinence among members of newly rising NA groups. As NA becomes more established in a community, a greater portion of NA members are in long-term stable recovery and provide a stronger NA recovery culture. That degree of organizational and personal stability now exists within many communities and provides role models in long-term recovery who can serve as mentors to new members.

What are the major risk factors for recurrence of drug use and addiction among NA members?

Surprisingly, only two studies focused specifically on risk factors for drug use recurrence among NA members. Seraji and colleagues published a study of 350 male NA members in Iran that identified unemployment and changes in income as major risk factors for recurrence of drug use.[114] Crossen-White and Galvin in a follow-up study of

[112] NA World Services (2018). 2018 Membership Survey. Accessed February 1, 2020 at https://www.na.org/admin/include/spaw2/uploads/pdf/conference/project/2301_MS_2018_Nov19.pdf

[113] Galanter, M., Dermatis, H., Post, S., & Santucci, C. (2013). Abstinence from drugs of abuse in community-based members of Narcotics Anonymous. *Journal of Studies on Alcohol and Drugs*, 74(1), 1-4.

[114] Seraji, A., Momeni, H., & Salehi, A. (2010). The investigation of factors affecting dependence on narcotics and reappearance of drug usage in narcotics anonymous. *Arak Medical University Journal* (AMUJ), 13(3), 68-75.

21 drug offenders referred to NA found substance use recurrence associated with less frequent NA participation or disengagement from NA.[115]

Longitudinal studies of "addiction careers" have been instrumental in mapping the long-term relationship between episodes of addiction treatment and the trajectories of sustained drug use and sustained recovery.[116] Unfortunately, most NA studies are cross-sectional or use relatively short-term periods of follow-up (e.g., one year or less). Independent studies of the long-term trajectory of drug use and drug abstinence among NA participants do not yet exist. Lacking such studies, the identification of risk factors for addiction recurrence among NA members exists only within the shared stories of NA members—stories not yet systematically analyzed. Research studies are needed that illuminate the patterns of drug use or drug abstinence across the long-term course of NA involvement and changes in such patterns preceding and following disengagement from NA.

What are the broader effects of NA participation on health and quality of life outcomes?

Studies to date of the broader effects of NA participation have focused on reductions in stressors, increases in positive traits, and overall improvements in quality of life. Table 6 presents representative findings from these studies.

Table 6: Effects of NA participation on Global Health
Christo and Sutton compared 100 NA members to a control group of 60 students and found that diminishment of anxiety, improvement in self-esteem, and increased employment linked to duration of NA participation.[117] Beygi and colleagues compared the coping styles of NA members and patients in methadone maintenance treatment (MMT) in Iran. NA members had higher ratings for interpersonal relationships, physical health, and positive coping skills than patients in MMT.[118]

[115] Crossen-White, H., & Galvin, K. (2002). A follow-up study of drug misusers who received an intervention from a local arrest referral scheme. *Health Policy*, 61, 153–171.

[116] Hser, Y.-I., Anglin, M. D., Grella, C., Longshore, D., & Prendergast, M. L. (1997). Drug treatment careers: A conceptual framework and existing research findings. *Journal of Substance Abuse Treatment*, 14(6), 543-558; Dennis, M. L., Scott, C. K., Funk, R., & Foss, M. A. (2005). The duration and correlates of addiction and treatment careers. *Journal of Substance Abuse Treatment*, 28(Suppl 1), S51-S62.

[117] Christo, G., & Sutton, S. (1994). Anxiety and self-esteem as a function of abstinence time among recovering addicts attending Narcotics Anonymous. *British Journal of Clinical Psychology*, 33(2), 198-200.

[118] Beygi, A., Farahani, M.N., & Mohammadkhani, S. (2011). The discriminative comparison of quality of life and coping styles in Narcotics Anonymous and methadone maintenance treatment members. *Journal of Research on Psychology and Health*, 5(1), 1-11.

Table 6: Effects of NA participation on Global Health
Khodararahimi and Rezaye studied the effects of NA participation on emotional health of male NA members in Iran. They concluded: "The twelve-step self-treatment programme significantly lowered psychopathology in patients with opiate abuse."[119] Taallaei and colleagues compared quality of life scores of NA members, members of a therapeutic community and patients enrolled in methadone maintenance treatment in Iran. Participation in all three of the interventions increased quality of life scores, with the NA group scoring highest on quality of life.[120] Akhondzadeh and co-investigators compared the personalities of 100 NA members and 100 patients in MMT in Iran. NA members scored lower on neuroticism and higher on agreeableness.[121] Zandasta and colleagues compared the personality characteristics of 30 NA members with 30 individuals who recovered from addiction without NA participation. NA members scored higher on neurosis, openness, and conscientiousness and similar on extroversion, flexibility, and novelty.[122] DeLucia and colleagues hosted a focus group of 11 NA members to explore quality of life within the NA recovery process. They concluded: "positive gains in interpersonal relationships, becoming part of a larger cohesive community, and an enhanced sense of psychological well-being might be offered as potential benefits of involvement to individuals contemplating 12-step recovery for a substance use problem."[123] Mansooreh conducted a study of the quality of life of 110 male NA members in Iran. The authors concluded: "an increase in the membership duration in NA was associated with lower levels of depression and physical pain and higher levels of general health and positive emotions."[124]

[119] Khodarahimi, S., & Rezaye, A. M. (2012). The effects of psychopathology and personality on substance abuse in twelve-step treatment programme abstainers, opiate substance abusers and a control sample. *Heroin Addiction and Related Clinical Problems*, 14(2), 35-48.

[120]Akhondzadeh, S., Shabrang, M., Rezaei, O., & Rezaei, F. (2014). Personality patterns in Narcotics Anonymous members versus individuals with addiction receiving methadone maintenance therapy, *Iranian Journal of Psychiatry*, 9(3), 158-162. Also see Salehmoghaddam, A. R., Kahani, H. B., Vagheii, S., & Chamanzari, H. (2012). Evaluation of detoxified addicts's life quality participating in narcotics anonymous, therapeutic community and who refers to methadone therapy clinics sessions in Mashhad, *Res Devel Nurs Midw*.

[121] Akhondzadeh, S., Shabrang, M., Rezaei, O., & Rezaei, F. (2014). Personality patterns in Narcotics Anonymous members versus individuals with addiction receiving methadone maintenance therapy. *Iranian Journal of Psychiatry*, 9(3), 158-162.

[122] Zandasta, E., Seddigh, S. M., & Namazi, S. (2014). Comparison of the personal characteristics of the recovered men through Narcotics Anonymous self-help groups with those who have been recovered without attending these groups*. American Journal of Life Science Research*, 2(1), 1-7.

[123] DeLucia, C., Bergman, B. G., Formoso, D., & Weinberg, L. B. (2015). Recovery in Narcotics Anonymous from the perspectives of long-term members: A qualitative study. *Journal of Groups in Addiction & Recovery*, 10(1), 3-22.

[124] Mansooreh, H. H. (2015). Addicts' quality of life and psychological disorders (depression, anxiety, and stress) in two treatment methods: Narcotics Anonymous vs. methadone maintenance treatment. *Research on Addiction*, 9(35), 119-136.

Table 6: Effects of NA participation on Global Health
Peles and colleagues compared 55 long-term methadone maintenance patients with 99 NA members formerly diagnosed with opioid dependence. NA members had more severe prior addiction scores and MMT patients had higher ratings of physical pain and psychiatric comorbidity. NA members reported high sleep quality and better cognitive functioning.[125] Azkhosh and co-investigators compared 20 NA members, 20 methadone maintenance patients, and 20 patients receiving acceptance and commitment therapy (ACT) in Iran. The ACT group scored higher on psychological well-being and psychological flexibility.[126] Delucia and colleagues studied the well-being of 128 U.S. NA members. They concluded: "ongoing recovery involvement may be positively associated with subjective psychological well-being in NA members."[127] Hosseini and colleagues studied the psychological well-being of 368 NA members in Iran. The study concluded: "consistent participation in NA self-help groups can significantly lead to an increase in quality of life."[128] Emamgholi and colleagues conducted a cross-sectional study of 50 NA members and 50 methadone maintenance treatment (MMT) patients in Iran. "The MMT group achieved higher scores in the subscale of weight control and nutrition, disease prevention, mental health, social health, drug prevention, accident prevention, and environmental health."[129] Mokhtari and colleagues studied the quality of life of NA members in Iran. They found that "The treatment [NA] group improved in all aspects of health-related quality of life and that benefits to quality of life related to mental health recovery extended beyond

[125] Peles, E. Sason, A., Tene, O., Domany, Y., Schreiber, S., & Adelson, M. (2015). Ten years of abstinence in former opiate addicts: Medication-free non-patients compared to methadone maintenance patients. *Journal of Addictive Diseases*, 34(4), 284-295.

[126] Azkhosh, M., Farhoudianm, A., Saadati, H., Shoaee, F., & Lashani, L. (2016). Comparing acceptance and commitment group therapy and 12-steps Narcotic Anonymous in addict's rehabilitation process. *Iranian Journal of Psychiatry*, 11(4), 244-249.

[127] DeLucia, C., Bergman, B. G., Beitra, D., Howrey, H. L., Seibert, S., Ellis, A. E., & Mizrachi, J. (2016). Beyond abstinence: An examination of psychological well-being in members of Narcotics Anonymous. *Journal of Happiness Studies*, 17, 817–832.

[128] Hosseini, F., Ardekani, S. M. Y., Kordi, A., Farzinrad, B., & Musazadeh, M. (2016). Quality of life among Narcotic Anonymous male members in Yazd City, Iran. *International Journal of High Risk Behavior & Addiction*, e31275 DOI: 10.5812/ijhrba.31275.

[129] Emamgholi, Z., Sharifi, S., Allameh, Y., Shahmohammadi, A., & Babakhanian, M. (2018). Comparing the lifestyle and sexual satisfaction of patients received methadone maintenance therapy with those of patients received Narcotics Anonymous. *Middle East J Rehabil Health Stud.,* 5(1):e60469. doi: 10.5812/mejrh.60469.

Table 6: Effects of NA participation on Global Health
the [NA] treatment program, indicating that the program principles were effectively implemented in daily life."[130] Sibthorpe and colleagues assessed the role of self-help group participation in reducing HIV risk among 317 injection drug users. They found that 40% of self-help groups attended were NA meetings and that "…self-help groups may play an important role in reducing the risk of HIV in out-of-treatment populations."[131] Beygi and colleagues comparted the coping styles of 50 NA members and 50 patients in methadone maintenance treatment (MMT) in Iran. "Results showed that mean scores of agency thinking, task-oriented coping style, and avoidance-oriented coping style, in NA members was significantly high, from MMT members. It seems that active attendance in NA may enhances effective coping style and hope."[132]

The most troubling finding within the NA and global health studies reviewed was a 2012 study by Rahimpour and colleagues of the marital adjustment of male and female NA members in Iran. Only 18% of NA couples (of 62 couples surveyed) in the study sample were well adjusted. The study authors called for increased attention to the support needs of couples in which one or both of the partners are recovering from addiction.[133]

NA participation predicts improvements in personal global health and functioning. Future studies should explore the effects of NA participation on intimate relationships, family functioning, and changes in the person-community relationship.

What factors related to NA participation predict substance use and quality of life outcomes?

Positive outcomes related to NA participation are dependent on two factors: Intensity of participation and duration of participation.

Broader involvement in NA activities and great frequency of these activities generate better outcomes than simply attending occasional NA meetings.[134] Such

[130] Mokhtari, M. R., Alavi, M. Pahlavanzadeh, S., ….. & Cleary, M. (2019). Comparison of the effectiveness of a 12 step substance use recovery program on quality of life. *Nursing and Health Sciences*, November. DOI: 10.1111/nhs.12668

[131] Sibthorpe, B., Fleming, D., & Gould, J. (1994). Self-help groups: A key to HIV risk reduction for high-risk drug users? *Journal of AIDS*, 7(6), 592-598.

[132] Beygi, A, Mohammadyfar, M., Farahani, M., & Mohammadkhani, S. (2012).The comparative study of coping styles and hope among Narcotic Anonymous and methadone maintenance treatment members. *Research on Addiction*, 5(2), 55-72.

[133] Rahimpour, R., Khankeh, H. R., Khoshknab, M. F., Farhoodian, A. & Farzi, M. (2012). The evaluation of marital adjustment among the addicts in Isfahan NA groups and their couples. *Iranian Rehabilitation Journal*, 10(15), 13-17.

[134] Kelly, J. F., Stout, R. L., & Slaymaker, V. (2013). Emerging adults' treatment options in relation to 12-step mutual help attendance and active involvement. *Drug Alcohol Dependence*, 129(1-2), 151-157; Majer, J. M., Droege, J. R., & Jason, L. A. (2010). A categorical assessment of 12-step involvement in relation to recovery resources. *Journal of Groups in Addiction & Recovery*, 5(2), 155-167; Majer, J. M., Jason, L. A., Ferrari, J. R., & Miller, S. A. (2011). 12-step

activities beyond meeting attendance include having a home group, active Step work, having a sponsor, sponsoring others, participating in the NA service structure, reading NA literature, and broader acts of helping others.[135] Positive addiction outcomes decline on the continuum from continuous NA participation (best outcomes), sporadic NA attendance, and no attendance (worst outcomes).[136]

Time is a critical ingredient to achieving effects via NA participation. For example, while reduced drug use and initiation/stabilization of abstinence can occur early within NA participation, recovery of psychological health may take up to five years following cessation of drug use.[137]

Future studies of NA should consistently differentiate outcomes across the dimensions of intensity and duration of NA participation.

Do such positive effects differ across demographic, cultural, and clinical characteristics?

The positive effects of participation in NA appear to extend to historically disenfranchised groups and other special populations. Table 7 presents key findings drawn from studies of NA effectiveness among women, people of color, people with co-occurring psychiatric conditions, and other special populations.

Table 7: Effects of NA Participation across Diverse Populations

"There were no significant differences in attendees and non-attendees on race, gender, education, employment pattern, or marital status….Overall the findings suggest that 12 step programs both appeal to and benefit disenfranchised groups."[138] (Study of 12-Step participation patterns of 558 patients treated for SUD from intake to one-year follow-up).
"The women identified the 12-Step program as either as an overall caring [half of those interviewed] or noncaring [half of those interviewed] influence enabling them to

involvement among a U.S. sample of Oxford House residents. *Journal of Substance Abuse Treatment*, 41(1), 37-44; Wells, E. A., Donovan, D. M., Daley, D. C., Doyle, S. R., Brigham, G., Garrett, S. B., & Walker, R. (2014). Is level of exposure to a 12-step facilitation therapy associated with treatment outcome? *Journal of Substance Abuse Treatment*, 47(4), 265–274; Wendt, D. C., Hallgren, K. A., Daley, D. C., & Donovan, D. M. (2017). Predictors and outcomes of Twelve-Step sponsorship of stimulant users: Secondary analyses of a multisite randomized clinical trial. *Journal of Studies on Alcohol & Drugs*, 78(2), 287–295.

[135] Kelly, J. F.; Myers, M.G., & Rodolico, J. (2008). What do adolescents exposed to Alcoholics Anonymous think about 12-step groups? *Substance Abuse*, 29(2), 53-62; Johnson, J. E., Finney, J. W., & Moos, R. H. (2006). End-of-treatment outcomes in cognitive-behavioral treatment and 12-step substance use treatment programs: Do they differ and do they predict 1-year outcomes? *Journal of Substance Abuse Treatment*, 31(1), 41-50.

[136] Kissin, W., McLeod, C., & McKay, J. (2003). The longitudinal relationship between self-help group attendance and course of recovery. *Evaluation and Program Planning*, 26(3), 311-323.

[137] Christo, G. (1998). Narcotics Anonymous as aftercare: The statistics. *Addiction Counseling World*, 9(51), 22-26.

[138] Humphreys, K., Mavis, B. E., & Stoffelmayr, B. E. (1994). Are twelve-step programs appropriate for disenfranchised groups? Evidence from a study of posttreatment mutual help group involvement. *Prevention in Human Services,* 11(1), 165-179.

Table 7: Effects of NA Participation across Diverse Populations
successfully move through treatment and recovery."[139] (Interviews with 12 African American women clients in SUD treatment and 18 female community informants) "Contrary to reports that 12-Step is more appropriate for European--American males, statistical analyses reveals that women and ethnic minorities are equally likely to attend 12-Step programs, and to recover in conjunction with such participation as European-American males. Although 12 Step may not appeal to all seeking to cease alcohol and drug use, the clinical implications for treatment providers and other addiction specialists points to the benefits of integrating 12-Step components into traditional treatment programs and recommending 12-Step participation for clients of all gender and ethnic groups."[140] (24-month follow-up study of 356 admission to adult outpatient alcohol and drug treatment) "We find that the rooms assume enormous importance in structuring the lives of people in recovery…people can recover from addiction in neighborhoods like the South Bronx, where drug use is ubiquitous and the use culture permeates every aspect of daily life."[141] (Study of 95 NA meetings in the South Bronx) "Regarding subpopulations, current evidence suggests non- or less-religious individuals benefit as much from self-help groups as more religious individuals and women become as involved and benefit as much as men."[142] (Research literature review) "…physical or sexual abuse was associated with more attendance at and involvement in12-step groups. Participation in12-step groups predicted abstinence at one year, regardless of abuse history."[143] (Comparison of patients with (122) and without (143) a history of physical or sexual abuse admitted to SUD treatment at the Veterans Administration) "Not surprisingly, women who have been involved in NA for longer periods of time and have completed the Twelve Steps perceive the least amount of stigma."[144] (Study of 92 women members of NA)

[139] Ehrmin, J. T. (2000). Cultural implications of the 12-step approach in addictions treatment and recovery. *Journal of Addiction Nursing*, 12(1), 37-41.

[140]Hillhouse, M. P., & Fiorentine, R. (2001). 12-step program participation and effectiveness: Do gender and ethnic differences exist? *Journal of Drug Issues*, 31(3), 767-780.

[141] Green, L. L., Fullilove, M. T., & Fullilove, R. E. (2005). Remembering the lizard: Reconstructing sexuality in the rooms of Narcotics Anonymous. *Journal of Sex Research*, 42(1), 28-34.

[142] Kelly, J. F. (2003). Self-help for substance-use disorders: History, effectiveness, knowledge gaps, and research opportunities. *Clinical Psychology Review*, 23, 639-663.

[143] Schneider, R., Burnette, M., & Timko, C. (2008). History of physical or sexual abuse and participation in 12-Step self-help groups. *The American Journal of Drug and Alcohol Abuse*, 34, 617–625.

[144] Sanders, J. (2012). Use of mutual support to counteract the effects of socially constructed stigma: Gender and drug addiction. *Journal of Groups in Addiction & Recovery*, 7(2-4), 237-252.

Table 7: Effects of NA Participation across Diverse Populations
"…self-help groups may play an important role in reducing the risk of HIV in out-of-treatment populations"[145] (Study of 317 injection drug users followed for 6 months to assess role of mutual aid group participation in HIV risk reduction; 44% of total meetings attended by participants were NA meetings]. "Alcoholics Anonymous and Narcotics Anonymous have been under-utilized in the treatment of chemical dependency in traumatic brain injury survivors."[146] (Study of need for addiction recovery mutual aid among brain injury survivors) "Results indicate that, compared to older adults, young adults are less likely to attend TSMHOs [Twelve Step mutual help organizations] and attend less frequently, but derive similar benefit. The mechanisms, however, by which TSMHOs help, differ in nature and magnitude. Also, young adults appear to derive greater benefit initially from meetings attended by similar aged peers, but this benefit diminishes over time."[147] (Research Review)

Studies to date suggest that the positive effects of NA extend to diverse demographic and clinical populations and across diverse cultural contexts. Future studies of NA should continue to report outcomes across these discrete populations.

Is NA effective in improving SUD recovery outcomes of adolescents?

In recent decades, addiction researchers have focused greater attention on the effects of 12-Step participation on recovery outcomes of adolescents[148], but no studies isolated effects of NA participation from broader data collected on effects of participation in 12-Step groups, and all studies were with treatment populations. Table 8 displays a summary of studies of the effects of 12-Step participation among adolescents.

Table 8: Effects of 12-Step Participation among Adolescents
In an early (1991) review of adolescents' responses to AA and NA participation, Alford and colleagues suggested that AA/NA models of adolescent SUD treatment were promising but required more focused attention on post-treatment relapse prevention.[149]

[145] Sibthorpe, B., Fleming, D., & Gould, J. (1994). Self-help groups: A key to HIV risk reduction for high-risk drug users? *Journal of AIDS*, 7(6), 592-598.

[146] Kramer, T. H., & Hoisington, D. (1992). Use of AA and NA in the treatment of chemical dependencies of traumatic brain injury survivors. *Brain Injury*, 6(1), 81-88.

[147] Kelly, J. F., Bergman, B. G., & Fallah-Sohy, N. (2018). Mechanisms of behavior change in 12-step approaches to recovery in young adults. *Current Addiction Reports*, 5(2): 134–145. doi: 10.1007/s40429-018-0203-1

[148] Sussman, S. (2010). A review of Alcoholics Anonymous/ Narcotics Anonymous programs for teens. *Evaluation and the Health Professions*, 33(1), 26-55.

[149] Alford, G. S., Koehler, R. A., & Leonard, J. (1991). Alcoholics Anonymous-Narcotics Anonymous model inpatient treatment of chemically dependent adolescents: A 2-year outcome study. *Journal of Studies of Alcohol*, 52, 118-126.

Table 8: Effects of 12-Step Participation among Adolescents
Kelly, Myers and Brown studied the effects of 12-Step attendance of 99 adolescents following treatment for a SUD. ""Results revealed modest beneficial effects of 12-step attendance, which were mediated by motivation but not by coping or self-efficacy."[150] A later study by this research group determined that "greater age similarity was found to positively influence [12-Step meeting] attendance rates and the perceived importance of attendance, and was marginally related to increased step-work and less substance use...locating and directing youth to meetings where other youth are present may improve 12-step attendance, involvement, and substance use outcomes."[151] Aromin and colleagues studied the responses to 12-Step group participation of 181 adolescents treated within a therapeutic community. They found considerable variability of response and concluded that 12-Step referral of adolescents in treatment should take into account "individual differences in level of spiritual development and…spiritual needs, beliefs, and prior Twelve-Step experiences."[152] Kelly and colleagues examined the responses to 12-Step groups over 8 years of 451 adolescents enrolled in SUD treatment. AA/NA involvement was common early post-treatment but progressively declined over the follow-up periods. Early 12-Step involvement was associated with better long-term outcomes. Greater addiction severity was associated with sustained 12-Step involvement. Adolescents surveyed most appreciated the mutual support and hope they found within 12-Step meetings.[153] Chi and colleagues conducted a 3-year follow-up of 357 adolescents treated for a SUD. "At 3 years, 68 adolescents (19%) reported attending any 12-Step meetings [during the follow-up period], and 49 (14%) reported involvement in at least one of seven 12-Step activities in the previous 6 months….12-Step activity involvement was associated significantly with 30-day alcohol and drug abstinence."[154]

[150] Kelly, J. F., Myers, M. G., & Brown, S. A. (2000). A multivariate process model of adolescent 12-Step attendance and substance use outcome following inpatient treatment. *Psychology of Addictive Behaviors*, 14(4), 376-389; Kelly, J. F., Myers, M. G., & Brown, S. A. (2002). Do adolescents affiliate with 12-step groups? A multivariate process model of effects. *Journal of Studies on Alcohol*, 63(3), 293-304.

[151] Kelly, J. F., Myers, M. G., & Brown, S. A. (2005). The effects of age composition of 12-Step groups on adolescent 12-Step participation and substance use outcome. *Journal of Child & Adolescent Substance Abuse*, 15(1), 63-72.

[152] Aromin, R. A. Jr., Galanter, M., Solhkhah, R., Dermatis, H., & Bunt, G. (2006): Preference for spirituality and Twelve-Step-oriented approaches among adolescents in a residential therapeutic community. *Journal of Addictive Diseases*, 25:2, 89-96.

[153] Kelly, J. F., Brown, S. A., Abrantes, A., Kahler, C. W., & Myers, M. (2008). Social recovery model: An 8-year investigation of adolescent 12-step group involvement following inpatient treatment. *Alcoholism: Clinical and Experimental Research*, 32(8), 1468-1478; Kelly, J. F.; Myers, M.G.; & Rodolico, J. (2008). What do adolescents exposed to Alcoholics Anonymous think about 12-step groups? *Substance Abuse*, 29(2), 53-62.

[154] Chi, F. W., Kaskutas, L. A., Sterling, S., Campbell, C. I., & Weisner, C. (2009). Twelve-Step affiliation and 3-year substance use outcomes among adolescents: social support and religious service attendance as potential mediators. *Addiction*, 104(6), 927-939.

Table 8: Effects of 12-Step Participation among Adolescents
Kelly and colleagues studied the effects of religious orientation on adolescent responses to 12-Step groups. “Youth with low or no lifetime religious practices may assimilate less well into 12-step–oriented treatment and may need additional 12-step facilitation, or a different approach, to enhance treatment response.” Adolescent 12-Step participation and acts of helping others were independently associated with better substance-use outcomes.[155] Chi and colleagues conducted a 7-year follow-up study of adolescents admitted to SUD treatment. They concluded: “Robust connection with twelve-step groups appears to be associated with better long-term outcomes among adolescents with substance use disorders.”[156] Kelly and Urbanoski conducted 3, 6, and 12-month follow-up of 127 adolescents admitted to outpatient SUD treatment. “The benefits of 12-step participation observed among adult samples extend to adolescent outpatients. Community 12-step fellowships appear to provide a useful sobriety-supportive social context for youth seeking recovery, but evidence-based youth-specific 12-step facilitation strategies are needed to enhance outpatient attendance rates.”[157] Kingston and colleagues interviewed 26 young adults regarding their responses to AA or NA participation. Most viewed the programs positively in terms of their instillation of hope and emotional support, but some rejected AA or NA due to concepts of powerlessness and higher power.[158] Labbe and colleagues studied the effects of age composition of 12-Step groups on abstinence outcomes of 302 young adults enrolled in residential SUD treatment. They found that ““A similar age composition was helpful early post-treatment among low 12-step attendees, but became detrimental over time. Treatment and other referral agencies might enhance the likelihood of successful remission and recovery among young adults by locating and initially linking such individuals to age appropriate groups. Once engaged, however, it may be prudent to encourage gradual integration into the broader mixed-age range of 12-step meetings, wherein it is possible that older members may provide the depth and length of sober experience needed to carry young adults forward into long-term recovery.”[159]

[155] Kelly, J. F., Pagano, M. E., Stout, R. L., & Johnson, S. M. (2011). Influence of religiosity on 12-Step participation and treatment response among substance-dependent adolescents. *Journal of Studies on Alcohol and Drugs*, 72, 1000-1011.

[156] Chi, F. W., Campbell, C. I., Sterling, S., & Weisner, C. (2012). Twelve-Step attendance trajectories over 7 years among adolescents entering substance use treatment in an integrated health plan. *Addiction*, 107, 933-942.

[157] Kelly, J. F., & Urbanoski, K. (2012). Youth recovery contexts: The incremental effects of 12-Step attendance and involvement on adolescent outpatient outcomes. *Alcoholism Clinical & Experimental Research*, 36(7), 1219–1229.

[158] Kingston, S., Knight, E., Williams, J., & Gordon, H. (2015). How do young adults view 12-Step programs? A qualitative study. *Journal of Addictive Diseases*, 34(4), 311-322.

[159] 123. Labbe. A. K., Greene, C., Bergman, B. G., Hoeppner, B., & Kelly, J. F. (2013). The importance of age composition of 12-step meetings as a moderating factor in the relation between young adults’ 12-step participation and abstinence. *Drug and Alcohol Dependence*, 133(2), 541-547.

Studies to date of 12-Step participation among adolescents enrolled in SUD treatment reveal variable, but generally positive, effects on substance use outcomes. Effects of 12-Step participation on reductions of drug use and increased rates of abstinence warrant referral of adolescents to these recovery management resources, particularly to meetings with higher youth representation. Youth should be presented with both 12-step and alternative recovery mutual aid options, particularly if they are uncomfortable with the spiritual orientation of NA.

Is NA safe for adolescents and other vulnerable populations?

There are potential iatrogenic effects (harm in the name of help) from all medical and psychosocial interventions into alcohol and other drug problems.[160] Although reports of harmful effects of participation in 12-Step groups have emerged as genres of popular literature and social media posts, such potential harm for adolescents has been a focus of only one scientific investigation. In 2011, Kelly and colleagues surveyed 128 youth involved in outpatient SUD treatment at 3, 6, and 12 months regarding perceived safety of AA and NA. They concluded: "outpatient youth report feeling safe at these groups overall, but some report negative experiences….it would seem that as a function of total 12-step meeting exposure, this [negative events] may be quite rare."[161]

Professional discussions and popular media references[162] to safety issues related to 12-Step programs generally focus on what within is castigated within NA and AA as "13th Stepping"—the targeting and sexual exploitation of newcomers. Beyond the Kelly study, no research exists specifically on "13th Stepping" or other safety issues in NA. An AA study on the experiences of 55 women AA members found that 50% of the women surveyed had experienced13-Step-related behaviors, with two of the surveyed women reporting rape by another AA member.[163]

From the standpoint of science, we know very little about safety-related issues within 12-Step groups and other recovery mutual aid groups or peer or professional interventions that effectively address safety concerns. Nor do we know whether such cases are more common in NA than they are in professionally provided services.

Published studies on attraction to NA, obstacles to NA participation, or retention in NA have not identified safety concerns among those surveyed. Moos, in a review of the potential for iatrogenic effects of psychosocial interventions in the treatment of substance use disorders, concluded that between 7% and 15% of people experienced detrimental effects from such interventions.[164] Though the original Moos review focused

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[160] Moos, R. H. (2005) Iatrogenic effects of psychosocial interventions for substance use disorders: prevalence, predictors, prevention. *Addiction*, 100, 595–604; White, W.L., & Kleber, H.D. (2008). Preventing harm in the name of help: A guide for addiction professionals. *Counselor,* 9(6), 10-17.

[161] Kelly, J. F., Dow, S. J. Yeterian, J. D., & Myers, M. (2011). How safe are adolescents at AA and NA meetings? A prospective investigation with outpatient youth. *Journal of Substance Abuse Treatment*, 40(4), 419-428.

[162] Fransway, R. (Ed.). (2000). 12-Step Horror Stories: *True Tales of Misery, Betrayal, and Abuse in AA, NA, and 12-Step Treatment*. Sharp Press; See film The 13th Step https://www.the13thstepfilm.com/

[163] Bogart, C. J., & Pearce, C. E. (2009). 13th Stepping:" Why Alcoholics Anonymous is not always a safe place for women. *Journal of Addictions Nursing*, 14(1), 43-47.

[164] Moos, R. H. (2005) Iatrogenic effects of psychosocial interventions for substance use disorders: prevalence, predictors, prevention. *Addiction*, 100, 595–604

on professional treatment, he later noted the need for additional research on the potential of such effects within the mutual aid context and potential strategies to prevent and ameliorate them.[165] We concur with Moos' recommendation and suggest that professionals referring to NA and other recovery mutual aid groups closely monitor the potential for such effects among those referred. Mutual aid meetings vary in the presence of active ingredients known to promote recovery and vary in their degree of adherence to their own espoused principles and practices. Knowledge of the character of local meetings should inform referral to mutual aid groups.

Is NA appropriate for people with less religious or spiritual orientation? What is the role of spirituality in NA's program of recovery?

Christo, in a 1988 study of 101 NA members, found that spiritual beliefs were not a prerequisite for initial attraction to NA nor was belief that addiction was a disease/sickness.[166]

Winzeleberg and Humphreys evaluated the influence of religious orientation on 12-Step group attraction, retention, and benefit among 3,018 males treated for substance dependence. They concluded that "referrals to 12-step groups were effective at increasing meeting attendance, irrespective of patients' religious background, and all experienced significantly better substance abuse outcomes when they participated in 12-step groups. The viewpoint that less religious patients are unlikely to attend or benefit from 12-step groups may therefore be overstated."[167]

Galanter and colleagues surveyed 450 NA members in nine U.S. states regarding the role of belief in "God, as we understood him" within their NA experience. The majority of surveyed NA members reported spirituality as an important aspect of their recovery. Twenty-one percent of those surveyed identified themselves as atheists or agnostics. There was a wide diversity in expressed understandings of "God" or "Higher Power," and expressed belief in God was associated with less reported craving and depression.[168]

McClure and Wilkinson in a population survey of 1,711 U.S. adults found that "Individuals who have ever attended addiction recovery programs such as A.A. [or N.A.] are significantly more likely to identify as spiritual but not religious rather than identify as both religious and spiritual, and those who attend such programs more frequently have the greatest likelihood of identifying as spiritual but not religious."[169]

The degree of religious and spiritual orientation varies among NA members with many not fitting neatly into binary categories of religious or secular. While NA's

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[165] Moos, R. H. (2008). Active ingredients of substance use-focused self-help groups. *Addiction*, 103(3), 387-396.

[166] Christo, G. (1998). Narcotics Anonymous as aftercare: The statistics. *Addiction Counseling World*, 9(51), 22-26.

[167] 30. Winzelberg, A., & Humphreys, K. (1999). Should patients' religiosity influence clinicians' referral to 12-Step self-help groups? Evidence from a study of 3,018 male substance abuse patients. *Journal of Consulting & Clinical Psychology*, 67(5), 790-794.

[168] Galanter, M., White, W., & Hunter, B. (2020, In Press). An empirical study on the construct of "God" in the Twelve-Step process. *Journal of Addiction Medicine*.

[169] McClure, P. K., & Wilkinson, L. R. (2020). Attending substance abuse groups and identifying as spiritual but not religious. *Review of Religious Research*, March. DOI: 10.1007/s13644-020-00405-2. (For similar finding, see Mercadante, L. A. (2014). *Belief without Borders: Inside the Minds of the Spiritual but Not Religious*. New York: Oxford University Press.

perceived religious orientation may be an obstacle to NA participation for some individuals, research to date does not suggest that recovery outcomes in NA are contingent upon degree of religious orientation. The role of spirituality in recovery among NA members remains an area of needed research investigation, as does the experience of secular-oriented NA members. Secular 12-Step meetings are becoming increasingly available, and there is recent interest in the role of secular spirituality within the addiction recovery process.[170] At a practice level, clinicians can explore this issue with clients prior to potential referral, highlight the distinction between religion and spirituality within 12-Step groups, and provide orientation to NA steps and secular step interpretations. It is also advisable to encourage sampling NA and available secular mutual aid alternative for those with less religious orientation, and link those with less religious orientation specifically to NA meetings or alternative groups with a more secular orientation.

Is NA appropriate for people with co-occurring psychiatric illness?

Several studies have examined the relationship between co-occurring SUD and psychiatric disorders on NA participation and NA-related recovery outcomes. Conclusions to date from these studies include the following:

- People with both a substance use and mental health disorder generally exhibit rates of NA attendance comparable to patients admitted for SUD treatment without serious mental illness[171], though patients with schizophrenia report lower levels of NA attendance compared to those with other psychiatric disorders.[172]
- NA participation is associated with an increased sense of psychological well-being that increases with duration of participation.[173]
- 12-Step groups are a viable recovery support resource for patients with co-occurring substance use and psychiatric disorders who may also benefit from special clinical supports to enhance NA participation and satisfaction.[174]

[170] Kurtz, E., & White, W. (2015). Recovery spirituality. *Religions*, 6(1), 58-81.

[171] Laudet, A. B., Magura, S., Vogel, H. S., & Knight, E. L. (2003). Participation in 12-step-based fellowships among dually-diagnosed persons. *Alcoholism Treatment Quarterly*, 21(2), 19-39; Timko, C., Sutkowi, A. & Moos, R. (2010). Patients with dual diagnoses or substance use disorders only: 12-Step group participation and 1-year outcomes. *Substance Use & Misuse*, 45(4), 613-627; Bergman, B. G., Greene, M. C., Hoeppner, B. B., Slaymaker, V. & Kelly, J. F. (2013). Psychiatric comorbidity and 12-Step participation: A longitudinal investigation of treated young adults. *Alcoholism: Clinical and Experimental Research*, 38(2), p. 501-510.

[172] Jordan, L. C., Davidson, W. S., Herman, S. E., & Bootsmiller, B. (2002). Involvement in 12-Step programs among persons with dual diagnoses. *Psychiatric Services*, 55(7), 894-896; Kelly, J. F. (2003). Self-help for substance-use disorders: History, effectiveness, knowledge gaps, and research opportunities. *Clinical Psychology Review*, 23, 639-663.

[173] DeLucia, C., Bergman, B. G., Formoso, D., & Weinberg, L. B. (2015). Recovery in Narcotics Anonymous from the perspectives of long-term members: A qualitative study. *Journal of Groups in Addiction & Recovery*, 10(1), 3-22

[174] Bogenschutz, M. P., & Akin, S. J. (2000). 12-Step participation and attitudes toward 12-step meetings in dual diagnosis patients. *Alcoholism Treatment Quarterly*, 18(4), 31-45.

- Recovery outcomes may be better for some patients with co-occurring disorders within specialty 12-Step groups (Dual Diagnosis Anonymous) compared to single-focus groups (NA or AA).[175]
- NA participation, compared to participation in self-acceptance group therapy, is associated with greater decreases in depression.[176]
- Patients with concurrent SUD and major depressive disorder may be less socially engaged and derive less global benefit from 12-Step group involvement compared to those with SUD-only, though substance use outcomes are similar and 12-Step linked improvements in depression are possible.[177]
- Treatment modifications may be required to maintain 12-Step group participation following cessation of formal treatment services.[178]
- NA can serve as an effective recovery resource for veterans, including those with PTSD.[179]

In summary, research findings differ on the equivalence of NA effectiveness among people with and without co-occurring SUD and other psychiatric disorders. The largest number of studies suggest that people with co-occurring disorders attend and benefit from NA at similar levels as those with only a SUD, but those with more severe forms of mental illness may require additional professional supports to maximize the positive effects of NA participation. When individuals in the latter group appear to experience a mismatch with NA, it is advisable to consider referral to a dual focus support group.

How does concurrent participation in addiction treatment and NA affect long-term recovery outcomes?

Fiorentine and Hillhouse, in a follow-up study of 419 adult admissions to outpatient SUD treatment, found an additive effect of combining 12-Step and professional SUD treatment: …"those who participated concurrently in both drug treatment and 12-Step programs had higher rates of abstinence than those who participated only in treatment or in 12-Step programs."[180] 12-Step studies confirm that 12-Step participation during and following treatment appears to strengthen and extend

[175] Laudet, A., Magura, S., Vogel, H., & Knight, E. (2000b). Support, mutual aid and recovery from dual diagnosis. *Community Mental Health Journal*, 36(5), 457-476.

[176] Soltaninejad, A., Barshan, A., Dortaj sani, S., Anaraki, M., & Saberi, R. (2017). On the comparison of the effectiveness of self-acceptance group therapy by Dryden method with teachings of Narcotics Anonymous groups (NA) in addicts' mental health in Kerman City. *Journal of Research on Addiction*, 11 (41), 49-63.

[177] Kelly, J. F., McKellar, J. D., & Moos, R. (2003). Major depression in patients with substance use disorders: Relationship to 12-step self-help involvement and substance use outcomes. *Addiction*, 98, 499–508; Worley, M. J., Tate, S. R., & Brown, S. A. (2012). Mediational relations between 12-Step attendance, depression and substance use in patients with comorbid substance dependence and major depression. *Addiction*, 107(11), 1974-1983.

[178] Worley, M. J., Tate, S. R., McQuaid, J. R., Granholm, E. L., & Brown, S. A. (2013). 12-Step affiliation and attendance following treatment for comorbid substance dependence and depression: A latent growth curve mediation model. *Substance Abuse*, 34(1), 43-50.

[179] Galanter, M., Dermatis, H., & Sampson, C. (2014). Narcotics Anonymous: A comparison of military veterans and non-veterans. *Journal of Addictive Diseases*, 33(3), 187-95.

[180] Fiorentine, R., & Hillhouse, M. P. (2000). Drug treatment and 12-step program participation: The additive effects of integrated recovery activities. *Journal of Substance Abuse Treatment*, 18(1), 65-74.

positive effects of professional SUD treatment, but replication of this finding is needed via studies composed exclusively of NA members.[181]

In spite of most NA studies involving treatment populations, no study has involved a trial comparing effects of specialty addiction treatment with and without NA involvement to involvement in NA without professional treatment. The portion of NA members who achieve stabled recovery without involvement in professional treatment is unknown, but research to date suggests the value of combining NA and professional treatment.

Is NA appropriate for people in medication-assisted treatment?

NA attitudes and policies toward the use of maintenance medications have long been a source of tension within NA and within the larger addictions field.[182] Table 9 summarizes conclusions from research studies on the experience of people seeking help from NA who are on such medications as methadone, buprenorphine, or Naltrexone.

Table 9: NA / 12-Step Participation among Patients in Medication-assisted Treatment
Parran and colleagues conducted an 18-48 month follow-up study of 176 opioid-dependent patients treated with outpatient buprenorphine/naloxone. "Those on bup/nx [buprenorphine/naloxone] at follow-up were more likely to report abstinence, to be affiliated with 12-step recovery, to be employed and to have improved functional status." They also found that the primary reason patients discontinued medication maintenance was perceived incompatibility between medication maintenance and 12-Step philosophy.[183] White and colleagues surveyed 322 patients enrolled in methadone maintenance treatment in a major U.S. city. They found a high rate of continuing abstinence from illicit drugs and alcohol in patients who were involved in NA/AA and a high rate of self-reported helpfulness of NA/AA. They also found patient experiences of marginalization/discrimination within NA/AA related specifically to medication status, leading some subjects to withhold their medication use from other NA/AA members and their sponsors.[184]

[181] Kelly, J. F., Dow, S. J., Yeterian, J. D., & Kahler, C. W. (2010), Can 12-step group participation strengthen and extend the benefits of adolescent addiction treatment" A prospective analysis. *Drug and Alcohol Dependence*, 110(1-2), 117-25.

[182] White, W. (2011). *Narcotics Anonymous and the pharmacotherapeutic treatment of opioid addiction*. Chicago, IL: Great Lakes Addiction Technology Transfer Center and Philadelphia Department of Behavioral Health and Intellectual disability Services.

[183] Parran, T. V., Adelman, C. A., Merkin, B., Pagano, M. E., Defranco, R., Ionescu, R. A., & Mace, A. G. (2010). Long-term outcomes of office-based buprenorphine/naloxone maintenance therapy. *Drug and Alcohol Dependence*, 106(1), 56-60.

[184] White, W. L., Campbell, M. D., Spencer; R. A., Hoffman, H. A., Crissman, B., & DuPont, R. L. (2014). Participation in Narcotics Anonymous and Alcoholics Anonymous and abstinence outcomes of 322 methadone maintenance patients. *Journal of Groups in Addiction and Recovery*, 9(1), 14-30.

Table 9: NA / 12-Step Participation among Patients in Medication-assisted Treatment
Monico and colleagues studied the effects of 12-Step participation on patients treated for opioid dependence with buprenorphine. They concluded: "Twelve-step meeting attendance is associated with better outcomes for BMT [buprenorphine maintenance treatment] patients over the first 6 months of treatment. However, there is no benefit to requiring meeting attendance as a condition of treatment, and clinicians should be aware of potential philosophical conflicts between 12-step and BMT approaches."[185] Harvey and colleagues conducted a 3-month follow-up study of 570 individuals in medication-assisted treatment for an opioid use disorder. They concluded: "Hours of individual counseling and 12-Step participation significantly predicted abstinence at follow-up….This finding suggests that the combination of individual and 12-Step interventions offer additional benefits above and beyond the direct effects of each treatment alone."[186] Although attitudes and policies toward maintenance medications used in the treatment of addiction may vary considerably across NA groups, people in medication-assisted treatment also seeking help from NA may encounter ambivalent to hostile attitudes toward such medication and face restrictions on their level of NA participation (e.g., ability to claim "clean time," speak in meetings, chair meetings, fill service positions).[187] Stigmatized attitudes toward maintenance medications in people recovering from opioid addiction with medication support can leave those in medication-assisted treatment still feeling like "users" and being perceived as still addicted ("dirty") even when illicit drug use has ceased and quality of life and functioning has significantly improved.[188]

[185] Monico, L. B., Gryczynski, J., Mitchell, S. G., Schwartz, R. P., O'Grady, K. E., & Jaffe, J. H. (2015). Buprenorphine treatment and 12-step meeting attendance: Conflicts, compatibilities, and patient outcomes. *Journal of Substance Abuse Treatment*, 57, 89-95.

[186] Harvey, L., Fan, W., Cano, M. A., Vaughan, E., Arbona, C., Essa, S., Sanchez, H., & de Dios, M. A. (2020). Psychosocial intervention utilization and substance abuse treatment outcomes in a multisite sample of individuals who use opioids. *Journal of Substance Abuse Treatment*, 112, 68-75.

[187] White, W. (2011). Narcotics Anonymous and the pharmacotherapeutic treatment of opioid addiction. Chicago, IL: Great Lakes Addiction Technology Transfer Center and Philadelphia Department of Behavioral Health and Intellectual disability Services.

[188] Malvini Redden, S., Tracy, S. J., & Shafer, M. S. (2013). A metaphor analysis of recovering substance abusers' sensemaking of medication-assisted treatment. *Qualitative Health Research*, 23(7), 951-962; Vigilant, L. G. (2004). The stigma paradox in methadone maintenance: Naïve and positive consequences of a "treatment punishment" approach to opiate addiction. *Humanity and Society*, 28(4), 403-418; Kepple, N.J., Parker, A., Whitmore, S., & Comtois, M. (2019). Nowhere to go? Examining facility acceptance levels for serving individuals using medication for opioid use disorder. *Journal of Substance Abuse Treatment*, 104, 42-50; Conner, K. O., & Rosen, D. (2008). "You're nothing but a junkie": Multiple experiences of stigma in an aging methadone maintenance population. *Journal of Social Work Practice in the Addictions*, 8(2), 244-264; Murphy, S., & Irwin, J. (1992). "Living with the dirty secret": Problems of disclosure for methadone maintenance clients. *Journal of Psychoactive Drugs*, 24(3), 257-264.

Table 9: NA / 12-Step Participation among Patients in Medication-assisted Treatment
NA policies and attitudes of vocal NA members opposed to medication-assisted recovery may not reflect the attitudes of mainstream NA members. In an unexpected finding, Bergman and colleagues in a survey of attitudes toward maintenance medications among a U.S. sample of people in recovery did not find an association between 12-Step participation and negative attitudes towards such medications, even in an analysis of only NA member respondents.[189] There is a trend toward integration of maintenance medications into 12-Step-oriented addiction treatment. It is unclear what effects this trend may have on future attitudes towards medication-assisted recovery support options and NA's medication policies.[190]

These preliminary findings suggest that NA involvement may be of potential benefit to people in medication-assisted treatment (MAT) as complementary recovery support during MAT and as a source of post-MAT recovery support. Referral of such patients to NA should include: 1) preparatory orientation about NA policies on medication, 2) assertive linkage to medication-friendly NA meetings, 3) monitoring of MAT patient responses to NA meetings, and, 4) if and when needed, linkage to alternative recovery support resources such as Methadone Anonymous, Moms on Methadone, Medication-Assisted Recovery Support, or All Recoveries Anonymous.

What mechanisms might help explain the positive changes people experience through NA participation?

NA's program of addiction recovery is rooted in the collective experience of its members rather than in a particular theory or in scientific investigations. Based on this experiential knowledge, NA, through its primary literature, has defined the primary nature of addiction, the personal consequences of addiction, and related prescriptions through which its members have achieved successful recovery. Table 10 displays how

[189] Bergman, B. G., Ashford, R., & Kelly, J. F. (2019). Attitudes toward opioid use disorder medications: Results from a U.S. national study of individuals who resolved a substance use problem. *Experimental and Clinical Psychopharmacology*, September, DOI: 10.1037/pha0000325

[190] Galanter, M. (2018) Combining medically assisted treatment and Twelve-Step programming: a perspective and review. *The American Journal of Drug and Alcohol Abuse*, 44(2)151-159; Galanter, M., Seppala, M., & Klein, A. (2016). Medication-assisted treatment for opioid dependence in twelve-step-oriented residential rehabilitation settings. *Substance Abuse*, 37(3), 381-383; Glickman, L, Galanter, M., Dermatis, H., Dingle, S., & Hall, L. (2005). Pathways to recovery: Adapting 12-step recovery to methadone treatment. *Journal of Maintenance in the Addictions*, 2(4), 77-90; Klein, A. A. & Seppala, M.D. (2019). Medication-assisted treatment for opioid use disorder within a 12-step based treatment center: Feasibility and initial results. *Journal of Substance Abuse Treatment*, 104, 51-63; Seppala, M. (2013). A comprehensive response to the opioid epidemic: Hazelden's approach. *Minnesota Medicine*, 96(3), 45-7; White, W. (2015). Recovery-focused addiction psychiatry: An Interview with Dr. Marvin Seppala. *Alcoholism Treatment Quarterly*, 33(4), 458-473; Obuchowsky, M., & Zweben, J.E. (1987). Bridging the gap: The methadone client in 12-Step programs. *Journal of Psychoactive Drugs*, 19(3), 301-302;

NA's *Basic Text* defines these problems, consequences, and behavioral prescriptions.[191]

Table 10: NA's Problem Definition and Program of Recovery

Problem Definition	**NA Prescription to Resolve Problem**
"Our problem is not a specific substance, it is a disease called addiction" (xxv) Moderation is not a solution to addiction (18): "When we use, we lose." (11) "The physical aspect of our disease is the compulsive use of drugs: the inability to stop using once we have started. The mental aspect of our disease is the obsession, or overpowering desire to use, even when we are destroying our lives. The spiritual part of our disease is our total self-centeredness." (20) "We have a disease, but we do recover." (8)	Complete abstinence from all addictive substances. (16, 18) Hope stemming from exposure to lived recovery experience of NA members Guidance on daily living from members in stable recovery Personal changes resulting from sustained abstinence and active Step work.
"…every addict…suffers from an incurable disease of body, mind, and spirit." (xxvi)	Recovery is more than cessation of drug use; recovery requires healing and transformation of the whole person. "Personality change was what we really needed." (15)
Sample Problem Consequences	**NA Prescription**
Preoccupations with power & control; defensive adaptions to deteriorations in health and functioning (e.g., denial, minimization, grandiosity, projections of blame, resentment, intolerance, aggression) (15, 20)	Stop using Acceptance and surrender, daily practice of honesty, humility, open-mindedness and gratitude (18, 20-21)
Social isolation, self-entrapment, self-pity, emptiness, hopelessness (4)	Connection to resource and relationships beyond the self Attend meetings: "Our meetings are a process of identification, hope and sharing." (11) Spiritual awakening (48)
Personality changes while using; fear of insanity (6, 22)	Hope via restoration of sanity with aid of power greater than oneself and mutual

[191] Narcotics Anonymous World Services, Inc. (2008). *Narcotics Anonymous*. Van Nuys, California.

	support; reconstruction of personal character and values (principles of daily living)
Self-deception; dishonesty, harm to others; guilt and shame; self-loathing (13, 34)	Honest self-inventory of character defects and assets, confession, amends to others, service to others (e.g., sharing with others, sponsoring new members, assumption of NA service roles), and continued self-inventory

The above examples illustrate the ways in which NA:

- defines the solution to addiction in behavioral terms (stop using, go to meetings, work the NA Steps, practice NA principles in your daily life),
- provides clear measures of progress (e.g., counting "clean time"),
- assures continued group surveillance/support and self-monitoring, and
- rewards pro-recovery milestones via recovery celebrations and status from service roles and activities.

Scientific studies of NA and studies of 12-Step programs that include NA samples reveal a wide variety of mechanisms through which recovery and enhanced quality of life are elevated, including many of those identified within NA's own literature. These mechanisms include:

- increased confidence (hope) of one's recovery potential (self-efficacy / locus of control)[192]
- increased motivation for abstinence[193]
- personal mentoring (sponsorship)[194]
- social support and social network reconstruction[195]

[192] Tajalli, F.B., & Kheiri, L. (2010). Locus of control in substance relateb and NA. *Procedia-Social and Behavioral Sciences*, 5, 1414-1417; Navid, K., Khiavi, F. F., Nezzgad, S. Z., Fathi, K., & Haghighi, M.H. (2016). Drug abstinence self-efficacy among addicted men who stopped taking drugs and participating in therapeutic community. Narcotic Anonymous and methadone maintenance treatment groups in Ahvaz City, Iran. *International Journal of Pharmaceutical Research & Allied Sciences*, 5(2), 75-81; Jalali, R., Moradi, A., Dehghan, F., Merzai, S., & Alikhani, M. (2019). The exploration of factors related to treatment retention in Narcotics Anonymous members: a qualitative study. *Substance Abuse Treatment Prevention Policy*, 14(1), 14.

[193] Kelly, J. F., Myers, M. G., & Brown, S. A. (2000). A multivariate process model of adolescent 12-Step attendance and substance use outcome following inpatient treatment. *Psychology of Addictive Behaviors*, 14(4), 376-389.

[194] Radziwiłłowicz, W., & Karolewska, I. (2017). Temporal orientation and self-experience of Narcotics Anonymous. *Alcoholism and Drug Addiction*, doi: 10.5114/ain.2017.68443; Witbrodt, J., & Kaskutas, L.A. (2005). Does diagnosis matter? Differential effects of 12-step participation and social networks on abstinence. *American Journal of Drug and Alcohol Abuse*, 31(4), 685-707; Kelly, J. F., Greene, M. C., & Bergman, B. G. (2017). Recovery benefits of the "therapeutic alliance" among 12-step mutual-help organization attendees and their sponsors. *Drug & Alcohol Dependence*, 162, 64–71; Wendt, D. C., Hallgren, K. A., Daley, D. C., & Donovan, D. M. (2017). Predictors and outcomes of Twelve-Step sponsorship of stimulant users: Secondary analyses of a multisite randomized clinical trial. *Journal of Studies on Alcohol & Drugs*, 78(2), 287–295.

[195] Toumbourou, J. W., Hamilton, M., U'Ren, A., Stevens-Jones, P., & Storey, G. (2002). Narcotics Anonymous participation and changes in substance use and social support. *Journal of Substance Abuse Treatment*, 23(1), 61-66;

- structuring of leisure time[196]
- cognitive support for key NA beliefs[197] [198]
- personal identity/character and worldview transformation—embrace of recovery identity, new experience of self, one's place in universal order, relationships with others, and severing person-drug relationship[199]
- enhanced self-esteem
- improved coping strategies
- increased empathy[200]
- strengthened commitment to recovery and prestige acquisition via NA service structure and from helping others[201]

Flynn, A. M., Alvarez, J., Jason, L. A., Olson, B. D., Ferrari, J. R., & Davis, M. I. (2006). African American Oxford House residents: Sources of abstinent social networks. *Journal of Prevention & Intervention in the Community*, 31(1-2), 111-119; Jalali, R., Moradi, A., Dehghan, F., Merzai, S., & Alikhani M. (2019). The exploration of factors related to treatment retention in Narcotics Anonymous members: a qualitative study. *Substance Abuse Treatment Prevention Policy*, 14(1), 14; Humphreys, K. (1997). Clinicians' referral and matching of substance abuse patients to self- help groups after treatment. *Psychiatric Services*, 48, 1445-1449; Laudet, A, Morgen, K. & White, W. (2006). The role of social supports, spirituality, religiousness, life meaning and affiliation with 12-step fellowships in quality of life satisfaction among individuals in recovery from alcohol and drug use. *Alcoholism Treatment Quarterly*, 24(102), 33-73; Davey-Rothwell, M. A., Kuramoto , J., & Latkin, C. A. (2009). Social networks, norms, and 12-Step group participation. *American Journal of Drug and Alcohol Abuse*, 34(2), 185-193.

[196] Masuod, H. M., Akbar, Z. S., & Behrooz, S. (2011). A survey on the rate and the effective factors on the membership satisfaction of N.A. association in Andimeshk. *The Sociology of Youth Studies Quarterly*, 1(3), 33-54.

[197] For example, addiction is a disease of mind, body, and spirit; recovery is possible; recovery is best achieved through total abstinence; and abstinence is best supported through prolonged NA participation.

[198] Haghgoie-Isfahani, M., Nili-Ahmadabadi, A., Arman-Mehr, V., & Moradi-Kalelo, N. (2015). Lived experiences of participants of factors affecting the drug stability (Narcotics Anonymous). *Journal of Qualitative Research in Health Sciences*, 4(2): 125-136.

[199] Rafalovich, A. (1999). Keep coming back—Narcotics Anonymous narrative and recovering-addict identity. *Contemporary Drug Problems*, 26(1), 131-157; Ronel, N., & Humphreys, K. (2000). Worldview transformations of Narcotics Anonymous members in Israel. *International Journal of Self-Help and Self-Care*, 1(1), 101-127; Sotodeh Asl, N., Behnam, B., & Ghorbani, R. (2013), Effectiveness of Narcotics Anonymous training programs in personality characters in substance abuse patients, *Koomesh*, 14(3), 316-20; Buckingham, S. A., Frings, D., & Albery, I. P. (2013). Group membership and social identity in addiction recovery. *Psychology of Addictive Behaviors*, 27(4), p. 1132-1140; Anderson, T. L. (1993). Types of identity transformation in drug using and recovery careers. *Sociological Focus*, 26(2), 133-145

[200] McCown, W. (1989). The relationship between impulsivity, empathy and involvement in Twelve Step self-help substance abuse treatment groups. *British Journal of Addiction*, 84, 391-393.

[201] Crape, B. L., Latkin, C. A., Laris, A. S., & Knowlton, A. R. (2002). The effects of sponsorship in 12-step treatment of injection drug users. *Drug and Alcohol Dependence*, 65(3), 291-301; Snyder, J. K., & Fessler, D. M. T. (2014). Narcotics Anonymous: Anonymity, admiration, and prestige in an egalitarian community. *Journal of the Society of Psychological Anthropology*, 42(4), 440-459; Haghgoie-Isfahani, M., Nili-Ahmadabadi, A., Arman-Mehr, V., & Moradi-Kalelo, N. (2015). Lived experiences of participants of factors affecting the drug stability (Narcotics Anonymous). *Journal of Qualitative Research in Health Sciences,* 4(2), 125-136; Radziwiłłowicz, W., & Karolewska, I. (2017). Temporal orientation and self-experience of Narcotics Anonymous. *Alcoholism and Drug Addiction*, doi: 10.5114/ain.2017.68443. 56; Zemore, S. E., Kaskutas, L. A., & Ammon, L. N. (2004). In 12-step groups, helping helps the helper. *Addiction*, 99(8), 1015-1023; Witbrodt, J., & Kaskutas, L.A. (2005). Does diagnosis matter? Differential effects of 12-step participation and social networks on abstinence. *American Journal of Drug and Alcohol Abuse*, 31(4), 685-707; Zemore, S. E., & Kaskutas, L. A. (2008). 12-Step involvement and peer helping in day hospital and residential programs. *Substance Use & Misuse*, 43(12-13), 1882-1903.

- spiritual renewal (life meaning and purpose)[202]
- decreased stress, anxiety, depression, hostility, and shame (the latter particularly cited by women in NA),[203] and
- Protection within high-risk environments.[204]

Rudolf Moos explored four theoretical models that possibly explain how recovery mutual aid groups, and 12-Step groups in particular, exert an influence on drug using behaviors, physical and emotional health, and social functioning. Social control theories emphasize how 12-Step programs encourage and bolster the goal of complete drug abstinence, provide group surveillance and behavioral monitoring, reward milestones in goal achievement, and encourage broader dimensions of personal growth (e.g., self-discovery, responsibility, and spirituality). Social Learning theories suggest that 12-Step groups exert their influence by serving as a shield against the influence of substance-using family and friends, cultivating new abstinence-based friendships, and providing role models for an abstinent-based lifestyle. Behavioral choice theories highlight the influence of 12-Step groups in the provision of substance-free social activities, self-esteem enhancement through acts of service to others, and reordering expectations for positive and negative consequences related to abstinence and drug use. Stress and coping theories suggest that NA participation influences recovery outcomes by improving motivation for abstinence, elevating confidence in achieving and maintaining abstinence, and modeling substance use refusal and alternative coping skills (approach versus avoidant coping strategies).[205] David Best and colleagues have extended social control and social learning theories to suggest that the process of recovery initiation involves a shift in social affiliation and a transformation of one's social identity—a

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[202] Chen, G. (2006). Social support, spiritual program, and addiction recovery. *International Journal of Offender Therapy and Comparative Criminology*, 50(3), 306-323; Beygi, A. (2011). Spiritual development, socio-religious performance and quality of life in Narcotics Anonymous. *Journal of Knowledge & Health*, 6(2), 6-12; 38; Galanter, M., Dermatis, H., Post, S., & Santucci, C. (2013). Abstinence from drugs of abuse in community-based members of Narcotics Anonymous. *Journal of Studies on Alcohol and Drugs*, 74(1), 1-4. 23; Green, L. L., Fullilove, M. T. & Fullilove, R. E. (1998). Stories of spiritual awakening - The nature of spirituality in recovery. *Journal of Substance Abuse Treatment*, 15(4), p. 325-331; Laudet, A., Morgen, K., & White, W. (2006). The role of social supports, spirituality, religiousness, life meaning and affiliation with 12-step fellowships in quality of life satisfaction among individuals in recovery from alcohol and drug use. *Alcoholism Treatment Quarterly*, 24(102), 33-73. 72; Carrico, A. W., Gifford, E. V., & Moos, R. H. (2007). Spirituality/religiosity promotes acceptance-based responding and 12-step involvement. *Drug and Alcohol Dependence*, 89, 66-73; Zemore, S. E. (2007). A role for spiritual change in the benefits of 12-Step involvement. *Alcoholism: Clinical & Experimental Research*, 31(10 Suppl), 76s-79s.

[203] Chen, G. (2006). Social support, spiritual program, and addiction recovery. *International Journal of Offender Therapy and Comparative Criminology*, 50(3), 306-323; Tajalli, F.B., & Kheiri, L. (2010). Locus of control in substance relateb and NA. *Procedia-Social and Behavioral Sciences*, 5, 1414-1417; Sanders, J. (2011). Feminist perspectives on 12-step recovery: A comparative descriptive analysis of women in Alcoholics Anonymous and Narcotics Anonymous. *Alcoholism Treatment Quarterly*, 29(4), 357-378.

[204] Green, L. L., Fullilove, M. T., & Fullilove, R. E. (2005). Remembering the lizard: Reconstructing sexuality in the rooms of Narcotics Anonymous. *Journal of Sex Research*, 42(1), 28-34.

[205] Moos, R. H. (2007). Theory-based processes that promote the remission of substance use disorders. *Clinical Psychology Review*, 27(5), 537-551; Moos, R. H. (2008). Active ingredients of substance use-focused self-help groups. *Addiction*, 103(3), 387-396. Moos, R. H. (2008). How and why twelve-step self-help groups are effective. In M. Galanter & L. A. Kaskutas (Eds.), *Recent developments in alcoholism: Research on Alcoholics Anonymous and spirituality in addiction recovery*, 18 (pp. 1-20). New York, NY: Springer.

process aided by the cognitive restructuring and social networking within NA and other recovery mutual aid organizations.[206]

Other authors focus on the potential role of 12-Step group participation in reversing or ameliorating the neurological deficits induced by excessive and prolonged substance use (e.g., dopamine depletion, reward deficiency, executive function defects) and reversing defects in memory, problem solving, emotional self-regulation, and impulse control.[207]

These theoretical frameworks and NA's own literature offer insights into how NA participation might mitigate addiction-related deficits and facilitate recovery stabilization and long-term recovery maintenance. The sheer number of mechanisms of change operating within NA identified within the above noted studies may account for its wide adaptability across cultural contexts and its viability across diverse demographic and clinical populations. We suspect that, like AA, the NA program of recovery involves multiple mediators operating simultaneously with factors such as sex/gender, age, addiction severity, and cultural context influencing these mediators. The ways in which people benefit or fail to benefit from NA participation differ depending on participants' individual needs and wants reflecting their differing clinical histories, life-contexts and circumstances, and stage of recovery.[208]

Future research studies on the most potent combinations or sequences of the above mediators of change within NA will be particularly important for the future design of recovery support services. As a highly accessible, low-cost long-term recovery management resource possessing credibility among those with lived recovery experience, NA lowers the risk of SUD recurrence and enhances global health through multiple mechanisms of change.

Does NA lead to isolation from mainstream community life or greater civic involvement?

NA and 12-Step critics have argued that 12-Step involvement is personally disempowering and leads to cult-like isolation from mainstream community life.[209] Such criticisms are part of a larger critique that NA and other 12-Step programs cast members as failures by positing the roots of addiction at an intrapersonal level while

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[206] Best, D., Beckwith, M., Haslam, C., Haslam, S. A., Jetten, J., Mawson, E., & Lubman, D. I. (2015). Overcoming alcohol and other drug addiction as a process of social identity transition: The social identity model of recovery (SIMOR). *Addiction Research & Theory*, 24(2), 111-123.

[207] Blum, K., Febo, M., Badgaiyan, R. D., Demitrovics, Z. Simpatico, T., Fahike, C., . . . & Gold, M. S. (2016). Common neurogenetic diagnosis and meso-limbic manipulation of hypodopaminergic function in reward deficiency syndrome (RDS): Changing the recovery landscape. *Current Neuropharmacology*, 15(1), 184-194; Blum, K., Thompson, B., Demotrovics, Z., Femino, J., Giordano, J., Oscar-Berman, M., . . . & Gold, M. S. (2015). The molecular neurobiology of twelve steps programs & fellowship: Connecting the dots for recovery. *Journal of Reward Deficiency Syndrome*, 1(1), 46-64.

[208] Kelly, J. F., Magill, M., & Stout, R. L. (2009). How do people recover from alcohol dependence? A systematic review of the research on mechanisms of behavior change in Alcoholics Anonymous. *Addiction Research & Theory*, 17(3), 236-259; Kelly, J. F., Bergman, B. G., & Fallah-Sohy, N. (2018). Mechanisms of behavior change in 12-step approaches to recovery in young adults. *Current Addiction Reports*, 5(2), 134–145.

[209] Dodes, L., & Dodes, Z. (2015) *The sober truth: Debunking the bad science behind 12-step programs and the rehab industry*. Boston: Beacon Press.

ignoring environmental factors that contribute to personal addiction vulnerability and its population prevalence.[210] The majority of these critiques lack any included scientific evidence, but often garner considerable media attention. So what does the research on this question conclude? Three studies have addressed this issue.

In 2003, Kurtz and Fisher conducted two studies involving interviews with 12-Step (NA and AA) members (17 in the first study and 33 in the second study) to address this question. Kurtz and Fisher concluded that 12-Step members are actively involved in community life and that "…it is possible for 12-step participation to engender a sense of empowerment, commitment to community life, and concern for others."[211]

A participant-observation study of more than 300 NA meetings in Israel concluded that NA served as a bridge between the drug culture and the mainstream community—protecting NA members from some negative societal influences while enabling greater participation in many aspects of community life.[212]

The relationship between NA members and the community is not a uniform one and often evolves across the stages of recovery. Some members use an acultural style of recovery maintaining minimal involvement in NA and minimal involvement in the larger community—with isolation serving as a primary protection against "people, places, and things" that could trigger a return to drug use. Others develop a bi-cultural style in which they are deeply involved in the NA culture while also deeply involved in community life. Still others may develop a culturally engaged style of NA involvement through which most of their social relationships and daily activities are dominated by NA with minimal interaction with the larger community. Those who have been deeply engaged in illicit drug cultures may require an early style of intense NA engagement as a protection against return to the drug culture and drug use. For many, NA involvement is marked over time by a transition from engaged to bi-cultural styles of recovery maintenance.[213] The latter style extends service within NA to a larger pattern of community involvement and service.

What is the cost-effectiveness of NA participation?

There have been no studies specifically evaluating the cost-effectiveness of NA participation, but three studies have drawn conclusions regarding the potential health care cost-savings that accrue from participation in 12-Step groups. In 2007, Humphreys and Moos conducted a 2-year follow-up study of 1774 veterans treated for a substance use disorder in either CBT [cognitive-behavioral treatment] or 12-Step based treatment. Clinical outcomes were similar, with the 12-Step group achieving higher levels of abstinence. The authors concluded: "Promoting self-help group involvement appears to

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[210] Christensen, P. (2017). The program is perfect: Narcotics Anonymous and the managing of the American addict. *Medicine Anthropology Theory*, 41, 23-27.

[211] Kurtz, L. F., & Fisher, M. (2003a). Participation in community life by AA and NA members. *Contemporary Drug Problems*, 30(4), 875-904; Kurtz, L. F., & Fisher, M. (2003b). Twelve-Step recovery and community service. *Health & Social Work*, 28(2), 137-145.

[212] Ronel, N. (1998). Narcotics Anonymous: Understanding the "Bridge of Recovery." *Journal of Offender Rehabilitation,* 27(1-2), 179-197.

[213] White, W. (1996). *Pathways from the Culture of Addiction to the Culture of Recovery*. Center City, MN: Hazelden.

improve post-treatment outcomes while reducing the costs of continuing care."[214] In that same year, Kelly and Myers reviewed available research on adolescent participation in AA and NA and concluded "freely available AA and NA networks could provide a cost-effective long-term therapeutic adjunct to professional SUD approaches for youth."[215] In 2012, Mundt and colleagues evaluated the association between 12-Step participation and the medical care costs of 403 adolescents following SUD treatment. They found that "Each additional 12-step meeting attended was associated with an incremental medical cost reduction of 4.7% during seven-year follow-up"—cost reductions related to reduced hospital admissions, reduced SUD treatment, and reduced psychiatric visits.[216] These studies confirmed earlier findings by Humphreys and Moos that 12-step based treatment resulted in lower continuing care costs than alternative treatment approaches.[217]

The limited data available suggest that encouraging NA involvement leads to significant cost reductions in health care utilization. In addition to decreased health care costs accruing from NA involvement, additional social cost savings could accrue from decreased involvement in the criminal justice and child welfare systems and cost offsets related to increased employment. The range of these potential cost savings remain unknown.

What are the attitudes toward NA among helping professionals and addiction treatment personnel and their related referral practices?

Professional attitudes toward NA vary by country and by treatment setting. Table 11 summarizes the results of available studies.

Table 11: Professional Attitudes & Referral Practices Related to NA

Troyer and associates surveyed 67 therapeutic communities in the U.S. regarding 12-Step attitudes and practices. Of those surveyed, 90% reported having 12-Step meetings on their premises (76% had AA meetings; 66% had NA meetings).[218]

Woff and colleagues surveyed 113 drug treatment professionals from 54 treatment agencies in Australia regarding attitudes toward the value of 12-Step programs. Most of those surveyed expressed positive views toward 12-Step programs while

[214] Humphreys, K., & Moos, R.H. (2007). Encouraging posttreatment self-help group involvement to reduce demand for continuing care services: Two year clinical and utilization outcomes. *Alcoholism: Clinical and Experimental Research*, 31(1), 64-68.
[215] Kelly, J. F., & Myers, M. G. (2007). Adolescents' participation in Alcoholics Anonymous and Narcotics Anonymous: Review, implications and future directions. *Journal of Psychoactive Drugs*, 39(3), 259-269.
[216] Mundt, M. P., Pathasarathy, S., Chi, F. W., Sterling, S., & Campbell, C. I. (2012). 12-step participation reduces medical costs among adolescents with a history of alcohol and other drug treatment. *Drug and Alcohol Dependence*, 126(1-2), 124-30.
[217] Humphreys, K., & Moos, R. (2001). Can encouraging substance abuse patients to participate in self-help groups reduce demand for health care? A quasi-experimental study. *Alcoholism: Clinical and Experimental Research*, 25(5), 711-716.
[218] Troyer, T. N., Acampora, A. P., O'Connor, L. E., & Berry, J. W. (1995). The changing relationship between therapeutic communities and 12-step programs: A survey. *Journal of Psychoactive Drugs*, 27(2), 177-180.

Table 11: Professional Attitudes & Referral Practices Related to NA

acknowledging their inappropriateness for some populations and concerns that self-help groups failed to address "underlying psychopathology."[219]

Freimuth surveyed 97 psychotherapists in the U.S. and found that "Psychotherapists are not only open to working with patients in 12-Step groups but they also believe there are multiple benefits to their patients' involvement."[220]

In a 1997 survey by Humphreys of 12-Step attitudes among 389 directors of VA SUD treatment programs, 45% reported referring patients to NA as a recovery support resource. The three groups of patients less likely to be referred included atheists, patients with co-occurring psychiatric disorders, and patients with less severe SUDs.[221]

Day and colleagues surveyed 346 UK addiction treatment workers on attitudes toward 12-Step groups. They concluded that attitudes toward such groups were "ambivalent at best" and that workers rarely referred their clients to 12-Step groups.[222]

A 2005 survey of 100 addiction treatment professionals conducted by Laudet and White in New York City revealed highly positive attitudes toward 12-Step groups but also identified key areas of resistance, e.g., 12-step emphasis on spirituality and powerlessness.[223]

Fenster, in a 2006 study of clinician referral patterns to 12-Step groups found that a large percentage of surveyed clinicians lacked information on 12-Step and alternative recovery mutual aid societies. Clinicians preferring 12-Step groups as referral sources were less likely to be knowledgeable of alternatives.[224]

Kelly and colleagues conducted a 2008 survey of 12-Step attitudes of 114 clinical staff from five adolescent SUD treatment programs. Staff rated NA/AA participation as "very important and helpful" in elevating recovery outcomes and referral rates were uniformly high.[225]

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[219] Woff, I., Toumbourou, J., Herlihy, E., Hamilton, M., & Wales, S. (1996). Service providers' perceptions of substance use self-help groups. *Substance Use. & Misuse*, 31(10), 1241-1258.

[220] Freimuth, M. (1996). Psychotherapists' beliefs about the benefits of 12-Step groups. *Alcoholism Treatment Quarterly*, 14(3), 95-102.

[221] Humphreys, K. (1997). Clinicians' referral and matching of substance abuse patients to self- help groups after treatment. *Psychiatric Services*, 48, 1445-1449.

[222] Day, E., Gaston, R. L., Furlong, E., Murali, V., & Copello, A. (2005). United Kingdom substance misuse treatment workers' attitudes toward 12-step self-help groups. *Journal of Substance Abuse Treatment*, 29 (2005) 321–327.

[223] Laudet, A., & White, W. (2005). An exploratory investigation of the association between clinicians' attitudes toward twelve-step groups and referral rates. *Alcoholism Treatment Quarterly*, 23(1), 31-45.

[224] Fenster, J. (2006). Characteristics of clinicians likely to refer clients to 12-Step programs versus a diversity of post-treatment options. *Drug and Alcohol Dependence*, 83(3), 238-246.

[225] Kelly, J. F. Yeterian J., & Myers, M. G. (2008). Treatment staff referrals, participation expectations, and perceived benefit to adolescent involvement in 12-Step groups. *Alcoholism Treatment Quarterly*, 26(4), 10.

Table 11: Professional Attitudes & Referral Practices Related to NA
Vederhus and colleagues conducted a study of 12-Step attitudes among 291 addiction professionals in Norway. They found "moderately positive" attitudes toward AA and NA but low levels of 12-Step knowledge and referrals.[226] Wall, Sondhi, and Day, in a survey of 92 clinicians in the UK, found that most (74% had positive attitudes toward 12-Step groups, with 80% reporting that they had referred clients to 12-Step groups in the past month.[227] White and colleagues reviewed a number of popular and professional misconceptions contributing to the underutilization of NA as a resource within the surge in opioid addiction and related deaths in the U.S.—beliefs challenged by available research on NA.[228]

Addiction treatment professionals and allied health professionals in the U.S. hold generally positive views toward NA, but NA attitudes and referral rates vary by country and by professional discipline and the nature and degree of training in addiction treatment and related services. Different countries' health systems too may vary in the degree of their positive endorsement of NA. NA attitudes also evolve over time as NA groups become more accessible and generate greater levels of recovery stability among their members. In the latest NA membership survey, 45% of members reported that a treatment facility or counseling agency influenced their first attendance at an NA meeting.[229]

What can treatment centers do to increase patient participation in NA?

Several studies have focused on professional interventions and treatment practices that increase 12-Step affiliation and retention.

- "Twelve-step-facilitation (TSF) interventions have been found to be more effective than comparison treatments in increasing patients' 12-step group involvement and in promoting abstinence."[230]
- Timko and colleagues conducted a randomized trial of standard referral and intensive referral to 12-Step groups following initial assessment of 345 patients in

[226] Vederhus, J.-K., Kristensen, O., Laudet, A., & Clausen, T. (2009). Attitudes towards 12-step groups and referral practices in a 12-step naive treatment culture: a survey of addiction professionals in Norway. *BioMed Central Health Services Research*, 9(1), 147.

[227] Wall, R., Sondhi, A., & Day, E. (2014). What influences referral to 12-Step mutual self-help groups by treatment professionals. *European Addiction Research*, 20:241-247.

[228] White, W., Galanter, M., Humphreys, K., & Kelly, J. (2016). The paucity of attention to Narcotics Anonymous in current public, professional, and policy responses to rising opioid addiction. *Alcoholism Treatment Quarterly*, 34 (4), 437-462.

[229] NA World Services (2018). 2018 Membership Survey. Accessed February 1, 2020 at https://www.na.org/admin/include/spaw2/uploads/pdf/conference/project/2301_MS_2018_Nov19.pdf

[230] Humphreys, K. (1999). Professional interventions that facilitate 12-step self-help group involvement. *Alcohol Research and Health*, 23, 93-98.

outpatient SUD treatment. Those receiving intensive referral had greater 12-Step involvement at 6-month follow-up and better alcohol and drug use outcomes.[231]

- In a study of 219 polysubstance dependent patients in New York City, Laudet and colleagues found that patients treated in settings that had onsite 12-Step meetings had great levels of 12-Step involvement at follow-up than those treated in programs without onsite meetings.[232]
- Timko and colleagues found that assertive referral procedures and involving patients in wide variety of 12-Step activities (e.g., reading 12-Step literature, service work, etc.) increased 12-Step participation at one-year follow-up.

In a 2008 review of research on recovery support meetings for youth, Passetti and White suggested multiple actions treatment programs could take to increase youth participation in 12-Step programs. These suggestions are displayed in Table 12.

Table 12: Suggested Actions to Increase Youth Participation in NA and other 12-Step Groups

"1) help young people structure their time before and after meetings and monitor their interactions with group members to minimize situations that may lead to relapse;
2) become familiar with group customs and languages in order to prepare youths for meetings, make appropriate referrals, and clear any misunderstandings;
3) research the characteristics of local meetings, including age composition of members, so that referrals can be tailored based on youths' needs, preferences, and cultural backgrounds;
4) investigate the variety of recovery support groups offered in a given area to provide youths with a menu of options;
5) recognize that some youths may need to try a diversity of meetings before finding one (or a combination) that feels comfortable;
6) interact with recovery support group service structures and develop a list of reliable group members to connect youths to the recovering community; and
7) implement assertive rather than passive referral strategies, including connecting youths to sober social activities sponsored by support groups, helping youths identify and approach sponsors, screening sponsors for appropriateness, monitoring attendance, and monitoring reactions to experiences and program concepts."[233]

[231] Timko, C., DeBenedetti, A., & Billow, R. (2006). Intensive referral to 12-step self-help groups and 6-month substance use disorder outcomes. *Addiction*, 101(5), 678-688.
[232] Laudet, A., Stanick, V., & Sands, B. (2007). The effect of onsite 12-step meetings on post-treatment outcomes among polysubstance-dependent outpatient clients. *Evaluation Review*, 31(6), 613-646.
[233] Passetti, L. L., & White, W. L. (2008). Recovery support meetings for youths: Considerations when referring young people to 12-step and alternative groups. *Journal of Groups in Addiction and Recovery*, 2(2-4), 97-121.

What are the major limitations of published research on NA?

Limitations of research to date on NA span the relative paucity of international studies on NA, the limited range of issues studied, and the historically weak but improving methodological rigor of NA and related 12-Step studies. Preliminary answers to key questions exist but require replication and many questions remain uninvestigated. The voluntary, anonymous, and highly decentralized organizational structure of NA poses innumerable research obstacles. Like AA, NA practices may differ markedly across groups/meetings and across cultural contexts.[234]

Methodologically rigorous effectiveness studies within the addictions research arena typically involve:

- carefully crafted study inclusion/exclusion criteria,
- approval of study design by an Institutional Review Board (IRB) to assure protection of human subjects,
- written informed consent procedures,
- large subject samples,
- randomization to alternative conditions and control groups,
- precise definitions of the active ingredients of the interventions being tested,
- manualized procedures to ensure replication of the intervention across time, setting, and counselors/therapists,
- rigorous training and supervision (fidelity monitoring) of those delivering the intervention,
- multiple points of long-term follow-up,
- extensive data collection with instruments whose validity and reliability have been tested,
- control of extraneous influences,
- valid and often sophisticated statistical analyses, and
- professional peer-review and publication of methodology and major findings to assure scientific integrity and to aid study replication.

Meeting the majority of such criteria requires substantial funding resources. Only a comparatively small number of randomized clinical trials and quasi-experimental studies involving such methods inform our understanding of NA, and only recent studies have begun to address the potential selection bias that plagues NA and other 12-Step studies. (For example, does NA participation predict increased abstinence motivation and recovery prognosis or do those with higher motivation and better recovery prognosis choose to participate in NA?).

Three limitations are particularly important. As noted, many of the conclusions related to the effects of NA participation are drawn from “12-Step” studies that use

[234] Montgomery, H., Miller, W., & Tonigan, J. (1993) Differences among AA groups: implications for research. *Journal of Studies on Alcohol*, 54, 502–4; Rynes, K. N., Tonigan, S., & Rice, S. L. (2013) Interpersonal climate of 12-step groups predicts reductions in alcohol use. *Alcoholism Treatment Quarterly*, 31, 167–85; 71; Galanter, M., White, W., & Hunter, B. (2019). Cross-cultural acceptability of the Twelve Step model: A comparison of Narcotics Anonymous in the USA and Iran. *Journal of Addiction Medicine*. Apr 1. doi: 10.1097/ADM.0000000000000526.

mixed samples of NA and other 12-Step members without disaggregating and analyzing data by recovery fellowship. This practice casts NA as a clone of AA and defies the reality that NA, although historically derivative from AA[235] and sharing many similarities with AA[236], constitutes a distinct program of recovery with its own unique history, culture, core ideas, language, and recovery support rituals as well as a membership profile that differs substantially from that of AA.[237]

Second, most NA-related studies utilized treatment samples. Findings from these studies may or may not apply to individuals seeking support from NA without past or concurrent addiction treatment.

A third complication is the failure to adequately distinguish studies of NA as an addiction recovery mutual aid fellowship and studies of professionally-directed treatment approaches that rely on NA principles and linkage to NA as central ingredients of the clinical intervention (e.g., Twelve-Step Facilitation studies and studies of treatment programs that embrace some 12-Step principles).

Given highly publicized accounts that frequently over-state or under-state 12-Step research findings (depending on the ideological ax being ground), it is little wonder that direct service professionals, policy leaders, the public, and those seeking assistance are left confused about the best approaches to support long-term addiction recovery.

In spite of existing study limitations, published research to date does illuminate the degree of effectiveness of NA in real world conditions. In reviewing the results of published NA research, the reader should keep in mind the limitations of such real world research and that many factors interact to predict long-term recovery outcomes. The strength in the present summary lies in the consistency of findings on the effects of NA participation across diverse populations and cultural contexts.

NA research remains at an early stage of development, and the future portends a greater volume of NA studies of increasing methodological rigor. All of the conclusions outlined in this review are tentative pending further research findings. Such probationary status of what we know is not unique to NA studies; it is the very essence of the scientific method.

Summary and Conclusions

Since its inception in 1953 as an addiction recovery mutual aid society, Narcotics Anonymous (NA) is increasingly available within U.S. communities and continues to grow internationally. There are presently (2020) 71,000 weekly NA meetings in 144 countries. Professional recognition of NA's existence first appeared in the medical/scientific literature in the 1950s, but formal studies of NA did not begin until the late 1980s. The number and methodological rigor of NA-related studies increased after 2000, in part due to the surge in NA studies conducted in the Islamic Republic of Iran.

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[235] White, W. (2014*). Slaying the dragon: The history of addiction treatment and recovery in America*. Bloomington, IL: Chestnut Health Systems.

[236] Rascon, C., & Tonigan, J. S., (2003). A comparison of Narcotics Anonymous and Alcoholics Anonymous member perceptions of group dynamics. *Alcoholism: Clinical and Experimental Research*, 26(5, Supplement), 648 (Abstract).

[237] White, W., Budnick, C., & Pickard, B. (2011). Narcotics Anonymous: Its history and culture. *Counselor*, 12(2), 10-15, 22-27, 36-39, 46-50.

At present, NA attracts a diverse membership (by gender, ethnicity, age, and primary drug choice). The major obstacles to NA participation include perceived religious components of NA, prior negative experiences with NA, NA's expectation of complete abstinence (including alcohol abstinence even when alcohol may not have been a problem substance), and NA's opposition to maintenance medications (e.g., methadone, buprenorphine). The rate of continued participation of people who begin attending NA is superior or equivalent to parallel forms of intervention into SUDs and other primary health conditions. Factors related to NA attraction and retention include younger age, greater addiction severity, an abstinence goal, belief in need for lifelong recovery support, and belief in a "higher power."

NA participation is associated with decreased drug use, increased rates of abstinence, improved global (physical, emotional, spiritual) health, enhanced social functioning, increased involvement with mainstream community institutions, and decreased health care costs. These effects are amplified by intensity (activities beyond meeting attendance e.g., reading literature, active sponsorship, step work helping others) and duration of NA participation. Positive effects of NA participation extend to adolescents, women, and people of color. People with co-occurring psychiatric disorders benefit from NA participation but may require concurrent mental health care to maximize these benefits.

The multiple mechanisms of change linked to positive effects of NA participation include increased motivation for abstinence, personal mentoring (sponsorship), social support and social network reconstruction, and identity and worldview transformations. Other NA mechanisms of change include increased confidence in one's recovery potential (self-efficacy), enhanced self-esteem, improved coping strategies, therapeutic effects of helping others, spiritual renewal (life meaning and purpose), prestige acquisition from service work, as well as decreased stress, anxiety, depression, and shame (the latter particularly cited by women in NA).

In-treatment and post-treatment NA participation amplifies and extends the positive effects of addiction treatment. Attitudes of treatment professionals towards NA range from positive and moderately positive (in the U.S.) to ambivalent (in the UK and Norway), with referral rates lower in the latter countries. A key source of negative perceptions of NA among addiction treatment professionals relates to NA's policies related to the use of medications in the treatment of opioid use disorders.[238] Participation in NA increases when treatment professionals integrate 12-Step exposure within the treatment experience and use assertive versus passive methods of referral to NA.

Systematic reviews of professional treatment of substance use disorders whose primary goals and methods focus on engagement and increased participation and retention in NA (e.g., 12-Step Facilitation) confirm that such an approach is as effective, but not more effective, than other treatment approaches on several outcomes. Twelve-Step Facilitation that includes assertive linkage to NA is recognized as an evidence-based practice by the National Institute on Drug Abuse, the Substance Abuse and

[238] For a history and analysis of NA policies on medication-assisted treatment of addiction, see: White, W. L. (2011). Narcotics Anonymous and the pharmacotherapeutic treatment of opioid addiction. Chicago, IL: Great Lakes Addiction Technology Transfer Center and Philadelphia Department of Behavioral Health and Intellectual disability Services.

Mental Health Services Administration, The National Association of Addiction Treatment Providers, the American Psychological Association, and is listed in the Directory of Evidence-based Practices for Substance Use Disorders.

Research findings related to the effects of NA participation and other aspects of NA await more focused and methodologically rigorous studies. Toward that end, we hope that future studies on "12-Step" participation will disaggregate and analyze data by recovery fellowship rather than considering "12-Step participation" as a monolithic entity.

Future research will continue to illuminate questions related to the efficacy, effectiveness, cost-effectiveness, and mechanisms of behavior change related to NA participation. The existing evidence drawn from various levels of scientific rigor possesses both consistency and coherence. NA members and NA literature boldly assert "We do Recover." The studies reviewed in this paper provide scientific confirmation and context to that assertion.

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