Cross-cultural Applicability of the 12-Step Model: A Comparison of Narcotics Anonymous in the USA and Iran

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Objective: Narcotics Anonymous (NA), a nonprofessional 12-step fellowship for people seeking recovery from addiction, reports 27,677 meetings in the USA, where it was founded, but there is limited literature on its adaptability cross-culturally. We studied NA within the Islamic Republic of Iran to ascertain its relative adaptation in a different cultural setting.

Method: We surveyed 262 NA members in Iran, supplemented by member interviews, and compared demographic and substance use-related characteristics of members, and also the nature of their respective involvement in NA, to the survey results of a previous US survey (n = 527).

Results: NA in Iran reports 21,974 meetings. The Iranian respondents surveyed differed relatively little ($d < 0.50$) from US members on demographics and prior ambulatory substance use disorder treatment, but did have fewer female members (means for Iran and US: 42.4 vs 39.0 years; 77% vs 87%; 6% vs 28%, respectively). They were, however, more involved in the fellowship ($d > 0.50$) in terms of reporting service as sponsors, experience of spiritual awakening, and achievement of diminished craving (scores of 1–10) (85% vs 48%; 95% vs 84%; 1.03 vs 1.89, respectively). Surveyed NA members in Iran publicized the fellowship with public (36%) and religious (20%) figures, and systematically worked the 12 steps in large sponsor-led groups ($\bar{X} = 19$ members).

Conclusion: NA, a 12-step program developed in a Western, predominantly Christian-oriented country, was adapted widely in the Islamic Republic of Iran, a setting different in culture, language, ethnicity, and religious orientation. The growth in its membership derives, in part, from specific innovations that may have broader applicability in other settings.

Key Words: addiction recovery, Iran, Narcotics Anonymous

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Substance use disorders constitute a major and longstanding public health problem internationally, and recent surges in opioid use disorders have exacted a reported toll of as many as 39,999 opioid-related deaths in a recent year in the United States (Ruhm, 2018). Policy and community-level responses span suppression of illicit opioid markets, public education, physician training, prescription monitoring, increased naloxone distribution, and expanded treatment resources (particularly pharmacotherapy), but rarely include the strategic mobilization of recovery mutual aid resources such as Narcotics Anonymous (NA) (White et al., 2016).

Narcotics Anonymous, a fellowship based on abstinence from drugs of abuse, was adapted from the recovery program of Alcoholics Anonymous (AA). The NA World Services (NAWS) office reports 70,065 meetings in 139 countries. Of these, 27,677 (40%) are in the United States. NAWS reports 21,974 meetings being held in Iran (Nickels, personal communication, 5/15/17). In itself, it has been found to be effective without prior self-selection bias (Humphreys et al., 2014), and observational studies of NA have reported positive correlational effects on recovery outcomes (Toumbourou et al., 2002; Gossop et al., 2008). In a randomized, controlled trial, intensive referral to 12-step groups was found to yield more improvement in alcohol and drug use than less intensive, standard referral (Timko et al., 2006). Furthermore, 12-step meeting attendance has been found to be associated with better outcomes for patients during buprenorphine maintenance treatment (Monico et al., 2015).

Opium addiction in Iran has been viewed as a serious social problem as far back historically as the 16th century. In contemporary Iran, before the Islamic revolution, trafficking in opium was designated as a capital crime, but the Iranian Ministry of Health was charged to provide treatment for people suffering from addiction (Aliverdinia and Pridemore, 2008). Under the current Islamic state, although opium use is prohibited by Shari'ah law, the Republic's constitutional policy allows flexible legal strategies to combat misuse of the drug (Figg-Franzoi, 2011). With opioid use disorder most recently estimated with a 12-month prevalence of 1.42%, methadone and buprenorphine are accepted for treatment (Ahmadi and Bahrami, 2002; Shekarchizadeh et al., 2012).

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Although treatment is undertaken by governmental agencies, 80% of professional care is estimated as being provided in private settings (Amin-Esmaeili et al., 2016).

Narcotics Anonymous was initiated in Iran in 1990, when 2 recovering persons with opioid addiction who were exposed to the fellowship in the United States returned to Iran with the intention of establishing the fellowship in their native country (Lavitt, 2014). Since then, the program's growth has been monitored by the central office of the fellowship, NAWS, which reports 21,974 NA groups across the country (Nickels, 2017). Aspects of fellowship members' spiritual development (Beygi, 2011) and quality of life (Hosseini et al., 2016) have been reported, but demographics, substance use, and NA membership experience are not available in the medical literature or from the fellowship's surveys.

The dimensions of the NA program in Iran, an ''Islamic Republic,'' suggests that we can learn about the mechanisms underlying the adaptability of the NA format in promoting addiction recovery, particularly in a setting that is culturally different from that in the United States. Studies of NA in Iran have linked the sizeable NA participation to ceased or decreased drug use, improvements in overall health and functioning, and increased quality of life (Beygi et al., 2011; Zandasta et al., 2014; Hosseini et al., 2016).

The growth rate of NA in Iran raises the following 2 questions: What is the character of members and the nature of this program developed within a Western, Christian cultural context when adopted in an Islamic country such as Iran? How does this Iranian 12-step program compare to that in the USA? The present study addresses these questions.

METHOD

Overall Approach

The methodology applied in this study was similar to that used in our previous studies on NA in the United States (Galanter et al., 2013, 2014) in both participant recruitment, and with the survey instrument employed. Face-to-face interviews were also conducted with members of the NA leadership in the USA, and by Skype with longstanding NA members in Iran. These focused on the history and mode of operation of the NA in Iran, including meeting format, sponsorship activities, and relations with governmental and clerical figures. This was augmented by a site visit in Iran by 1 of the authors (M.G.) where discussions were undertaken with local NA members and physicians treating patients with opioid use disorder. Literature prepared by NA in Iran on procedures for cooperating with local clergy and government representatives was also reviewed, and NA membership data were solicited from NAWS office.

Interviews

Interviews were conducted to ascertain the nature of NA's operation in Iran and the mode of its expansion to large numbers of persons with addiction. Interviewees in Iran were selected based on established relationships with senior members of the fellowship at NAWS and on the recommendation of key informants in Iran, and conducted by Skype. The interviews were recorded, transcribed, and reviewed for content by the authors to ascertain a consensus on the queries presented and responses. All were conducted in English with English-speaking subjects, requiring no translation. Face-to-face and phone interviews were conducted with officers of NA who had made multiple visits to Iranian NA meetings and had consulted with local members to frame the local approach to the development of the fellowship there. No interviews with non-English-speaking Iranians were undertaken.

Onsite Survey

Narcotics Anonymous World Services provides data on the number of meetings held in Iran, but does not obtain information on demographics, drug use, and recovery patterns. Because these characteristics may vary considerably across national settings, a survey instrument employed in our study on US members (Galanter et al., 2013, 2014) was employed to ascertain relative comparability of the membership in the 2 countries. This was intended to provide basic information on the NA fellowship in a context in which its relative operation and expansion could be placed. Additional items related to specifics of the operation of the fellowship were included relative to standard NA group meetings and meetings with sponsors, and also the interaction with local civil and religious authorities. These latter items were developed based on specific issues raised in the interviews.

The coordinator for the NAWS Office in Iran selected 3 meeting sites in Tehran and Shiraz to participate in a computer-codeable self-report instrument. Meeting leaders were asked to distribute this questionnaire to the attendees for completion on-site. Attendees were informed that participation in the survey was both voluntary and anonymous. Those who responded to the questionnaire at one meeting were instructed not to complete the questionnaire if present at another meeting. The study design, employing de-identified data, was approved by the human subjects review board of NYU Medical Center, with no consent required.

The Survey Instrument

The survey instrument included the 51-coded items employed in the US sample. The items were translated to Farsi, and then back-translated into English to assure accuracy. Ten items pertinent to the NA meeting format in Iran were added. Topics included demographics; experience with NA, including first encounter with the fellowship; meeting attendance; sponsor/sponsee experiences; and questions related to spirituality, including mosque attendance, experience of God, and experience of spiritual awakening within NA. Craving for drugs or alcohol was assessed by responses on a 0 to 10 visual analog scale, similar to ones applied in previous studies (Volpicelli et al., 1992; Galanter et al., 2013).

We also employed items from 2 scales used in previous studies of NA to assess the nature of members' involvement in NA, including measures of NA affiliation and NA-related beliefs (Galanter et al., 2013, 2014). Items on both scales were scored on a 5-point continuum, from ''not at all'' to ''very much.'' For the first scale on affiliation, respondents scored the NA members they ''know best'' on 8 characteristics. Typical items were ''They care for me,'' and ''I like being part of their activities.'' The second scale included 8 items reflecting a

respondent's degree of acceptance of NA steps, such as, ''I am powerless over drugs,'' and ''I should turn my will and life over to God as I understand Him.'' Interitem reliability of the scales was found to be satisfactory when applied to the US sample.

The SPSS-V.24 statistical software program was applied to conduct analyses. Bivariate associations between categorical variables and continuous variables were assessed by either independent-samples *t* test or chi-square statistic. Multiple linear regression analyses were conducted to determine the relationship of NA-related experiences to scores on alcohol or drug craving.

RESULTS

The Respondent Sample

There were 262 NA members participating in the survey, with between 260 and 262 responding to each of the respective questionnaire items. The group coordinators from the survey sites estimated the portion of meeting attendees participating in the survey at the respective sites as at least 75%. The mean age of respondents was 42.4 (SD 9.52) years, and they reported last using drugs 8.66 (SD 4.85) years previously. Ninety-four per cent were male, and 90% were either employed or enrolled as students. Comparisons with the US sample are given in Table 1. Relative to the US respondents, Iranian NA members surveyed were older, more likely male, more likely employed (or students), and less likely to have received prior treatment for their substance use disorder. Although the Iranian respondents identified less as being religious, and were less likely to attend their respective formal place of worship (mosque vs church), they were no less likely to experience God's presence in their daily lives.

Participation in NA

The age at which Iranian respondents first attended an NA meeting was younger than American members, and they were less likely to have been referred to NA by a professional (Table 2). The large majority of Iranian respondents had a sponsor and also served as sponsors themselves, more so than respondents in the US sample. Overall, Iranian NA members did not differ substantially from those in the United States in age, religiosity, and their prior outpatient experience. The Iranian respondents, however, were less likely to experience drug craving.

Degree of Engagement in NA

The responses of the Iranians reflected a more intense social involvement than for those members in the United States. The Iranian respondents were more likely to serve as a sponsor, but they scored lower on NA beliefs, and were less likely to attend their respective houses of worship. Nonetheless, they did, on average, respond with high scores on the items in the belief scale: The large majority endorsed 4 or 5 for ''I am powerless over addiction'' (86%), and ''I should turn my will and my life over to God, as I understand Him,'' (80%), reflecting a high degree of commitment to the 12 steps. The extent of identification and affiliation with other members is illustrated by the large majority of respondents who answered 4 or 5 on the 5-point scale regarding the ten NA members they knew best: ''They care for me'' (65%); ''I like being part of their activities'' (57%); and ''I care for them'' (76%). Respondents' mean score on the 0 to 10 analog scale for craving was less than that of US respondents, with almost half (49%) indicating that they had experienced no (0) craving for drugs or alcohol in the past week.

Spirituality

Respondents designated themselves as relatively more spiritual than religious, as did the US members, and were more likely to experience God's presence in their daily lives and report having a spiritual awakening. Almost all (92% of the entire respondent sample) reported that it came about

TABLE 1. Comparison of US and Iran Samples (Patient-related Variables)

	USA (n = 527)		Iran (n = 262)			
Item	**Mean/%**	**SD**	**Mean/%**	**SD**	t/χ^2	**Cohen *d/h***
Age	39.01	13.01	42.39	9.52	−4.14‡	−0.28
Male	72%		94%		50.20‡	−0.60
Employed/student	75%		90%		23.53‡	−0.39
Spiritual, but not religious	65%		53%		9.91†	0.24
Neither religious nor spiritual	4%		15%		31.25‡	−0.40
Experience God's presence						
Every day	29%		32%		0.77	−0.07
Some days	14%		17%		1.34	−0.09
Never or almost never	6%		2%		5.46*	0.19
Mosque (US church)						
≥1 time a month	25%		17%		6.23*	0.19
<1 time a month	40%		70%		63.81‡	−0.62
Not at all	35%		12.60%		43.72‡	0.54
SUD treatment						
Outpatient	68%		65%		1.04	0.08
Inpatient	77%		55%		39.11‡	0.46
Any	0.87		77%		12.14‡	0.26

Cohen *d/h* is interpreted as follows: small effect ≥0.20 and <0.50, medium effect ≥0.50 and <0.80, large effect ≥0.80.
*$P < 0.05$.
†$P < 0.01$.
‡$P < 0.001$.

TABLE 2. Comparison of US and Iran Samples (NA-related Variables)

Item	USA (n = 527)		Iran (n = 262)		t/χ^2	Cohen *d/h*
	Mean/%	SD	Mean/%	SD		
Age first attended	27.4	9.85	32.32	8.44	−7.29*	−0.52
Referred by professionals	33%		11%		43.92*	0.54
Had sponsor	88%		99%		24.77*	−0.46
Served as sponsor	48%		85%		98.37*	−0.81
Craving past week	1.89	2.67	1.03	1.93	5.17*	0.35
NA beliefs	36.2	5.11	32.2	8.32	7.14*	0.63
Spiritual awakening	84%		95%		18.06*	−0.36

Cohen *d/h* is interpreted as follows: small effect ≥0.20 and <0.50, medium effect ≥0.50 and <0.80, large effect ≥0.80.
*$P < 0.001$.

gradually rather than suddenly. Furthermore, of those reporting a spiritual awakening, almost all (92%) reported that it made abstinence easier. With regard to mosque attendance, only 17% reported attending at least once a month, 70% less often, and 13% not at all.

Items Added Particular to the Iranian Survey

The NA respondents in Iran first encountered NA an average of 10.0 (SD 4.2) years previously. Both the last regular NA meeting they had attended and their last meeting with their sponsor had a comparative large number of members present, on average, 51.4 (SD 29.15) and 19.0 (SD 19.2) persons, respectively. When asked whether they had met with community figures for public relations related to NA, many answered affirmatively; 32% reported that they met with doctors, 20% with religious leaders, 36% with government officials, and 17% with the press. The apparent transcultural adaptability of NA was evident in that respondents could endorse how they understood ''God as we understood him,'' as included in the steps: 47%, as God in general; 31%, as a universal spirit; 9%, as the membership of NA; 4% Allah; and 10%, other.

Relationship Among the Variables

Table 3 presents the intercorrelations of the selected study variables. The older the respondent and the more years since the first exposure to NA, the greater the duration of abstinence and the lower the drug craving. Table 4 illustrates the relationship between 2 spiritual or religious variables: ''feeling God's presence daily'' and current mosque attendance,'' and selected NA variables. Members with more years of abstinence and lower levels of drug craving are less likely to attend mosque. Members with higher NA beliefs are more likely to feel God's presence.

Interviews

The background and function of NA in Iran were described by interviewees. The fellowship in Iran was first established in 1990 by 2 men of Iranian descent who had encountered the program while living in California. In Iran, it is currently organized into 2900 geographic subdivisions, each of which has Public Information, Hospital and Institutional, and Workshop Committees. These committees work actively in publicizing and promoting the program with religious leaders and public officials (such as judges), and also professionals, and provide platforms for sharing information on NA's program of recovery and its governance. NA Iran and its committees are independent of governmental or religious institutions. Because of the active relationships fostered with these parties, however, NA's open meetings are regularly attended by outside parties for informational purposes, and meeting spaces are made available for NA meetings in public buildings and mosques.

There are aspects of the experience of NA membership in Iran that differ from that of attendees in the United States. A more active effort is made to reach out to persons who may

TABLE 3. Intercorrelation Among Selected Variables and Selected NA Variables by God's Presence

	Age	Age of First NA Meeting	Years Since First NA/AA Meeting	Years Abstinent	NA Meetings Last Year	NA Beliefs	NA Affiliation	Level of Craving for Substance
Age		0.892†	0.498†	0.516†	0.087	−0.074	0.018	−0.242†
Age of first NA meeting	—	—	0.071	0.192†	0.091	−0.123*	−0.002	−0.128*
Years since first NA/AA meeting	—	—	—	0.800†	0.016	0.094	0.070	−0.290†
Years abstinent	—	—	—	—	0.081	0.133*	0.138*	−0.364†
NA meetings last year	—	—	—	—	—	0.136*	0.088	−0.144*
NA beliefs	—	—	—	—	—	—	0.519†	−0.065
NA affiliation	—	—	—	—	—	—	—	−0.088
Level of craving for substance	—	—	—	—	—	—	—	—

*$P < 0.05$.
†$P < 0.01$.

TABLE 4. Selected NA Variables by God's Presence and Mosque Attendance

	Feels God's Presence Daily					Current Mosque Attendance				
	Yes		No			Yes		No		
	Mean	SD	Mean	SD	Statistic, *t*	Mean	SD	Mean	SD	Statistic, *t*
Age, y	43.14	9.58	41.56	9.42	1.35	42.06	9.20	44.73	11.39	−1.287
Age of first NA meeting	32.99	8.28	31.57	8.60	1.36	32.40	8.09	31.76	10.72	0.332
Years abstinent	9.01	4.93	8.26	4.75	1.24	8.33	4.79	10.90	4.76	−2.887†
NA meetings last year	151.21	99.64	127.73	93.78	1.96	142.18	98.16	124.84	92.02	0.943
NA beliefs	33.14	7.61	31.10	8.97	1.975*	32.11	8.24	32.64	9.06	−0.336
NA affiliation	31.46	5.49	30.32	5.92	1.62	30.89	5.75	31.22	5.53	−0.308
Level of craving for substance	0.99	1.91	1.06	1.96	−0.30	1.12	2.01	0.39	1.06	3.187†

*$P < 0.05$.
†$P < 0.01$.

initially attend but then drop out, and ''service'' (efforts expended to maintain fellowship functions) is actively promoted from early on in membership. The format of sponsorship also differs from that typical in the United States, in that sponsors may have as many as 30 or more sponsees, whereas more than 5 sponsees is unusual in the United States. This latter format arose because there were only a limited number of members with long-term abstinence to serve in this role when the fellowship was first established in Iran. Additionally, sponsors frequently meet with sponsees as a group more than once each week to ''work'' the NA steps. This group ritual is in addition to the regular NA meeting format employed in the United States and in most settings worldwide. This emphasis on systematically ''working'' the steps is much more actively promoted in Iran than in the United States, and celebrations are held in Iran for groups of sponsees upon their completion of the 12 steps, in contrast with NA in other countries where abstinence anniversaries are celebrated.

DISCUSSION

Narcotics Anonymous in Iran had its origins in 1990, when 2 recovering persons with heroin addiction who were exposed to the fellowship in the United States returned to Iran with the intention of establishing the program in their native country. Iranian officials initially required that it operate under government oversight, and members, in accordance with NA Tradition of nonaffiliation, decided that they were obliged to close it down not to violate the Traditions (Narcotics Anonymous World Services, 2008). Five years later, in large part because of the government's acknowledgement of a pressing need for intervention in the widespread problem of heroin addiction, NA members were able to re-establish the fellowship as an independent nongovernmental organization, as its nonreligious format was made clear. Since then, onsite reports of NA groups reflect more growth in Iran than in any other country (Khajeian, personal communication, 4/20/17 and 4/27/17). At present, meetings are conducted in cities in 29 different areas designated by the fellowship across the country, each with a major city (Meyer, personal communication, 12/3/18).

Twelve-step effectiveness in the United States has generally been evaluated among patients discharged from professional care where referral to AA is common (Humphreys and Moos, 2007; Kelly et al., 2014). The mode of respondents' referral to the NA fellowship in Iran, however, illustrates the program's isolation from professional treatment facilities. Even though most of our NA respondents had been hospitalized for their disorder, we found that only 11% of them were referred to NA by a health professional, suggesting NA's introduction for most to be from family, friends, or other persons with substance use disorder. Therefore, they came to NA without the recommendation from whatever treatment setting they had encountered, illustrating the viability of the fellowship independent of professional referral. This, in combination with the percentage of members who self-reported no prior involvement in professional treatment (23%), suggest that NA in Iran may be serving as an alternative, and also an adjunct to professionally-directed addiction treatment. Additionally, the preponderance of males in the fellowship in Iran relative to the United States reflects the greater portion of males among persons with addiction (Ghaderi et al., 2017).

Another observation is that the NA format was apparently well adapted in the Iranian cultural/religious context. Once encountering NA, potential members are introduced to a program that originated in a culture where the concept of ''God'' is generally based on the Christian religion. Apparently, however, potential members were able to adapt to a generic concept of God in a setting with a very different religious and cultural orientation. This was facilitated by NA's governing Traditions of independence from outside enterprises such as governmental agencies or religious institutions, and by its operation apart from professional leaders, while contact with these entities was promoted for informational exchange.

Narcotics Anonymous' adoption in Iran is characterized by maintaining positive but independent relations with governmental and religious parties. This aspect of the cross-cultural adaptability of this spiritually grounded fellowship allowed the establishment of the large number of NA groups now present in Iran. A comparison of the number of people in the United States and Iran with substance use disorder is not feasible because of the lack of documented figures for the disorder's prevalence in Iran. The number of groups in Iran, however, is almost as great as that in the United States, even though the population of the United States is 4 times greater. The apparent adaptability of the NA format in the Islamic setting is further noteworthy, and may have been helped by the

congruity of NA and traditional Persian value placed on family, mutual help, hospitality, and service, as emphasized by interviewees. Issues such as endorsement of the steps, affiliation with other members, and feeling God's presence in daily life are comparable in intensity to those indicated in our prior studies on US NA members. Altogether, these issues may help explain the expansion of NA overall outside the United States and Iran. It is, however, noteworthy that NA has been reported to have been adopted in Israel, also a (predominantly) non-Christian national setting (Ronel, 1997).

Success of engagement in the NA format is compatible with the observation that persons are most responsive to cues in their environment when they enter a setting after feeling little social support and confronting problems beyond their capabilities (Kelley, 1967), as new NA recruits are likely to be. In time, craving comes to be lesser for members of longer standing and those who attend more meetings (even though they may attend mosque less frequently).

The operational structure within the fellowship in addition to its regular NA group meetings is noteworthy. Members apparently meet in large numbers with a sponsor (many more in such a meeting than typical in the United States). The effectiveness of mutual support is thereby heightened by providing acquaintance and mutuality between given members in meetings with their sponsor that may be more strongly supported than in the usual, more formal NA meetings. These meetings among members with their sponsors are dedicated specifically to ''working the [Twelve] steps.'' This ''work'' is a central tenet of both AA and NA, but neither fellowship in the United States systematically indoctrinates members in this fashion, and therefore may not engage new members into the fellowships' belief systems as systematically.

Mutual support of others and helping activities in the 12-step fellowship have been shown to enhance the likelihood of recovery (in the United States) by Pagano et al. (2004). In Iran NA, indoctrination of members into this service ethic is far more prescriptive than in the USA final factor that may have contributed to the exponential growth of NA in Iran is the support of NAWS to translate NA literature into Farsi, which began in 2005, and the creation of extensive NA literature within Iran.

By and large, NA members in Iran were respectful of the norms of behavior in the fellowship: NA's 12 traditions stipulate expectations of members' behavior, such as not endorsing outside enterprises (tradition 6) and being nonprofessional (tradition 8). Additionally, the format of traditional meetings was promoted by members experienced with meetings in the United States; these were supplemented by large meetings of members with their respective sponsors, but not replaced by them. On the contrary, questions might be raised regarding whether the active effort to reach out to persons who have dropped out, and of embarking on public relations with outside agencies might compromise the practice of attraction rather than promotion (tradition 11), and potentially, anonymity at the level of press, radio, and films (tradition 12). Additionally, NAWS, by virtue of its own cooperation with this study, might be considered by some to be at variance with the NA tradition of nonaffiliation; the project, however, was approved by the NAWS formally constituted central office in Chatsworth, CA.

Limitations

There clearly are limitations in applying our survey format in the Iranian setting. Our access to groups countrywide was limited (by convenience) to only members in 2 major Iranian cities, namely Tehran and Shiraz. Additionally, we interviewed bilingual (English and Farsi) members, who were better educated than many Iranians. The views of non-English-speaking members, potentially culturally different from our interviewees, might provide some alternative perspectives. The members we interviewed did, however, point out a consistency of NA format across the country's meetings, but if surveys were applied elsewhere in Iran, results could have differed to some degree. For example, 85% of our respondents indicated that they had served as sponsors. Given this, members in the NA group we studied may be of longer standing than some NA members in groups in other cities in Iran.

Another issue related to the approach we adopted that could not be addressed is that we conducted a cross-sectional study. The Iranian response to addiction has evolved over time, and there has been an increase in the availability of opioid maintenance medications in Iran in recent years, with the introduction of buprenorphine (Ahmadi and Bahrami, 2002) and methadone (Banazadeh et al., 2009). The availability of pharmacological treatments for addiction may have an impact on NA recruitment and retention over time. Only a prospective or longitudinal study would allow addressing this latter development. At present, interviewees noted that some providers of medication treatment recommend patient participation in NA during and after cessation of medication support.

We have observed the cross-cultural adaptability of the NA format, which emerged in a predominantly Christian (US) culture, to the Islamic setting of Iran. Although the central role of spiritual renewal and awakening has been discussed as a cross-cultural phenomenon (Miller, 2004), generalizability of our findings to other national settings may be limited. It cannot be assumed that a level of adaptation of this magnitude would apply in non-Farsi Islam, or in countries with a predominantly Buddhist culture, or ones that generally disavow religion, like contemporary China.

CONCLUSIONS

We have found that key aspects of the 12-step culture and format were transferrable to a materially different cultural setting. This suggests that key mechanisms of action that promote the psychology of achieving recovery in this fellowship, namely the cohesiveness among members, ascription to the fellowship's ideology, and the basic format of its group meetings (Galanter et al., 2013), may be able to operate independent of the cultural setting where NA arose. These apparent mechanisms of action may be applicable to non-12-step-based settings also, even those based on the use of medications, where engagement into a culture of recovery and engendering patient mutual support as in methadone programs (Gilman et al., 2001) or 12-step-oriented residential rehabilitation programs (Seppala, 2013) may augment treatment outcome. Additionally, enlarging on the established NA format with the sponsor-led group engagement meetings, as

developed in Iran, may be a useful innovation. Assertive interaction with community leaders also appears to enhance referral to a recovery-oriented program; this latter consultation-oriented approach may be useful in structuring other community-based programs that promote addiction recovery. As noted above, however, questions of compatibility of this consultation-oriented approach with the 12 traditions of NA might be raised.

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