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Theory-based interventions in STIs/HIV Prevention: A systematic review of the literature in Iran

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Abstract

Background: Various theory-based interventions (TBIs) have been done to prevent STI/HIV. The current study aimed at reviewing the TBIs for STI/HIV prevention in Iran.

Methods: We systematically searched 6 English and Persian electronic databases to identify TBIs conducted for STI/HIV prevention in Iran. General searches were conducted using PubMed MeSH terms. Articles were included if they were interventional and conducted using models and theories, aimed at reducing the risk of STIs, were quasi-experimental or experimental, and if their full text was available.

Results: Overall, 1042 studies were found. Finally, 13 original studies met our inclusion criteria. The findings indicated that HBM and TPB were the most frequently used theory/models. High school students and drug abusers were the most common target groups in the included studies.

Conclusion: The results revealed that the majority of the conducted TBIs contained a methodological weakness. Conducting randomized controlled trials is needed to evaluate the effectiveness of the TBIs.

Keywords: Sexually transmitted infections, Sexual risk-reduction intervention, Theory, Model

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Introduction

Sexually transmitted infections (STIs) are infections that occur directly between individuals via unprotected sexual contact including vaginal, anal, and oral sex (1). Some STIs can also spread without sex, such as through childbirth or breastfeeding, blood or blood products, as well as by sharing needles among injecting drug users (IDUs) (2). STIs have a significantly negative impact on reproductive and sexual health worldwide (3). Over 30 different pathogens including bacteria, viruses, and parasites are known to be passed by sexual contact (2).

STIs are a common problem across the world. They are responsible for high morbidity and can have severe health implications above the instant impact of the infection. STIs such as herpes and syphilis can increase the risk of HIV three times or more; moreover, maternal transmission of STIs can result in stillbirth, neonatal death, low birth weight, prematurity, sepsis, pneumonia, neonatal conjunctivitis, and congenital deformities (4). Over one million STIs are obtained every day globally (5).

In developing countries, STIs and their consequences are one of the first 5 medical conditions that lead adults to search for medical help (6). A person may have an STI without showing clear symptoms of a disease (7). STIs including HIV infections, which are often transmitted through unprotected sexual contact, are the most important disease among young males (15–24 years) (8).

According to statistics, 31 950 individuals with HIV/AIDS were registered in Iran until September 2016,

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↑What is "already known" in this topic:
Nowadays, models and theories are commonly used in behavioral change interventions. This topic aimed at showing to what extent these models and theories are appropriate and applicable in STI/HIV prevention.

→What this article adds:
Conducted TBIs on STI/HIV in Iran have a strong methodological weakness. The construct of the models and theories are used only in theory and they are not used in practice and actual field.

and threefold of this number either did not recognize or were not aware of their disease, of whom 66% were male and 34% were female. Overall, 45.6% of patients with HIV were aged 25 to 34 at the time of getting infected with HIV (9). Sexual transmission of HIV in Iran was almost constant at 5% to 8% until 2006, but the actual percentage steadily increased to 20.7% of known cases in 2010 (10) and 37.9% in 2014 (11). Previous studies have shown that HIV/AIDS is one of the main causes of the burden of disease (DALY) in middle-income countries in 2030 (12). It is estimated that the attributable burden of HIV/AIDS in Iran is increasing rapidly and that it will reach to 1% in 2025 from 0.4 in 2013 (13).

HIV has no cure, but prevention is the best way to control its spread. People can reduce their risk of HIV infection by avoiding the risk factors (14). According to the World Health Organization (WHO), health education is the most effective way of dealing with HIV, and for this purpose, high-risk and vulnerable groups must be prioritized (15). Prevention of HIV infection is 28 times cheaper than treating it, and developing a comprehensive program to prevent infection could prevent millions of new infections worldwide (16). Behavioral factors are the main cause of disease and death worldwide (17, 18). Behavioral interventions and counselling offer primary prevention against STIs (including HIV) and unwanted pregnancies (2).

The most effective public health programs are those that are based on understanding of health behaviors and the context of these behaviours (19, 20). Evidence shows that behavior change interventions based on a theoretical framework are more effective than those not theory-based (21-23). A theory suggest an organized approach of understanding events, behaviors, and/or situations (20). Theories and models of behavior change (1) help understand why people do or do not practice healthy behaviors, (2) are useful in identifying the basic information needed for designing interventions (19, 24-26), (3) provide a framework to evaluate the interventions, (4) determine the timing of the interventions, and (5) provide insights and perspective into design an effective intervention (27). In recent years, health education and promotion models and theories have been increasingly used in developing, implementing, and evaluating behavior change interventions in Iran. The purpose of this paper was to prepare a systematic review of the published theory-based interventions (TBIs) in STI/HIV in Iran.

Review of the literature

This review was directed according to the 'Preferred Reporting Items for Systematic Reviews and Meta-Analyses' (PRISMA) statement (28). To identify TBIs in STI/HIV prevention in Iran, reports published on or before August 30, 2016 in 3 Persian electronic databases including Magiran, Iranmedex, and Scientific Information Database (SID) and 3 English public research databases including PubMed, Scopus, and Google Scholar were searched. General searches of databases were conducted using combinations of the following keywords: STIs, sexual risk, risk behavior, HIV/AIDS, prevention, condom use, behavioral intervention, theories and models, programs, and unprotected sex. An indexed paper from these databases was selected according to (1) STIs, (2) HIV/AIDS, (3) health behavior change models and theories, (4) health education and health promotion models and theories (e.g., HBM), (5) aim of the study (e.g., evaluation of the effectiveness of education), (6) risk behavior, (7) and type of study (e.g., before and after and clinical trials). Moreover, the reference lists of retrieved studies were scanned to find further articles. We had no time limitation for the search of the studies.

Study selection

Two authors, independently, searched the papers and scanned titles and abstracts using the qualification criteria for inclusion in the review. The full texts of potential articles were then analyzed by 2 authors, and an ultimate conclusion about which articles to include in the review was reached based on consensus. If no consensus was reached, a third author, expert in health education and health promotion, provided arbitration. For any additional information or data, the authors of reviewed articles were contacted.

Inclusion & exclusion criteria

To select the studies, the following inclusion criteria were defined: (1) interventional studies based on one or more theory of behavior change (e.g., TPB, HBM), (2) studies that were experimental or quasi- experimental in nature, (3) studies that aimed at evaluating the effectiveness of theory-based interventions, (4) studies that considered the risk reduction of STIs or HIV/AIDS as an objective, and (5) availability of the full text of the studies. Also, in the case of intervention duration and follow up, the target group of studies (individuals, families, community) and place of intervention were not considered as limitations. . Descriptive, cross-sectional, KAP (knowledge, attitude, and practice) studies, and studies that described the effective factors for the prevention of STIs/ HIV using models and theories were excluded from the study.

Data abstraction

Two authors, independently, used a predefined data extraction form to extract data from eligible studies. This information included first author's name, sample and sample size, target group, method of education, randomization, outcome, outcome assessment, tools, and type of study.

Quality assessment

We used the check list provided by CONSORT (29) and Chen et al. (30) to assess the methodological quality of the included studies. A total score of methodological quality was calculated by adding all occurrences (Yes = 1 & No = 0). Papers that met 70% of the criteria were rated as showing a high methodological quality.

Discussion

The initial database search resulted in 1 042 records, of which 25 full texts were reviewed; and finally, 13 articles

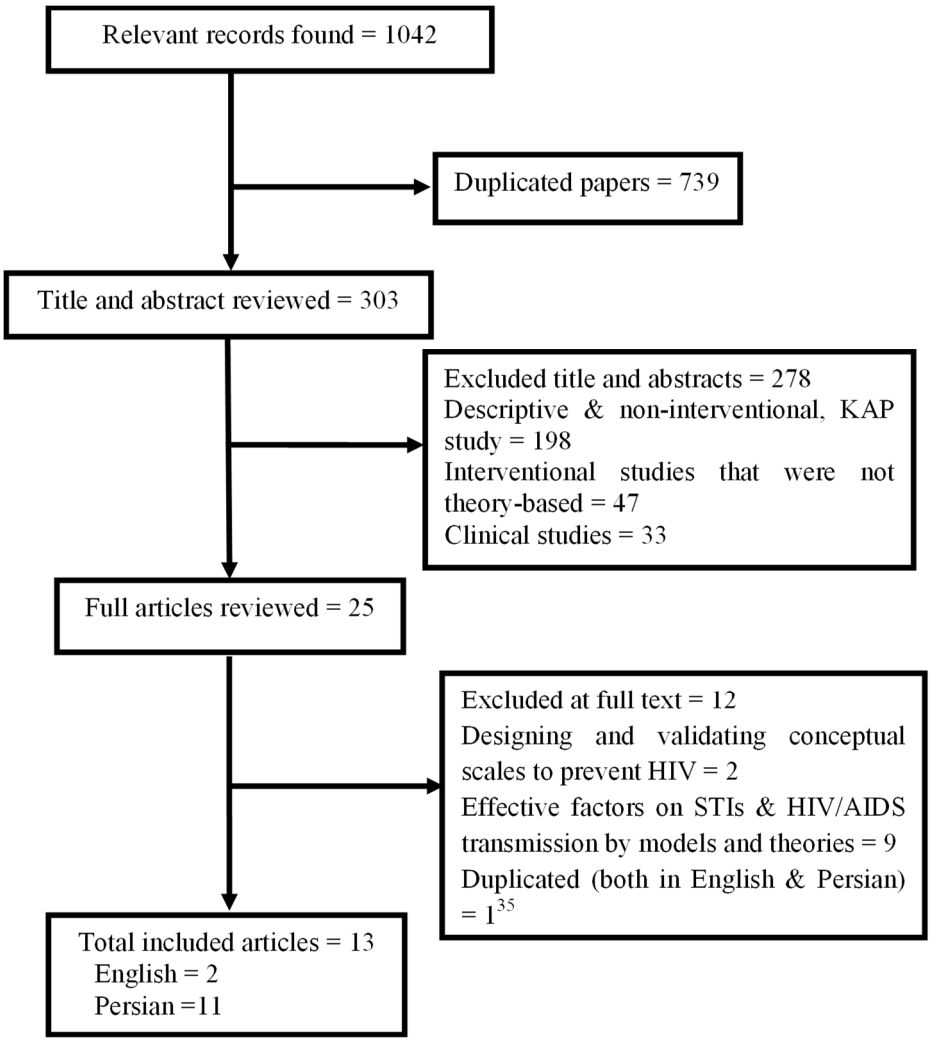

Fig. 1. Bibliographical searches and inclusion process

that met all our criteria were included in the study (Fig. 1). Out of the 13 papers, 2 were published in English (31, 32) and the other 11 were in Persian (33-43). A total of 8 papers were based on the health belief model (HBM) (31-38), 4 on the theory of planned behavior (TPB) (40-43), and 1 on self-efficacy theory (39). All 13 studies were quasi-experimental and reported that intervention had a positive impact on the score of structures of theories and models towards STI prevention. With respect to the sample size of the reviewed articles, the minimum and maximum of sample size varied between 49 and 280. The target group was diverse, involving different people including students, drug abusers, and HIV+ patients (Table 1).

With regards to the characteristics of the intervention, all the studies by providing the background mentioned the reasons for selecting the certain model or theory. All the studies used a combination of teaching methods including lectures and group discussions. Except for one study that was conducted by peers education (41), facilitators in the other 12 studies were researchers. The following period of intervention varied from 1 to 5 months. The content of the interventions included HIV transmission, epidemiology of HIV/AIDS, life skills training, and communication skills (Table 2). The results of the methodological assessments showed that only one study that had a good methodological design received more than 70% on the quality assessment checklist, (33) while the 12 other studies received a small score (n= 1: 75%; n= 2: 62%; n= 4: 50%; n= 5: 37%; n= 1: 25%) (Table 3).

The present study investigated theory-based interventions in STIs in Iran and the effect of these interventions. Health behaviors are the main components in the area of prevention, treatment, and rehabilitation. Abundant social, cultural, and economic components contributed to the creation, continuity, and shift of behaviors (44). Theories are necessary to investigate health behaviors, describe and understand the processes, gain knowledge, and collect evidence. Interpretable and effective interventions can be designed to promote healthy lifestyles and reduce risky behaviors only through sound evidence and without reinventing the wheel (45). Results of our systematic review showed that 8 papers were conducted based on the HBM model, 4 papers based on the TPB, and another study based on the self-efficacy theory. These individual-based models focused on the intrapersonal factors, without addressing the other non-individual factors affecting health behaviours. Socioecological models have focused on several layers of influence, such as personal, interpersonal,

Table 1. Characteristics of included studies on TBIs in STIs/HIV/AIDS

Author (Year)	Model/ theory	Study objective	Study design	Sample	Results
Vakili et al. (2010)	HBM	Effect of Communication Skills Training on Health Belief Model Constructs about AIDS	Quasi-experimental	Health volunteers (N=80; Intervention, N = 40; Control, N = 40)	Significant increase in HBM susceptibility, severity, and perceived barrier Constructs. Non- significant increase in perceived self-efficacy, perceived benefit, and behavioral intention
Soltani et al. (2013)	HBM	Evaluation of the effect of educational program based on health belief model in health beliefs about AIDS	Quasi-experimental	High school students (N = 149; intervention, N = 77; control, N = 72)	Significant improvement in knowledge, perceived susceptibility, severity, benefits and self-efficacy, and significant decrease in perceived barriers
Karimi et al. (2008)	HBM	Effect of health education based on health belief model on preventive actions of AIDS	Quasi-experimental before and after	Addicted men (N=49; intervention, N = 49)	Significant deference in the score of all constructs of HBM before and after intervention
Pirzadeh et al. (2011)	HBM	Effect of educational program on knowledge and health belief model structures about AIDS	Quasi-experimental	High school students (N =72; intervention, N = 36; control, N=36)	Significant increases in knowledge, perceived severity, benefits and barriers, but there was no significant increases in perceived susceptibility
Mirheidari et al. (2014)	HBM	Effect of educational interventions on sexual high risk behavior between drug addicts ex-users	Quasi-experimental	Addicted men (N=128; intervention, N=52; control, N=66)	Significant deference in the score of all constructs of HBM before and after intervention and in comparison with control group
Jadgal et al. (2015)	HBM	Effect of educational interventions on AIDS preventive behaviors among health volunteers	Quasi-experimental	Health volunteers N=150; intervention, N=75; control, N=75)	Significant deference in the mean scores of all constructs of the HBM and positive effects of educational interventions on AIDS-related awareness, skills, and preventive behaviors
Bastami et al. (2016)	HBM	Effect of education on knowledge, perceived self‐efficacy, perceived benefits, barriers and performance of drug addicts men	Quasi-experimental	Addicted men (N=88; intervention, N=44; control, N=44)	Significant increase in the mean scores of perceived benefits and barriers, knowledge and preventive behaviors in the intervention group. However, the increase in self-efficacy score was not significant.
Zareban et al. (2015)	HBM	Effectiveness of a TBI program in prevention of HIV transmission risk behaviors in HIV+ patients	Quasi-experimental	HIV+ patients (N=92; intervention, N=46; control, N=46)	Significant deference in scores of all constructs of HBM before and after intervention
Ebrahimipour et al. (2015)	Self- efficacy	Effect of educational intervention based on Self- Efficacy Theory on preventive behavior of HIV/ AIDS	Quasi-experimental	High risk and vulnerable women (N=70; intervention, N=35; control, N=35)	Significant increases in the mean scores of self-efficacy and condom use
Moieni et al. (2014)	TPB	Determining the effect of educational programs to encourage safe sexual behaviors among substance abusers	Quasi-experimental RCT	Substance abuser men (N=104; intervention, N=52; control, N=52)	Significant increase in the mean scores of all constructs of theory in the intervention group
Sadeghi et al. (2014)	TPB	Impact of educational intervention based on theory of planned behavior on the AIDS-preventive behavior	Quasi-experimental	Health volunteers (N=120; intervention, N=60; control, N=60)	Significant increase in awareness level and all constructs of TPB
Sivaki et al. (2010)	TPB	Effect of peer education on preventive behaviors of HIV/AIDS based on theory of planned behavior	Quasi-experimental	High school students (N=280; intervention, N=140; control, N=140)	Significant increase in awareness and the mean scores of all constructs of theory in the intervention group
Pakpour Hajiagha et al. (2012)	TPB	Assessing the impact of health education based on Theory of Planned Behavior in preventing AIDS	Quasi-experimental	High school students, (N=120; intervention, N=60; control, N=60)	Significant increase in scores of the cognitive variables, refusal skills, and stalling risk suggestions

organizational, social, and public health policy and were based on the concept that behaviors are shaped by social environments and shaped it (46, 47). Results of systematic reviews and meta-analyses across the world showed that the most commonly used theories and models for reducing HIV-related sexual risk behavior are self-administration, problem-solving education, and skills learning with SCT (social cognitive theory) approaches (10, 23, 48). Before

Table 2. Characteristics of TBIs in STIs/HIV/AIDS

Author (Year)	Duration/assessment point	Facilitators	Intervention strategies	Content
Vakili et al. (2010)	3 weekly workshop/ pre-intervention, and post-intervention, (5 months)	Researcher*	Lecture, role playing, group discussion, power point	Basic information about HIV/AIDS, principal and concepts of communication, and communicating skills
Soltani et al. (2013)	Two 90- minute sessions for each group (n=10-12)/ pre-intervention, and post-intervention (2 months)	Researcher*	Group discussion, lecture and colloquy	Knowledge about HIV: epidemiology, transmission, high risk behaviors, at risk population and way of prevention
Karimi et al. (2008)	2 weekly sessions/ pre-intervention and post-intervention (2 months)	Researcher*	Lecture, colloquy , film, and handout	Knowledge about HIV, education about adopting HIV preventive behavior and interaction with environment
Pirzadeh et al. (2011)	2 educational sessions (45 minutes)/ pre-intervention, post-intervention (1 months),	Researcher*	Group discussion, lecture, booklet, poster and pamphlet	Knowledge about HIV and way of transmission, and enhancing perceived severity, intensity, and benefit
Mirheidari et al (2014)	2 (120 min) sessions for each group (n=4-7)/ pre-intervention, post-intervention (3 months)	Researcher*	Group discussion, lecture, colloquy, brain storming, booklet and pamphlet	Basic information about HIV/AIDS (risk behavior & way of transmission), importance of condom use, and consequences of HIV infection
Jadgal et al (2015)	2 educational sessions (120 min)/ pre-intervention, and post-intervention (2 months)	Researcher*	Lectures, group discussions, and pamphlet	Not mentioned
Bastami et al. (2016)	Three 90 minute sessions for each group (n=10-12)/ pre-intervention and post-intervention (2 months)	Researcher*	Lectures, colloquy, group discussions, educational films, pamphlets, and booklets	Basic information about HIV/AIDS, its transmission and prevention along with improving perceived self- efficacy, Benefits of and barriers to this disease
Zareban et al. (2015)	4 weekly educational sessions/ pre-intervention and post-intervention (2 months)	Researcher*	Group discussion, colloquy, brain storming, and pamphlet	Not mentioned
Ebrahimipour et al (2015)	3 educational sessions/ pre-intervention and post-intervention (3 months)	Researcher*	Group discussion, lecture, personal counseling, colloquy	Knowledge about HIV and its importance, HIV preventive behaviors, and condom use training
Moieni et al. (2014)	4 educational sessions (45 min)/ pre-intervention and post-intervention; (2 months)	Researcher*	Lecture, colloquy, pamphlets, film & clip, slide show, and role playing	Consequences of risky sexual behaviors, problem solving skill training, refusal and assertiveness skills
Sadeghi et al. (2014)	3 educational sessions (60 min) monthly/ pre-intervention and post-intervention (3 months)	Researcher*	Lecture, colloquy, pamphlets, booklets, demonstration	Self-care skill, abstinence, safe sex behavior, drug abuse
Sivaki et al. (2010)	2 educational sessions (45 min) / pre-intervention and post-intervention (1.5 months)	Peer education	Lecture, booklets, film	Knowledge about HIV and way of transmission
Pakpour Hajiagha et al. (2012)	5 group discussion sessions (45-60 min)/ pre-intervention and post-intervention (3 months)	Researcher*	Focus group discussion, pamphlet, film & CD	HIV preventive skill, knowledge about HIV

*. Researcher was a health education expert

1970, general hygiene education stressed the broad areas of social determinants of health and social institutional skills (19). Health educators then focused on intrapersonal factors, such as beliefs, attitudes, knowledge, and skills, and most behaviour change programs were based on these factors (23, 49, 50). The current view considered primary public health, suggesting that looking beyond the individual and taking into account the social and environmental factors can increase the likelihood of success of health promotion programs (46). Planners and designers of interventions must move towards the understanding of different levels of influence on individuals, populations' behavior, and health status. To develop effective interventions, several theories or constructs of different theories are recommended. This is because studies have shown that interventions that use a combination of 2 or more theories have better efficacy (51).

Our review showed that the conducted intervention in Iran only focused on HIV/AIDS and that other STIs including chlamydia, gonorrhea, primarily hepatitis B, syphilis, herpes simplex virus (HSV or herpes), and human papillomavirus (HPV) were not addressed.

Our study showed that the target groups of the reviewed study were as follow: high school students (34, 36, 41, 42), health volunteers (31, 33, 40), drug abusers (32, 35, 37, 43), at risk and vulnerable women (39), and HIV+ patients (38). Based on the existing studies, high-risk groups in Iran are injecting drug users, their sexual partners, non-injecting drug users, sex workers, prisoners, street children, and the homeless (9). Although 4 studies were conducted in schools, talking about sexual behaviors and condom use in schools was very problematic considering cultural and social limitations. Only one study was conducted among high-risk women. Statistics show that sexual transmission of HIV in Iran has increased in recent years (52). The proportion of people who have been infected through sex has increased over the years and HIV prevalence among female sex workers has reached to 4.5% (53). The majority of these women do not always use condoms (53). Injecting drug users are sexually active and their sexual contact is often unprotected (53). Also, risky sexual behavior among young people is not low (54) and 19.5% of people aged 20 to 29 years have extramarital sexual relationships (54). The prevalence of HIV among

Table 3. Methodological quality of the included TBIs in STIs/HIV/AIDS

Author (Year)	Randomization	Blinding	Inclusion/Exclusion criteria clearly described	Adequate sample size calculation shown	Measures described	Maintenance	Theory/model ex-plained	Rational for duration /dose of intervention	Score
Vakili et al. (2010)	1	1	1	1	1	0	1	0	6/8
Soltani et al. (2013)	1	0	0	0	1	0	1	0	3/8
Karimi et al. (2008)	0	0	0	1	1	0	1	0	3/8
Pirzadeh et al. (2011)	0	0	0	1	1	0	1	0	3/8
Mirheidari et al. (2014)	0	0	1	1	1	0	0	0	3/8
Jadgal et al. (2015)	1	1	1	0	1	0	1	0	4/8
Bastami et al. (2016)	0	0	0	0	1	0	1	0	2/8
Zareban et al. (2015)	0	0	1	1	1	0	1	0	4/8
Ebrahimipour et al. (2015)	0	0	1	1	1	0	1	0	4/8
Moieni et al. (2014)	1	0	1	1	1	0	0	0	4/8
Sadeghi et al. (2014)	1	0	1	1	1	0	1	0	5/8
Sivaki et al (2010)	1	0	0	0	1	0	1	0	3/8
Pakpour Hajiagha et al. (2012)	1	0	1	1	1	0	1	0	5/8

street children in Tehran was 4.5%, while this rate was 9% among those who use drugs (55). However, due to the social taboo of issues such as drug use and risky sexual behavior, which are the main causes of transmission in Iran and sociocultural sensitivity, access to high-risk groups is very difficult, which is a main challenge in HIV control (9). Hence, interventions should be directed towards high-risk groups and involve the whole society.

All reviewed studies have reported a significant difference resulting from interventions (p-value<0.05), while a significant difference was observed in the score of constructs of the used theory in the study before and after the intervention and between cases and control groups. However, we cannot claim that the increase in knowledge score and the cognitive construct of models and theories can be sustained and lead to a change in behavior because a set of personal, social, and cultural factors are responsible for shaping and changing selected behavior. Moreover p-value is not enough alone, and studies that calculate the effect size and have a high effect size can be suggested.

Duration of intervention ranged from 2 to 5 sessions, and only one study provided 5 sessions of education (42). The evidence indicates that changes in the intensity of interventions can affect the effectiveness of a program. Comparison of 2 forms of educational interventions with the same overall time (10.5 hours) but different number of sessions (7 vs. 3 sessions) showed that the intervention was associated with reduced risk of behavior among students only in 7 sessions. (56). Therefore, when the content of an intervention is constant, a discount in the count of sessions can be effective in reducing the effectiveness of the intervention even if the overall time of the program is the same (57-59).

The reviewed studies have used a wide variety of educational methods such as lecture, group discussions, films, etc. However, the majority of studies did not mention which method should be used for behavior change. For example, group discussion and exposure to affected people are the best ways to change attitude, while actual experience and direct observation are more effective to learn a new skill. Moreover, lectures and questions and answers are more effective in changing knowledge levels (27). Among the reviewed studies, no study provided practical training or observational training for condom use, while the best approach to condom use education is practical skill training. Only one study used appropriate strategies to enhance self-efficacy (39). Self-efficacy is an individual's belief in her or his capacity to act and insist on doing it despite obstacles and challenges, and is highly important in influencing behavior change (60). Enhancing self-efficacy is possible using 3 strategies: (1) setting small but attainable gradual goals, (2) using special behavioral contract to determine the goals and certain rewards, and (3) monitoring and reinforcement (61).

With regards to the methodological quality of the reviewed studies, only one study (33) earned the acceptable quality score, indicating that the conducted studies in Iran contained methodological weaknesses. Very little information was provided on blinding and randomization, while none of the studies mentioned the rationale for study duration and did not asses the maintenance of behavior.

Previous studies showed that low self-efficacy is associated with high proportion of sexual risk behavior (62, 63). On the other hand, when reduction of high-risk sexual behaviors is analyzed, the cognitive aspects of knowledge and skills for exercising by the individual who examines his behavior are necessary but not enough (64). People learn how sexual infections are transmitted or learn how to talk to their sexual partners about using a condom, but they are still involved in high-risk sexual behaviors because behaviors are not directly and solely influenced by knowledge and skills. However, the behavior is changed in a cognitive process, and this process is formed by integrating awareness, expected outcome, determining emotions, social influence, and past experiences to judge one's abilities in difficult situations (64). For a healthy sexual behavior and its continuity, several cognitive variables that play an important role in such relationships should be integrated (65). Attitude also plays a role in safe sex and is associated with self-efficacy. However, having a negative attitude toward condom use, does not mean that one person's dos not use condom at all, and vice versa. . The ex-

pected outcome about condom use is another variable that is not a predictor of condom use, as positive or negative expectations can be put together at one time; on the other hand, condom is used to prevent sexually transmitted infections, but it is expected to reduce sexual pleasure. Therefore, outcome expectation is a reason for doing or avoiding to a behavior (66). Social support, positive outcome expectation, and self-efficacy are 3 main factors affecting healthy behavior and continuation of actions. Negative expectation of a consequence reduces self-efficacy and lack of social support also leads to low self-efficacy in a particular behavior (67, 68).

Conclusion

The results of our study indicated that out of all the theories and models, only 3 (HBM, TPB, and Self-Efficacy) were used in STI/HIV prevention in Iran. Organizational, social, and ecological models are not used. High-risk people including injecting drug users, their sexual partners, sex workers, prisoners, street children, and homeless people were not included in the interventions. We suggest that future interventions be conducted on high-risk people and that theories and models be used in all stage of educational programs including designing, implementation, and evaluation. Also, we propose that social cognitive theory be used as an effective tools for planning and implementing such interventions. Behavioral interventions that focus on skill building methods and involve the participants actively can be more effective in the context of STIs prevention. To prevent the transmission of sexually transmitted infections, it is best to promote condom use and abstinence, but since few people choose to avoid sexual relationships, health service providers must emphasize the use of condoms, but using male condoms requires collaboration of both men and women. However, there are many challenges in putting knowledge and theories into practice.

Limitations

Our study had several limitations. We did not contact the authors of the excluded papers, so we are not certain whether they did or did not gather other information in related outcomes. Furthermore, we conducted searches in 6 electronic databases, and thus, we might have missed some related papers in our literature review. Additionally, we only reviewed the studies that were conducted in Iran.

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Conflict of Interests

The authors declare that they have no competing interests.

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