

The Experience of Health-Promoting Schools in Iran

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Background: Iran, with the second youngest population in the Eastern Mediterranean Region, faces a high demand on health and education. The Iranian youth are at risk for common behavioral problems that may affect their present and future health. The Health Promoting School Initiative is a well-known international approach that addresses these risks. The Health-Promoting School Program was launched as a national initiative in Iran in 2003.

Objectives: This article is the result of an evaluation study that evaluated the intermediate outcomes of this initiative.

Materials and Methods: The study was a before-after single community intervention with cluster sampling in which 32 clusters were randomly selected from 215 health-promoting schools in 6 socioeconomically representative provinces of Iran. The calculated sample size was 1260 students from the first grade (grade 9) of secondary school. Educational approach was a mix of active education, peer education and life skills training which targeted 6 prime messages on risk behaviors.

Results: We observed improvement in the students' knowledge on sound definition of health, the cause of HIV/AIDS and the route of transmission, different risks and the places with high potential to encounter a risk, consequences of smoking and violence. Attitudes of the participants towards risk and protective behaviors, with the exception of better understanding of laws, improved with little difference between male and female participants.

Conclusions: The Health Promoting School Program model in Iran can significantly improve knowledge and attitude of students regarding the prime messages that address risk behaviors. There is a need to revise the material to maximize the outcomes.

Keywords: Health Promoting; School; Evaluation

1. Background

Iran has the second youngest population in the Middle Eastern and North African regions. Approximately 13 million Iranian youth are studying at schools. The majority of Iranian children are enrolled in primary school and a lower secondary school had gross enrollment ratio of 84% in 2009 (1). According to the Global Youth Tobacco Surveys (GYTS) of 2003 and 2007, the trend toward using tobacco products has been growing among 13-15 year-old Iranians (2). The GYTS of 2007 has estimated that there are 3.0% current cigarette smokers and 26.1% (20.6%-32.4%) current users of other tobacco products among adolescent students (3). The Rapid Situation Assessment on Drug Abuse in 2004 estimated that the total number of drug addicts to be between 1.2 and 1.8 million (4). A total of 50.6% of intravenous drug users began injecting drugs when they were under the age of 24 years. In another study conducted in adolescent males of Tehran in 2002, few participants have reported any smoking history (13%), alcohol (17%) or drug (2%) use (5). Based on Iranian studies of households that experience domestic violence, it is estimated that at least 3 million children are at risk of ex-

posure to domestic violence each year, with 60% to 70% of Iranian children exposed to domestic violence each year (6). The high risk of sexual behaviors in schoolchildren is extremely sensitive and there is a lack of valid evidence on this issue in Iran. In a study conducted in Tehran, 27.7% of adolescent males aged 15-18 years have reported sexual contact before marriage. Older age, the use of alcoholic drinks, early sexual activity, and poor knowledge of reproductive physiology have been introduced as predictors of multiple sexual partners among adolescent males (7). Schools have long been a priority setting for health promotion activities (8). Increasing interest has been given to more systemic and ecological approaches such as the Health-Promoting School (HPS) model of health promotion. According to the WHO (9), "a health promoting school:

- 1) Fosters health and learning with all the measures at its disposal.
- 2) Engages health and education officials, teachers, teachers' unions, students, parents, health providers and community leaders in efforts to make the school a healthy place.
- 3) Strives to provide a healthy environment, school

Implication for health policy/practice/research/medical education:

This article is the result of an evaluation study that has attempted to assess the intermediate outcomes of this initiative.

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health education, and school health services along with school/community projects and outreach, health promotion programs for staff, nutrition and food safety programs, opportunities for physical education and recreation, and programs for counseling, social support and mental health promotion.

4) Implements policies and practices that respect an individual's wellbeing and dignity, provide multiple opportunities for success, and acknowledge good efforts and intentions as well as personal achievements.

5) Strives to improve the health of school personnel, families and community members as well as pupils, and works with community leaders to help them understand how the community contributes to, or undermines, health and education”.

2. Objectives

In 2001, an agreement between the Ministers of Health and Education stressed the establishment of HPSs in Iran (10). The prototype plan for the HPS program was developed, piloted and implemented nationwide from 2003 onward. This study was conducted in 2005 to evaluate the intermediate outcomes of implementation of the HPS national Program.

3. Materials and Methods

The study design was a before-after single community intervention. The method was the only choice for a mass intervention that involved 972 secondary schools in 25 out of 28 provinces of Iran (11). A pre-test survey was conducted before intervention. A post-test survey was conducted in another representative sample of students six months later, one month after the intervention. Surveys were completed in classrooms using a self-administered, anonymous questionnaire previously validated for a Life Skills Training Project (12). Trained teachers supervised completion of the questionnaires which addressed knowledge, attitude, skills and practice by questions that focused on HIV/AIDS, safe friendship, drug abuse, smoking, violence and civil rights/responsibilities. However, this article has focused solely on knowledge and attitude changes. The intervention was based on the community organization theory in which intervention schools were encouraged to adopt and own their HPS program and commit to implementing health promotion strategies to address target health risk behaviors which included drug and tobacco use, violence and HIV/AIDS. The design of the program was piloted in 4 secondary schools in the Islamshahr District, Tehran Province. Essential elements of the intervention model consisted of 1) defining and highlighting health risk behaviors and gaining school community commitment to HPS; 2) identifying key players and the ideal HPS structure for Iranian schools; 3) planning, implementing and monitoring HPS strategies; and 4) ongoing support and maintenance of HPS

structures and activities. Interventions comprised a set of health promotion actions to change the existing state of knowledge, attitude, skills and behavior of the HPS community. A self-learning manual was provided for students to practice an active education model through which six prime messages were conveyed to the students. A teacher's instruction manual helped teachers to manage the HPS activities. A parent's self-learning manual was used to both introduce the initiative and involve parents in the process of active education in the home setting. The role of sexual contact in HIV/AIDS transmission was supposed to be addressed by parents because of the existing cultural sensitivities. A fact book was developed and given to HPS volunteer teachers which enabled them to provide responses to detailed questions of students and/or parents. All HPS activities were handled as an extracurricular program and home activities. Contests, camping events, one HPS video and 4 pamphlets were used to intensify the effect of the education model. All HPSs in each province were supervised by a Drug Prevention Officer to ensure that minimum standards were met.

A cluster sampling method was used for subject recruitment. Considering that $P = 4\%$ as the prevalence of smoking among adolescent students and with a CI of 95%, we calculated the sample size to be 140 students for each of the 6 target provinces. The total sample size calculated was 1260 students when the initial size was adjusted for a design effect of 1.5%. We randomly chose 32 schools (as clusters) from 215 public and private secondary schools in both urban and rural areas of 6 socioeconomically representative provinces of Iran. The list of grade 9 students was used to randomly select subjects and proportional to the size of students in each target province. We used SPSS package (version 11.5) for both data entry and analysis. Descriptive analysis and the t-test were used to derive the results presented in this article. The National Advisory Board of the Drug Prevention Office, Ministry of Education approved the study proposal. Participation in the study was completely voluntary and confidential. Verbal informed consent was mandatory for the participants.

4. Results

Totally, 546 male and 520 female grade 9 schoolchildren participated in the pre-intervention test and 583 males and 556 females participated in the post-intervention test. The average age of the participants was 14.4 years. Six secondary schools were located in rural areas and 4 schools were private. The results showed significant improvement in the level of knowledge of students after training regarding the concept of health (73.2% vs. 96.3%) and underlying risk of smoking (47.5% vs. 68.6%), violence (50.0% vs. 60.5%), use of un-prescribed performance enhancing/body building drugs (31.1% vs. 54.6%) and substance abuse (64.3% vs. 84.3%) compared to before training. Table 1 shows the changes observed in students' knowledge regarding some important concepts of

health and risk. There was a significant improvement observed in students' knowledge of risky behaviors such as unprotected relationships (61.0%), bullying (52.3%), smoking hookah (39%), and using shared barber razors (72.6%). Table 2 shows the impact of intervention on students' knowledge of various types of risks. Students' knowledge about the consequences of smoking was lowest in terms of knowledge for skin diseases in the pre-test (27.1%) and post-test (44.7%), but was highest in terms of pulmonary

diseases for both the pre-test (78.3%) and post-test (87.5%). Students' knowledge about different routes of transmission of HIV virus was a key target of the program. Figure 1 displays the change in students' HIV/AIDS knowledge as a result of HPS interventions ($P < 0.0001$). The attitude of the students about being involved in risky behaviors was diversely affected by the interventions provided in the context of HPS. Table 3 summarizes some key attitudes which were targeted by the project.

Table 1. Changes Observed After Educational Intervention in Students' Knowledge Regarding the Definition of Health and Selected Risk Behaviors

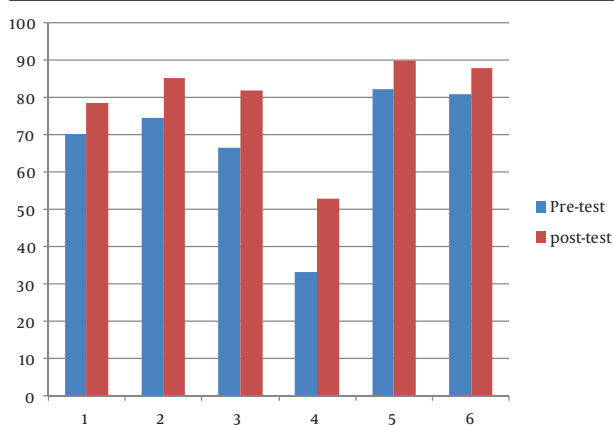
	Female		Male		Total	
	Pre-Test	Post-Test	Pre-Test	Post-Test	Pre-Test	Post-Test
Health is a state of complete physical, mental and social welfare and not merely the absence of disease or infirmity	72.8	96.6	73.6	96.00	73.2	96.3
P Value	0.2	-	0.02	-	0.01	-
HIV/AIDS is caused by a virus	52.9	81.1	57.0	71.8	54.9	76.5
P Value	< 0.0001	-	< 0.0001	-	< 0.0001	-
A good friend may compete with me on school achievements.	70.8	80.9	73.7	81.0	72.2	81.0
P Value	0.001	-	0.02	-	< 0.0001	-
An empty park, a party in which youth smoke and a public bathroom in which used syringes are seen are all dangerous places	78.6	82.6	73.2	81.5	76.0	82.1
P Value	0.2	-	< 0.0001	-	< 0.0001	-
An intentional hit during a football game is violence.	48.9	60.5	65.1	64.3	56.7	62.4
P Value	0.002	-	0.08	-	0.02	-
Smoking can cause cancers.	54.0	69.2	72.9	77.4	63.5	73.3
P Value	< 0.0001	-	0.05	-	< 0.0001	-
Smoking fruit flavored hookah is a kind of tobacco use.	22.8	43.8	40.0	53.9	31.5	48.9
P Value	< 0.0001	-	< 0.0001	-	< 0.0001	-

Table 2. The Impact of Health-Promoting School Intervention on Students' Knowledge About Selected Risks

Risks	Female		Male		Total	
	Pre-Test	Post-Test	Pre-Test	Post-Test	Pre-Test	Post-Test
Cigarette smoking	45.2	67.0	62.5	70.3	53.9	68.6
P Value	< 0.0001	-	0.003	-	< 0.0001	-
Fight and aggression	37.0	60.5	45.6	60.4	41.4	60.5
P Value	< 0.0001	-	< 0.0001	-	< 0.0001	-
Using body building medicines	41.2	53.5	42.5	55.7	41.9	54.6
P Value	< 0.0001	-	< 0.0001	-	< 0.0001	-
Using psychoactive substances and drug abuse	70.8	82.7	78.8	85.9	74.8	84.3
P Value	< 0.0001	-	0.001	-	< 0.0001	-
Unsafe and immoral relationships	45.0	64.5	40.6	57.6	42.8	61.0
P Value	< 0.0001	-	< 0.0001	-	< 0.0001	-
Cursing	29.1	52.2	36.4	52.4	32.8	52.3
P Value	< 0.0001	-	< 0.0001	-	< 0.0001	-
Smoking pipe and hookah	16.5	36.0	26.5	41.9	21.6	39.0
P Value	< 0.0001	-	< 0.0001	-	< 0.0001	-
Using a single blade for different clients in barber-shop	59.9	73.3	60.6	71.9	60.3	72.6
P Value	< 0.0001	-	< 0.0001	-	< 0.0001	-

Table 3. Attitude of Students Towards Selected Key Messages Before and After Health-Promoting School Intervention

	Agree, %		Neutral, %		Disagree %		P Value
	Pre-Test	Post-Test	Pre-Test	Post-Test	Pre-Test	Post-Test	
Asking for help from school authorities or parents when can't overcome a bully is a good option.	88.0	88.6	4.7	6.9	7.4	5.4	0.006
We never need to do something violent such as using invective language, fighting, teasing or bullying others.	67.1	70.1	10.6	10.9	22.4	17.9	0.058
Even one cigarette smoking experience may end up to lifetime smoking.	66.3	67.9	8.4	10.2	25.3	23.9	0.02
Majority of students at my age don't smoke.	52.0	57.0	17.7	16.1	30.4	27	0.8
It is not embarrassing to ask a barber to use a new razor blade or ask a dentist to use sterile equipment for you.	81.9	86.1	10.3	8.5	7.7	51.4	0.002
Only one time penetration of an infected needle or sharp object can result in HIV/AIDS.	82.5	85.3	11.6	9.5	7.9	6.2	0.015
Using any kind of substance could have some possible harm for our body.	76.0	76.7	16.4	18.7	7.6	4.7	0.019
Using some substances are not legally banned but they maybe potentially harmful for our health.	85.5	87.2	5.6	7.2	8.9	6.5	0.008
When we have enough knowledge about laws and regulations this help us to know or rights and responsibilities and consequences of our decisions.	91.6	91.3	6.2	6.6	2.2	2.1	0.6
What we understand from laws and regulations maybe somewhat different from what they exactly mean. It is always helpful to ask legal experts, if we doubt about something legal.	81.3	81.6	1.5	1.5	17.2	16.9	0.8

**Figure 1.** Change in Students' Knowledge About the Routes of HIV/AIDS Transmission Before and After Health-Promoting School Intervention. 1-Transfusion of infected blood; 2- Sharp and penetrating objects; 3- Infected mother to the fetus; 4- Breast milk of infected mother; 5- Unsafe sex; 6- Using infected syringe for injection

5. Discussion

A recent study has shown that multi-behavioral health-promoting school intervention can be effective and is

able to improve a variety of synergic risk behaviors in adolescents through the school setting (13). The literature does not show many significant interventional studies like this in Iran. The Iranian experience of HPS was almost the only interventional study designed according to the model of multi-behavior intervention which targeted four risk behaviors violence, HIV/AIDS, drug abuse and smoking through an integrated skill training approach. Therefore we expected to see changes in knowledge, attitude, skills and eventually behavior of students regarding the above risks. Overall achievement in the area of knowledge improvement was at an adequate level. Students' knowledge about actual examples of risky situations and behaviors improved as shown in Table 1. However, there were some exceptions. Males' knowledge improvement about the concept of health and dangerous places was not as significant as females. In contrast, females' understanding of good friends did not adequately change. Students' understanding of health risk improved significantly at the end of the intervention, both in females and males (Table 2). However, there was proportional variety for different risks. For example, 68.6% of students knew cigarette smoking was a health risk at the final survey, whereas only 39% understood that smoking tobacco by pipe and hookah was a risk (Table 2). Previous Iranian

studies confirmed the effectiveness of skill-based education in improving the level of knowledge of students about risks (12). One of the most interesting findings of this study was the rather high level of knowledge among adolescent students about the routes of transmission for HIV/AIDS. Figure 1 depicts that a significant majority of students were familiar with major routes of transmission; however, the intervention significantly improved this knowledge. This finding was consistent with another study on Iranian adolescents in which the high general knowledge of this age group was confirmed. Seven Most (95%) adolescent males in that study knew about HIV/AIDS, however misconceptions were widespread. For example, 37% of the respondents did not know that AIDS was incurable and 23% did not know that people infected with HIV could be asymptomatic. It seems that improving attitudes was not as successful as knowledge through this model. Although the majority of participants agreed that young people do not smoke, approximately one third disagreed and the impact of educational intervention was not significant. This could be interpreted as pluralistic ignorance which might result in an overestimation of the number of smokers among peers (14). On the other hand, the intervention did not significantly improve the attitude of students towards better knowledge about laws; however, the proportion of those who agreed with positive attitude was sufficient allow us to not be concerned about this lack of success. Over 80% of students at the pre-test and more than 90% at the post-test stage had positive attitudes towards good legal knowledge. The HPS national program has been significantly effective in raising awareness of students about targeted risk behaviors. It could positively affect the attitudes and skills of students; however, the initiative has failed to improve the attitude of the students on the importance of law and student's knowledge about their rights as a protective factor. As the program is still ongoing in some provinces with different names or a variety of alterations, updating its training manuals may be considered to enhance effectiveness. This revision needs to focus on the chapter on rights and responsibilities.

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Author's contribution

All authors have participated equally in this study.

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