Evaluation of the Quit and Win contest for smoking cessation in the Islamic Republic of Iran

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تقييم مسابقات "أقلِعْ واربح" للإقلاع عن التدخين في جمهورية إيران الإسلامية

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الخلاصة: "أقلِعْ واربح" مسابقة دولية نصف سنوية هدفها التشجيع على ترك التدخين. ورغم أن أكثر من 70 بلداً يشارك في هذه المسابقة، إلا أن عدداً قليلاً من بلدان إقليم شرق المتوسط يشارك فيها. وتم في هذه الدراسة تقييم أربع من حملات "أقلِعْ واربح" في محافظة إصفهان، بجمهورية إيران الإسلامية، في ما بين عَامَيْ 1998 و2004، لتوثيق معدَّلات المشاركة، ومعدَّلات الإبلاغ الذاتي بالامتناع عن التدخين، لمدة شهر واحد ولمدة سنة واحدة، والعوامل ذات الصلة بذلك. وقد تراوحت معدَّلات المشاركين بين المدخنين في إصفهان بين 0.7٪ و2.4٪. وتراوح معدَّل الإقلاع لمدة شهر واحد بين 41.8٪ في عام 1998 و92.8٪ في عام 2004. ولدى المتابعة بعد سنة واحدة تفاوتت معدَّلات الإقلاع الذاتي الإبلاغ بين 22.5٪ في عام 1998 و91.2٪ في عام 2004. وقد وجد هذا النموذج مجدياً وناجحاً وقابلاً للتطبيق في بلدان أخرى منخفضة الدخل ومتوسطة الدخل.

ABSTRACT Quit and Win is an international biannual smoking cessation contest. Although more than 70 countries participate, few are from the Eastern Mediterranean Region. This study evaluated 4 Quit and Win campaigns in Isfahan province, Islamic Republic of Iran, from 1998 to 2004, documenting participation rates, self-reported 1-month and 1-year abstinence rates and related factors. Participation rates among smokers ranged from 0.7%–2.4% of the smokers in Isfahan. One-month quit rates varied from 41.8% in 1998 to 92.8% in 2004. At 1-year follow-up, self-reported quit rates varied from 22.5% in 1998 to 91.2% in 2004. This model was found to be feasible and successful in our community, and can be implemented in other low- and middle-income countries.

Évaluation du concours de sevrage tabagique « Quit and Win » en République islamique d'Iran
RÉSUMÉ Le concours « Quit and Win » est un concours international bisannuel de sevrage tabagique. Bien que plus de 70 pays y participent, la Région de la Méditerranée orientale est peu représentée. Cette étude a évalué quatre campagnes « Quit and Win » dans la province d'Ispahan (République islamique d'Iran), de 1998 à 2004, en réunissant des données sur les taux de participation, les taux d'abstinence autodéclarés à 1 mois et 1 an et les facteurs associés. Les taux de participation parmi les fumeurs étaient compris entre 0,7 % et 2,4 % des fumeurs à Ispahan. Les taux d'arrêt à un mois variaient de 41,8 % en 1998 à 92,8 % en 2004. Au bout d'un an de suivi, les taux d'arrêt autodéclarés variaient de 22,5 % en 1998 à 91,2 % en 2004. Ce modèle s'est avéré réalisable et efficace dans notre population et il peut être mis en œuvre dans d'autres pays à revenus faibles et moyens.

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Introduction

Worldwide about 1.2 billion of the adult population smoke. There has been a dramatic increase in the prevalence of smoking in developing countries over the last 25 years [*1,2*]. In the Islamic Republic of Iran, for example, 26% of men and 3.6% of women aged over 16 years are current smokers [*3*].

The biannual Quit and Win contest to help smokers quit was first developed in 1994 by the National Public Health Institute in Finland and the World Health Organization (WHO). The contest has been conducted in many countries with different socioeconomic and cultural profiles as an effective and low-cost method for encouraging smoking cessation. It can motivate and encourage smokers to quit and help them in the quitting process as well as in the prevention of relapse in the critical period of abstinence (around the first 4 weeks) [*4,5*]. For instance, among the Vietnamese, it resulted in good participation, good success in initial quitting and a high abstinence rate at 6-month follow-up [*6*].

Nowadays around 70 countries participate in this international competition, but only 7 are from the Eastern Mediterranean Region (EMR). As one of the first countries in the EMR to take part in the campaign, the Islamic Republic of Iran has participated in 4 consecutive Quit and Win campaigns from 1998 to 2004.

In this paper, we present an evaluation of the experience of the Isfahan Cardiovascular Research Centre (WHO collaborating centre in EMR) over 4 consecutive Quit and Win contests in Isfahan province to assess the efficacy of this campaign in the short-term and long-term quitting rates as well as some of the factors associated with quitting.

Methods

Intervention

For each Quit and Win contest, we recruited current smokers aged at least 18 years, who, according to the international Quit and Win protocol, reported their willingness to quit by filling the standard registration form, including information about their personal profile and pattern of tobacco use. All participants were asked to stop using tobacco at least during the contest period of 4 weeks, which was verified by 1 witness: the spouse, parents and/or siblings of the participants.

From these participants, anyone who succeeded in quitting was eligible to take part in the lottery. In the final Quit and Win ceremony that was organized by the Isfahan Cardiovascular Research Centre and broadcast on television, 10 winners were introduced (selected by lottery from all registrants) and 1 of the 10 went forward to the international draw. The Isfahan Cardiovascular Research Centre conducted the campaign in cooperation with the governmental and nongovernmental organizations that work in the field of health and social damage. All 4 campaigns were conducted in collaboration with the National Public Health Institute in Finland.

The strategy was to invite members of the general public who were smokers to participate in the Quit and Win contest. The main tool for informing smokers about the contest was the mass media (television, radio, newspapers), billboards in the city, and distribution of registration forms in public places such as universities, factories, offices, large stores, cinemas, health centres, pharmacies, hospitals, schools and daycare centres. Different strategies for promotion were more prominent in some years; for instance, in 1998 it was distribution

of registration forms in factories, offices and wide-circulation newspapers, in 2000 it was universities and army barracks, in 2002 it was the distribution of registration forms via health centres and in National Tobacco Control seminars in schools (which provided 350 000 visitors to Isfahan and greatly increased the audience) and in 2004 we emphasized community intervention by advertising on 2 billboards and 3 local newspapers.

Follow-up

According to the international rules, a 1-year follow-up survey was performed in which the smoking habits (number of cigarettes smoked and frequency of consumption during the preceding year) at 1 month and at 1 year after the beginning of the contest were collected. For this survey, a questionnaire was posted to 1500 subjects who were selected by a systematic random method from among the participants of the last contest. They were asked to return the completed form by prepaid post. In turn, at least 1500 respondents were followed in order to assess the pattern of their tobacco consumption, as well as to find the reasons of their success in quitting or relapsing.

For calculating the 1-year quit costs, we divided the total cost of organizing Quit and Win every year by the number of quitters at the 1-year follow up, and the budget saved through quitting by the Quit and Win contest every year was calculated.

The estimated costs for smoking of these subjects over 1 year (without quitting) was calculated by multiplying the number of quitters by the mean daily number of cigarettes consumed, i.e. 10 × 365 (the number of the days in a year) by the cost of cigarettes (about US$ 1 per pack).

Statistical analysis

All data were stored in a computer database, and analysed by the *SPSS* software package, version 13.0. Analyses were conducted separately for each year of the campaign. In order to recognize the determinants of long-term cessation, a logistic regression model with demographic and process variables was used, including use of special methods for quitting, previous cessation attempts and duration of smoking. The results are presented as descriptive statistics and odds ratios (OR) with 95% confidence interval (CI).

Results

Participation and response rate

The 4 Quit and Win campaigns held from 1998 to 2004 included 7 051, 8 024, 14 650 and 4 429 participants, respectively. The proportion of our participants to the total registrants in the world in these campaign years (1998–2004) were 2.35%, 2.03%, 2.18% and 0.74%, respectively. The proportion of smokers in Isfahan province registered to the campaign were 1.2%, 1.3%, 2.4% and 0.7% in years 1998 to 2004 respectively (Table 1).

The demographic characteristics of participants from 2000 to 2004 are presented in Table 2. The great majority of participants all 4 campaigns in Isfahan province were men (ranging from 98.2% in 1998 to 90.9% in 2004). Regarding age, the largest group of participants in each campaign was those aged 31–40 years, except in 2004 when it was the 18–30-year-olds. The majority were married. The mean number of cigarettes smoked per day by participants varied from 12.5 in 2002 to 17.0 in 2004, and the majority of participants reported that they had attempted to quit ≥ 1 times previously (Table 2).

Each year the local sponsors of the contests agreed to give more valuable gifts to the winners, so that the budget increased from around US$ 3000 to US$ 4500, US$ 5000 and US$ 8000 in the consecutive cam-

Table 1 **Profile of the campaigns and follow-up data from participants in 4 successive Quit and Win contests in Isfahan**

Variable	Year 1998	Year 2000	Year 2002	Year 2004
Proportion of smokers in province registered to campaign (%)	1.2	1.3	2.4	0.7
1-year quit rate (%)	22.5	85.5	78.5	91.2
Total cost to organize contest (US $)	3000	4500	5000	8000
Cost per participant (US $)	0.42	0.56	0.34	1.80
Cost per long-term quitter (US $)	1.89	0.65	0.43	1.98
Participants' intention to quit at time of campaign (%)	66.5	58.8	76.8	387.6
Quitters' opinion of role of contest in quitting (%)				
Important	62.5	85.2	92.1	67.3
No effect	5.7	3.1	1.8	18.9
Don't know	31.8	11.7	6.1	13.8
Relapsers' main reason for relapse (%)				
Withdrawal symptoms	65.0	51.2	66.2	53.6
Poor knowledge about quitting	17.5	19.4	15.2	13.4
Smoking by peers/ coworkers/friends	11.2	18.3	2.2	9.2
Stressful situations	6.3	11.2	16.5	23.7

paigns conducted in Isfahan. The budget for an individual smoker who participated in the campaign varied from US$ 0.51 in 2002 to US$ 3.11 in 2004.

At the 1-year follow-up, 1500 questionnaires were mailed to participants in each contest. The response rate varied from 45% to 73% in different campaigns. The number of respondents to follow-up questionnaires in the 4 campaigns from 1999–2005 ranged from 804 to 1100.

Abstinence rate

One month after the contest, the self-reported quit rates varied from 41.8% in 1998 to 92.8% in 2004. At the 1-year follow-up, the self-reported quit rates varied from 22.5% in 1998 to 91.2% in 2004 (Table 3). More than 60% of participants in each contest said that their registration in the international competition was important for their decision and intention to quit or to reduce their consumption of cigarettes (Table 1).

In all 4 campaigns the most important indicators for long-term success in quitting were 1-month abstinence rate and the initial decision to quit at the time of the contest. Advice from health professionals and family support was reported to have helped significantly in 2002 and 2004 (Table 4).

The timing of relapse for those who failed to quit is shown in Table 5. The highest rate of 1-year relapse was seen in 2003 and the lowest rate in 2001. Among those who relapsed, withdrawal symptoms and poor knowledge about how to quit were stated as the most common reasons for relapse (Table 1).

Table 2 **Demographic characteristics of participants in 4 successive Quit and Win contests in Isfahan**

Variable	Year 1998 (*n* = 7065)		Year 2000 (*n* = 8024)		Year 2002 (*n* = 14 650)		Year 2004 (*n* = 4429)	
	No.	%	No.	%	No.	%	No.	%
Sex								
Male	6 924	98.2	7 849	97.8	14 274	97.4	4 025	90.9
Female	141	1.8	175	2.2	376	2.6	404	9.1
Age (years)								
18–30	1 307	18.5	2 6.8	32.5	6 270	42.8	2 151	48.6
31–40	4 402	62.3	4 346	54.2	7 179	49.0	1 289	29.1
40+	1 356	19.2	1 071	13.3	1 201	8.2	989	22.3
Cigarettes (no. per day)								
1–10	1 908	27.0	3 341	41.6	7 168	48.9	967	21.8
11–20	4 006	56.7	3 641	45.6	6 221	42.5	2 364	53.4
21–40	975	13.8	916	11.4	704	4.8	995	9.2
40+	176	2.5	126	1.6	557	3.8	103	2.3
Mean (SD)	14.5 (2.5)		12.6 (1.8)		12.5 (3.6)		17.0 (3.2)	
Marital status								
Single	1 399	19.8	1 429	17.8	3 766	25.7	521	11.8
Married	5 666	80.2	6 517	81.2	10 768	73.5	3 867	87.3
Widowed	–	–	78	1.0	116	0.8	41	0.9
Education (years)								
< 5	1 024	14.5	1 003	12.5	3 267	22.3	878	19.8
5–9	1 286	18.2	1 108	13.8	2 947	20.1	835	18.9
10–12	4 345	61.5	4 695	58.5	4 510	30.8	1812	40.9
> 12	410	5.8	1 218	15.2	3 926	26.8	904	20.4
Period of smoking (years)								
1–9	2 296	32.5	2 315	29.5	6 271	42.8	2 370	53.5
10–19	2 953	41.8	2 653	33.6	4 615	31.5	1 254	28.3
20+	1 816	25.7	2 881	36.7	3 764	25.7	805	18.2
Previous attempts to quit (no. of times)								
0	933	13.2	136	1.7	175	1.2	2 359	53.3
1–2	1 293	18.3	5 947	74.1	10 036	68.5	1 532	34.6
3+	4 839	68.5	1 941	24.2	4 439	30.3	538	12.1

SD = standard deviation.

Discussion

During the 4 Quit and Win campaigns in Isfahan, a total of 34 168 smokers have been motivated to quit (a total of 5.7% of the smokers in Isfahan province), spending a total average of US$ 0.59 per participant. In addition, there was evidence from the follow-up questionnaire that the campaign has a positive influence on all smokers, stimulating them to think about cessation and encouraging activating of the cessation cycle [*5,7*]. The cost per person who successfully quit long-term in Isfahan prov-

Table 3 **Self-reported abstinence from smoking at 1-month and 1-year follow-up for participants in 4 Quit and Win contests in Isfahan (1998–2004)**

Year	Abstinence rate (%)	
	After 1 month	After 1 year
1999	41.8	22.5
2001	91.8	85.5
2003	83.3	78.5
2005	92.8	91.2

ince was between US$ 0.43 and US$ 1.98. This is cost-effective compared with clinical smoking cessation methods, which are much more expensive and are not available for the whole population, even in developed countries.

The 1-year quit rates at follow-up varied from 22.5% in 1998 to 91.2% in 2004. The 1-year quit rates of Quit and Win campaigns are widely different in various countries. In Vietnam, the quit rate was 71.9%–84.2% [*6*], in Minnesota 37% [*8*] and in Finland 28.3% [*9*]. The underlying reasons for such large variations need to be clarified in future research, but may be due to cultural differences between populations.

Between 1998 and 2004, these contests involved 2.5 million smokers worldwide, with a progressive increase in the participation rate. Similarly, the number of par-

Table 4 **Indicators for success in quitting by respondents to the follow-up questionnaire in 4 successive Quit and Win contests in Isfahan**

Variable	Year 1998 OR (95% CI)	Year 2000 OR (95% CI)	Year 2002 OR (95% CI)	Year 2004 OR (95% CI)
Age: < 35 vs ≥ 35 years	0.74 (0.54–1.02)*	0.68 (0.46–0.93)*	1.80 (1.01–2.35)*	2.30 (1.22–3.14)*
Sex: female versus male	0.68 (0.56–1.43)*	0.83 (0.47–1.05)	4.20 (3.80–5.70)*	3.50 (2.80–4.30)
Education: < 12 vs 12+ years	0.76 (0.46–1.25)	1.80 (0.90–2.30)	0.92 (0.68–1.82)*	0.86 (0.53–1.04)*
Marital status: married vs single	1.78 (1.20–3.42)*	2.80 (2.14–4.05)*	3.40 (2.80–4.80)*	4.20 (3.01–4.96)*
Previous attempts to quit: ≤ 1 vs 2+	0.55 (0.37–0.82)*	1.90 (1.20–3.40)*	6.40 (3.30–7.50)*	3.20 (2.01–3.80)*
Had a supporter: yes vs no	1.38 (1.20–2.24)*	2.60 (1.28–4.22)	5.90 (4.30–7.60)*	3.60 (2.01–4.32)*
Used special measures: NRT vs none	1.81 (1.30–2.51)*	2.13 (1.90–3.82)*	1.92 (1.70–3.10)*	1.02 (0.90–1.80)*
Initial decision to quit at the time of contest: yes vs no	3.18 (2.30–4.20)*	3.80 (2.70–4.30)*	4.20 (3.70–5.20)*	5.40 (3.50–6.20)*
Received advice from health personnel: yes vs no	1.60 (0.95–3.20)*	1.01 (0.80–1.80)*	2.60 (1.30–3.20)*	3.10 (2.50–3.80)*
No. of cigarettes smoked/day: < 10 vs 10+	1.30 (0.80–1.90)*	2.90 (1.50–3.00)*	3.40 (2.70–4.20)*	2.43 (1.08–3.20)*
1-month abstinence rate	4.95 (3.24–7.69)*	3.40 (2.05–4.01)*	7.32 (5.10–8.40)*	5.60 (3.50–7.80)*

P < 0.05.

OR = odds ratio; CI = confidence interval; NRT = nicotine replacement therapy.

Table 5 **Timing of relapse for participants who failed to quit smoking in 4 Quit and Win contests in Isfahan (1998–2004)**

Year	Relapse (%)		
	After 1 month	After 6 months	After 12 months
1998–99	55	31	14
2000–01	42	53	7
2002–03	42	35	23
2004–05	39	33	18

ticipants in Isfahan increased over the 3 successive campaigns from 1998 to 2002, although there was a drop in numbers in 2004. This could be explained by variations in the national prizes and the registration process. In the 1998 Iranian campaign, most of our registration forms were distributed in factories and offices and most participants were in the 31–40 year age group.

Considering that the greatest proportion of the Iranian population are under 30 years, we tried to increase the participants of this age group in subsequent campaigns by involving universities, army barracks and youth recreational places. Consequently, the participation rate of the 18–30 years age group increased from 18.5% in 1998 to 48.6% in 2004. Similarly, in China, in 1998 most participants (35%) were in the 40–49 year age group, although this age group comprised only 22% of daily smokers in that country. In 1998, the Quit and Win contest in China provided US$ 600 prizes (the same as the Islamic Republic of Iran), which consequently attracted 40–49-year-old smokers [*10*], while in the same year in Finland, which allocated a trip to the Olympic games as the prize, those aged under 30 years had a higher participation rate [*4*]. Such findings reveal that even though the Quit and Win contest is conducted under a similar international protocol, its success largely depends on the strategies undertaken in each year and each country.

Similar to many other countries [*7*], the number of female participants in our study was considerably less than that of men. In the Islamic Republic of Iran this it likely to be because of the large gender difference in smoking prevalence and because many female smokers might have not registered because of cultural taboos about smoking by women [*3*].

Most participants in all 4 Quit and Win contests in our country were married, which could be expected by the higher participation rate of subjects over 30 years old and the encouraging effect of having a partner.

Over our 4 campaigns, the number of participants who were heavy smokers (> 20 cigarettes per day) increased in 2000 and then showed a decreasing trend in 2002 and 2004 while the mean daily cigarette consumption has not shown a significant change except in 2004. This may be due to increased knowledge about the hazards of smoking due to the interventions of the Isfahan Healthy Heart Program, a community-based programme in Isfahan involving different anti-smoking activities [*11*]. It might also be due to failure of heavy smokers to quit during previous contests because of their higher tobacco dependence.

The proportion of participants with less than 10 years of cigarette consumption decreased between 1998 and 2000 and increased between the 2002 and 2004 campaigns. However, the percentage of participants who smoked 10–19 cigarettes per day decreased over the 4 campaigns. This is likely to be because those who had been smoking for many years and smoked more cigarettes per day had a greater burden of smoking-related diseases and higher referral rate to physicians, who are likely to advise them to stop smoking. This is in line with the study in Finland that showed older

participants were more successful at 1-year follow-up [*5*]. Many studies have shown the key role of age in success at quitting smoking [*10*].

Of interest is the positive attitude of participants to the contest: 62.5%–92.1% of respondents believed that these contests were important in encouraging and motivating smokers to decide to cease smoking and to succeed. This finding is compatible with the results of previous studies [*6,7,9*].

Intention to quit was one of the major indicators of successful quitting in this study, which conforms to Prochaska and Di Clemente's Stages of Change model, showing the importance of progression through the cycle of precontemplation and contemplation before action towards cessation. This model emphasizes using methods that persuade smokers to quit and, after the smoker shows readiness, to move him/her into action and finally maintenance of cessation [*12,13*]. Many previous studies have reported the potential ability of Quit and Win contests to stimulate behaviour change [*6–9*].

In our campaign in 2002, distribution of forms in schools for the students' parents and increasing pupils' knowledge about the hazards of active and passive smoking led to a high number of statements about the impact of children's support and pressure for their parents to stop smoking. In 1998, support from health professionals was modest, while in 2002, concurrent with the Isfahan Healthy Heart Program activities, this item was emphasized. In Finland, support by health professionals has been important in continuing cessation [*4*] and in China lower success rates among men, despite the help of friends, colleagues and physicians, has been related to the cultural acceptability of smoking in men [*7*].

In all 4 of our contests, the number of previous quit attempts was one of the important indicators of success in quitting after 1 year. The greater the number of previous attempts, the higher the success rate, while in England [*14*] and Sweden [*15*], those with ≤ 2 quit attempts were more successful than those who had ≥ 3 attempts, and in China only 10% of participants had attempted > 3 times [*7*], which is expected considering the cultural acceptability of smoking in Chinese men. The relationship between the number of quit attempts and successfully quitting can be interpreted in the light of more experience in handling nicotine withdrawal symptoms, as every quit attempt is a step forward to the next successful quit attempt [*13*].

Smoking < 10 cigarettes per day was one of the most important indicators for success in long-term cessation over the 2000 to 2004 campaigns. This is presumed to be because of the relationship between the number of daily cigarettes and years of smoking and the degree of nicotine addiction, leading to more problems and higher relapse rates in highly dependent smokers. However, as dependence of participants was not assessed, interpretation of this finding is difficult. In Finland, on the contrary, greater cigarette consumption has been associated with a higher success rate [*4*]. This can be related to the more public information provided in the North Karelia Project about controlling cardiovascular risk factors such as smoking. Further comprehensive research into this aspect of quitting is recommended.

There is no doubt that the self-reported 1-month quit rate was one of the most important indicators for long-term cessation in our study. This was expected because the withdrawal symptoms are most severe during the critical first 4-week quit period. Our cigarette smokers believed that the major factors in restarting smoking were their withdrawal symptoms and lack of information about dealing with these symptoms. This is illustrated by the higher failure rate

in those smoking 10+ cigarettes per day and those with fewer previous attempts to quit, presumably because they had not had sufficient experience to deal with withdrawal symptoms. Previous research showed the greater success of quitting using drug treatments and consultations relative to just participating in the contest [*4,15*].

A major limitation of our study is that all the results were based on self-administrated questionnaires applied in the follow-up survey without confirmatory biochemical testing. However, misleading responses from questionnaires tend to be lower than from interview methods.

Since at least 59% of registrants in the 4 contests were willing to quit, we recommend further research into the readiness of smokers to quit in various age groups and the development of special programmes appropriate for each stage of change. Noting quitters' statements in the Quit and Win contests about the importance of participating in the contest, and the relatively lower costs, periodic contests can be a feasible and cost-effective strategy for smoking cessation for low- and middle-income countries, especially if cultural beliefs are taken into account. In addition, facilities for availability of cessation drugs are recommended.

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