# Impact of Mobile Phone-Based Interventions on Methamphetamine Use and High-risk Sexual Behaviors in Men Who Have Sex with Men (MSM): A Systematic Review

**Arefeh Ameri[1]**, **Sareh Keshvardoost[2]**, **Kambiz Bahaadinbeigy[3]**

**Review Article**

## Abstract

**Background:** Today, increased use of methamphetamine in homosexual men is associated with high-risk sexual behaviors and (HIV) epidemic. Mobile phone-based interventions are an accessible and rapid method to provide healthcare services to this population. This study aimed to systematically review the effects of mobile phone-based interventions on methamphetamine use and high-risk sexual behaviors in homosexual men.

**Methods:** This systematic review was conducted by two researchers via searching in PubMed, Google Scholar, Web of Science, Scopus, and PsycINFO databases to retrieve the published articles regarding the effects of mobile phone-based interventions on the control of methamphetamine use and high-risk sexual behaviors.

**Findings:** Among 250 unique articles that were retrieved, only five cases met all the inclusion criteria of the study. Accordingly, some of the applied interventions included text messaging (n = 4) and mobile apps (n = 1). In this regard, the use of text messaging significantly decreased the rates of methamphetamine use, condomless anal intercourse (CAI), and HIV transmission among homosexual men.

**Conclusion:** According to the results, short-term interventions based on text messaging could decrease the rates of methamphetamine use and the high-risk sexual behaviors associated with HIV infection in homosexual men. Despite the positive impact of these interventions, long-term follow-ups are required for individuals using methamphetamine in different communities.

**Keywords:** Methamphetamine; Telemedicine; Text messaging; Human immunodeficiency virus

1- Social Determinants of Health Research Center, Institute for Futures Studies in Health, Kerman University of Medical Sciences, Kerman, Iran
2- Medical Informatics Research Center, Institute for Futures Studies in Health, Kerman University of Medical Sciences, Kerman, Iran
3- Modeling in Health Research Center, Institute for Futures Studies in Health AND Department of Health Information Sciences, School of Management and Medical Informatics, Kerman University of Medical Sciences, Kerman, Iran
Correspondence to: Sareh Keshvardoost; Medical Informatics Research Center, Institute for Futures Studies in Health, Kerman University of Medical Sciences, Kerman, Iran; Email: s.keshvardoost@kmu.ac.ir

## Introduction

Recently, methamphetamine use has been recognized as an important public health concern. According to the latest Statista report, 3% of the world's population use methamphetamine, and the rate of its consumption is assumed to be higher in the youth aged more than 14 years.[1] In addition, the rates of production, consumption, and damages caused by methamphetamine have been estimated at 0.3%, 1.4%, and 63.0% in the general population of the United States (US), Australia, and eastern and southeastern Asia, respectively.[2] In addition to physical complications, long-term use of methamphetamine could lead to aggressive behaviors, cognitive and emotional complications, and increased tendency toward high-risk sexual behaviors, which could in turn rise up the risk of human immunodeficiency virus (HIV) transmission.[3] Therefore, in addition to adverse effects on community health, methamphetamine use could give rise to familial and social insecurity.

According to the evaluations of the Substance Abuse and Mental Health Services Administration (SAMHSA), the rate of methamphetamine use is 2-4 times higher in homosexual and bisexual men in comparison to other populations.[4] In male homosexuals, methamphetamine use is related to the increased number of sexual partners and engagement in condomless anal intercourse (CAI), leading to the higher risk of HIV transmission in men who have sex with other men (MSM).[5,6] In this regard, the diagnosis rate of new HIV cases in male homosexuals has been reported to be 40 times higher compared to women, while 44 times higher compared to other men.[7] Therefore, evidence attests to the association between methamphetamine use and increased risk of HIV infection among MSM.[8]

Face-to-face interventions have been shown to be an effective approach to the control of methamphetamine use and high-risk sexual behaviors in male homosexuals; such examples are motivational interviews, cognitive behavioral therapy (CBT), and evidence-based interventions.[9] It is notable that face-to-face interventions require a predetermined schedule to receive counseling and treatment, which may be challenging to MSM methamphetamine users.[9] Since the possession of mobile phones is considered to be higher among MSM, mobile phone-based interventions could be an effective interventional technique in this population.[10,11] Mobile phone-based interventions could provide the required services to methamphetamine users instantaneously, conveniently, and confidentially.[10,11]

Several review studies have assessed the effects of mobile phone-based interventions on self-management and self-monitoring, reduction of methamphetamine use, and treatment of the behavioral disorders caused by drug abuse (e.g., smoking and alcohol consumption).[12-14] Furthermore, numerous findings have confirmed the importance of addiction as a chronic and recurrent disease that requires self-care and continuous care, similar to other chronic diseases. On the other hand, some studies have reviewed the apps available on commercial app stores, which are related to controlling the use of methamphetamine,[15] alcohol, and other drugs.[16] However, a review of the literature indicated that no prior research has been focused on the scientific contents of the mobile phone-based interventions that are used to control (reduction/elimination) methamphetamine use and its complications. Considering the growing use of methamphetamine and given the importance of its impacts on the increased risk of high-risk sexual behaviors and HIV transmission, it is crucial to recognize the effective mobile phone-based interventions in this regard.

The present study aimed to address the following questions:

1. What mobile phone-based interventions are used for MSM methamphetamine users?

2. What are the effects of mobile phone-based interventions on methamphetamine use or treatment of methamphetamine addiction in the MSM users?

3. What are the effects of mobile phone-based interventions on high-risk sexual behaviors and risk of HIV transmission in MSM methamphetamine users?

## Methods

This systematic review was done by two authors via searching in PubMed, Web of Science, Scopus, and PsycINFO databases in order to find the published articles regarding the effects of mobile phone-based interventions on the control of methamphetamine use and high-risk sexual

behaviors without time restriction until 2019. The related articles were found using two groups of keywords depending on the objectives of the research. The first group included the keywords regarding methamphetamine (group A), and the second group consisted of the keywords regarding the mobile phone technology (group B). The keyword groups were combined using "AND" operator.

Group A: ("methamphetamine" OR "amphetamine" OR "crystal meth" OR "meth")

Group B: ("app" OR "apps" OR "mobile application" OR "mobile health" OR "M health" OR "smartphone" OR "mobile technology" OR "mobile communication technology" OR "text messaging")

Final search strategy: [(Group A) AND (Group B)]

After searching in the mentioned databases, a manual search was also conducted in Google Scholar in order to prevent missing of any relevant study.

*Inclusion criteria:* The inclusion criteria of the study were as follows: 1. mobile phone-based interventions as the main objective of the research (the technology not applied as recruitment or data collection tools), 2. studies mainly focusing on the control (reduction/elimination) of methamphetamine use (not aiming to increase medication or treatment adherence), 3. studies focusing on the control (reduction/elimination) of HIV-related high-risk sexual and methamphetamine use behaviors, 4. studies

focusing on MSM, 5. articles published in English, 6. being interventional studies [randomized controlled trial (RCT) or quasi-experimental studies/no descriptive or qualitative studies], and 7. being original articles (no reviews, conferences, letters to editor, short communication, case reports, or commentaries).

*Data selection, collection, and analysis:* After conducting the database search, the extracted data were imported in Endnote (version X8.0.1), and the duplicates were identified and eliminated. Then, the titles and abstracts of the retrieved articles were evaluated and the eligible cases were selected for full-text review. Finally, another search was conducted based on the references list of the selected articles and first author of these articles.

## Results

*Search details:* In total, 338 and 19 articles were retrieved from the electronic databases and via the manual search of the references list of the final articles, respectively. After the recognition and elimination of the duplicates (n = 107), the titles of 250 articles were assessed by two authors independently. The full texts of 18 articles were evaluated after the elimination of the irrelevant cases. Eventually, only five out of 18 articles met the inclusion criteria of the research, while no studies were selected based on the references list search of the final five articles. Details of the article search are shown in figure 1.
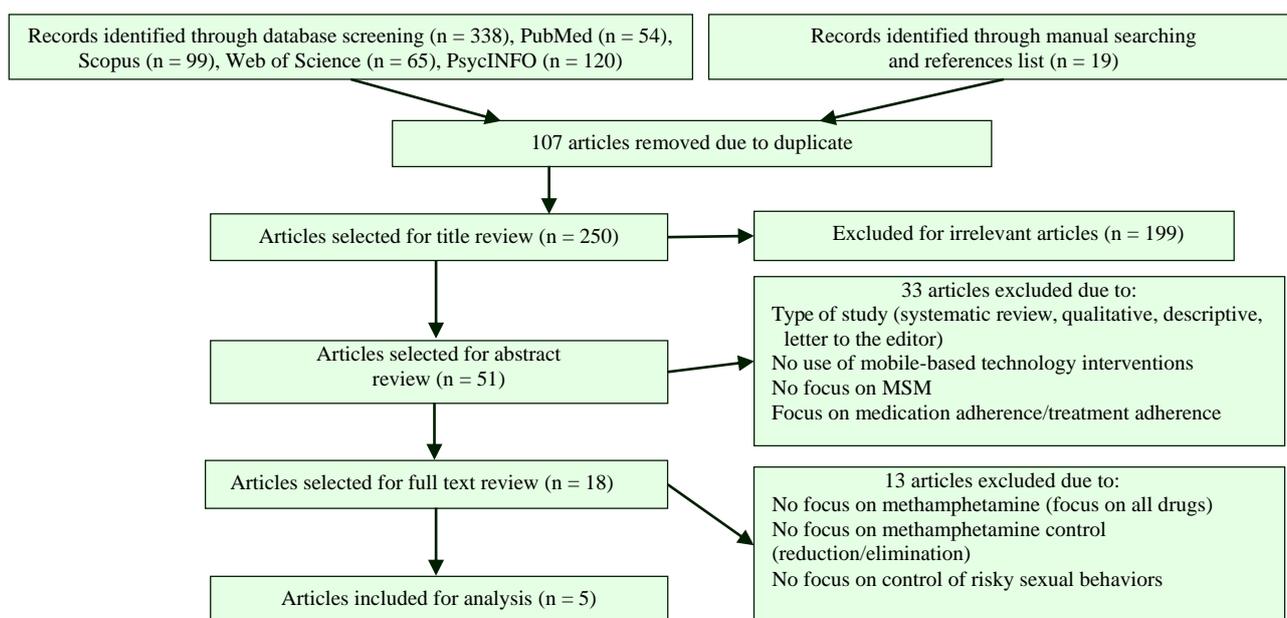


**Figure 1.** Screening process flowchart

***Features of the selected articles:*** All the selected studies were conducted by Reback et al. during 2008-2016 in Los Angeles, California, US.[9,17-20] Considering that all the studies were performed by the same authors, another search was performed in databases based on the first author of these articles, which yielded no proper results.

Table 1 shows the details of the study design, study populations, types of mobile technologies, duration of the studies, and their key findings. Accordingly, the sample sizes of the studies varied from 52[9,20] to 286[17,18] and the participants were mostly within the age range of 18-65 years.[9,17-20] The mobile phone-based interventions used in the selected studies were mainly based on the use of mobile applications[19] and text messaging[9,17,18,20] and performed as RCTs (n = 2),[17,18] pre/post-test pilot studies (n = 2),[9,20] and pilot studies (n = 1).[19]

The duration of the interventions in the selected studies ranged from two weeks[9,20] to eight weeks.[17-19] In addition, the inclusion criteria of all the selected studies were MSM and methamphetamine users.[9,17-20] However, some of the studies had other inclusion criteria such as unprotected anal intercourse with non-primary male partners,[7,17,18,20] no currently receiving/seeking drug therapy,[9,17,18,20] and no receiving an HIV-positive diagnosis.[9,20]

In all the selected articles, text messaging interventions had a theoretical framework, and the text messages were developed based on the possible risk profiles of the subjects (e.g., HIV status, frequency of methamphetamine use, mode of methamphetamine administration, drug use/intercourse location, and sexual positioning).[9,17,18,20] The theories applied in the selected articles included the social support theory (SST), social cognitive theory (SCT), and health belief model (HBM).[9,17,18,20]

### Mobile phone-based interventions and their impacts

*Mobile phone apps:* In study NO. 3 in table 1, Reback et al.[19] used ecological momentary assessment (EMA) for the self-monitoring and improvement of treatment in methamphetamine-using gay and bisexual men. To this end, the items of EMA were implemented in the form of a mobile phone app (Android and iOS), with a web-based dashboard displaying all the EMA survey responses based on time and location. The time and location features were aimed at enabling the participants to search for the time and location trends and patterns to find the association between various EMA survey responses and methamphetamine use and/or high-risk sexual behaviors. In the mentioned study, the participants were divided into three groups of EMA with dashboard, EMA with dashboard and counselor, and control. The measured criteria were developed in three forms with detailed data on the health impact assessment status, methamphetamine use, age, income status (data obtained from the admission form), high-risk sexual behaviors such as the episodes of CAI with non-primary partners and number of sexual partners within the past 30 days [data obtained from the Behavioral Questionnaire-Amphetamine (BQA)], substance use, urine drug screening, and retention (data obtained from substance abuse form). The obtained results indicated a significant reduction in the episodes of CAI only in the EMA with dashboard and counselor group compared to the control group. While both the intervention groups reported the reduced use of methamphetamine, no significant differences were observed with the control group in the number of the male sexual partners and likelihood of providing a positive urine sample for methamphetamine metabolites.

*Text messaging services:* Among the reviewed articles, four studies used text messaging intervention.[9,17,18,20] In the first article in table 1, the researchers evaluated the cost-effectiveness of the text messaging services designed to diminish methamphetamine use and high-risk sexual behaviors associated with HIV transmission among MSM.[17] Following the baseline behavioral assessment, the participants were screened for HIV, other sexually transmitted infections (STIs), and recent drug use. Ultimately, 286 participants were divided into three groups of text conversations with Peer Health Educators (TXT-PHE), TXT-auto, and assessment only (AO) and examined for eight weeks. In the mentioned study, the TXT-PHE group received an intervention based on interactive text messaging conversations with the peer health educators, theory-based, gay-specific text messages sent via automation, and weekly text-based self-monitoring. In the TXT-auto group, the intervention involved theory-based, gay-specific text messages sent via automation, as well as weekly text-based self-monitoring.

**Table 1.** Existing studies of mobile phone-based interventions in reductions of methamphetamine use and high-risk sexual behaviors for men who have sex with other men (MSM)

| Study | Study design | Type of mobile technologies | Length of study | Study population in each group | Key finding |
|---|---|---|---|---|---|
| Reback et al.[17] | RCT | Text messaging | 8 weeks intervention, follow up at 3, 6, and 9 months post-enrollment | Intervention 1: TXT-PHE, n = 94<br>Intervention 2: TXT-auto, n = 99<br>Control: AO, n = 93 | Reducing HIV risk behaviors<br>Reductions in days of methamphetamine use<br>Reductions in sex on methamphetamine<br>Reductions in CAI |
| Reback et al.[18] | RCT | Text messaging | 8 weeks intervention, follow up at 3, 6, and 9 months post-enrollment | Intervention 1:TXT-PHE, n = 94<br>Intervention 2: TXT-auto, n = 99<br>Control: AO, n = 93 | Reductions in methamphetamine use<br>Reductions in sex on methamphetamine<br>Reductions in CAI with casual male partners |
| Reback et al.[19] | Pilot study | EMA mobile app | 8 weeks intervention, follow up at 4, 8, and 12 weeks | Intervention 1: EMA + dashboard, n = 16<br>Intervention 2: EMA + dashboard + counselor, n = 18<br>Control, n = 102 | Reductions in the number of CAI episodes<br>Decrease in the number of days of methamphetamine use from baseline to follow-up |
| Reback et al.[20] | Single arm, pre/post-test pilot study | Text messaging | 2 weeks intervention, 2 months follow-up | Meth-using MSM (n = 52) | Reductions in sentinel HIV risk and drug use behaviors in active methamphetamine users<br>Reductions in the number of serodiscordant unprotected anal sex partners<br>Decreased engagement in exchange sex<br>Decreased frequency of methamphetamine use |
| Reback et al.[9] | Single arm, pre/post-test pilot study | Text messaging | 2 weeks intervention, 2 months follow-up | Meth-using MSM (n = 52) | Decreases in frequency of methamphetamine use and unprotected sex while on methamphetamine<br>Reductions of unprotected anal intercourse with HIV-positive partners and with HIV-negative partners<br>Fewer insertive and receptive episodes |

CAI: Condomless anal intercourse; EMA: Ecological momentary assessment; HIV: Human immunodeficiency virus; MSM: Men who have sex with other men; RCT: Randomized controlled trial; TXT-PHE: text conversations with Peer Health Educators; TXT-auto: Automated messages; AO: Assessment only

The AO group in the mentioned research only received the weekly text-based self-monitoring assessment. It is notable that the weekly text-based self-monitoring assessment in the three groups was focused on methamphetamine use and HIV-related high-risk sexual behaviors, and the intervention was performed during seven days. In the mentioned study, data on methamphetamine use and HIV-related high-risk sexual behaviors were collected using the BQA. According to the obtained results, methamphetamine use decreased in all the study groups, which was followed by diminished sexual activity on methamphetamine and CAI with casual male partners. Moreover, HIV-related high-risk sexual behaviors more significantly decreased in the TXT-PHE and TXT-auto groups compared to the AO group. On the other hand, the number of the days using methamphetamine and having CAI with casual male partners decreased in the TXT-auto group compared to the TXT-PHE group. While the overall costs were higher in the TXT-auto group compared to the AO group, the former experienced a more significant reduction in the CAI at lower costs compared to the latter. Based on the results of the mentioned study, it could be inferred that even simple, cost-efficient controlling methods such as AO could effectively decrease the rate of problematic methamphetamine use in the MSM not seeking treatment.[17]

In research number two, the effects of text messaging on the reduction of methamphetamine use and HIV risks were evaluated in MSM.[18] Initially, the participants completed a computer audio interview in the primary assessment. Afterwards, they were screened in terms of the diagnosis of HIV, other sexually transmitted diseases (STDs), and drug use. Similar to study number one,[17] the participants were divided into three groups of TXT-PHE, TXT-auto, and AO, and the intervention was performed during eight weeks. In the mentioned research, the contents of text messages were developed based on the SST, SCT, and HBM. In addition, the messages were delivered and responded to in a real-time manner and at the peak hours of the high-risk activities of the subjects. The findings were indicative of a significant decrease in methamphetamine use, sex on methamphetamine, and CAI with casual male partners among the MSM in all the study groups.

Furthermore, the participants in the TXT-PHE and TEXT-auto groups reported reduced CAI with their primary male partners, and only the subjects in the TEXT-auto group reported reduced CAI with anonymous male partners. Ultimately, it was concluded that the text-based self-monitoring alone was sufficient for the prompt significant reduction in both methamphetamine use and CAI with casual male partners.[18]

Study number four in table 1 was also performed to assess the effects of theory-based text messages (SST, SCT, and HBM) on the reduction of HIV-related high-risk sexual behaviors and methamphetamine use in a group of gay methamphetamine users before and after the intervention.[20] In the mentioned study, the participants initially completed a computer audio interview in a primary assessment. Following that, a messaging system encompassing 400 customized messages was formulated based on possible risk profiles (e.g., HIV status, frequency of use, method of administration, drug/sex location, sexual positioning), as well as SST, SCT, and HBM. According to the obtained results, the HBM- and SCT-based messages decreased the prevalence of HIV-related high-risk behaviors regarding methamphetamine use in the participants.

In a research involving increased relative exposure, HBM/SCT-based messages were reported to decrease the rate of HIV serodiscordant unprotected anal sex, engagement in sex for money and/or drugs, and frequency of recent methamphetamine use more significantly compared to SST-based messages. Furthermore, HBM-based messages reduced the number of non-primary anal sex partners more significantly compared to the other research groups.[20]

In the last study presented in table 1, the impact of text messaging intervention was evaluated on the reduction of methamphetamine use and the associated high-risk sexual behaviors among MSM. In the mentioned research, the subjects initially completed a computer audio interview in a primary evaluation, followed by a urinalysis in order to examine recent drug use, as well as a rapid oral HIV antibody test. After the assessment, the participants received a mobile phone with the ability to send/receive messages and were asked to briefly respond to five questions about methamphetamine use so as to help the researchers prepare specific text

messages (e.g., Where do you use meth? At home? At clubs/bars? At bathhouses or sex clubs?). Afterwards, a proper messaging intervention was developed and carried out for two weeks based on the SST, SCT, and HBM theories using the data collected from the responses of the participants.[9]

In another research, Reback et al. stated that the use of messaging intervention led to the decreased frequency of methamphetamine use and unprotected sex on methamphetamine. Moreover, the participants reported the reduced episodes of unprotected anal intercourse with HIV-positive partners.[9]

## Discussion

This systematic review aimed to evaluate the effects of mobile phone-based interventions on MSM methamphetamine users. In general, text messaging was observed to be the most common intervention used in the studies. In this regard, text messaging has mostly been associated with reduced methamphetamine use and HIV-related high-risk sexual behaviors.[9,17,18,20] Furthermore, previous studies have demonstrated that the use of motivational and psychological theories in the design and implementation of text messaging as interventions could significantly decrease methamphetamine use and HIV-related high-risk sexual behaviors.[9,17,18,20] The main theories used in this regard have been the SST, HBM, and SCT.[9,17,18,20]

The SST posits that supportive actions from trusted others (or even the perception that such support is available) act as a buffer to the stress of difficult life events, which improves the coping performance of the individual in dealing with such events.[20] Some SST-based messages include: Gay pride is taking care of yourself." and "You deserve to be healthy". You deserve to be healthy."[9,17,18,20]

In contrast to these results, Wohl et al.[21] and Woodward and Pantalone[22] reported that the use of SST-based messages could improve retention in HIV care, as well as medication adherence, through diminishing psychological distress in HIV-positive MSM. In another research by Scott et al.,[23] SST-based messages were applied in HIV-negative young MSM, and perception of social support was associated with the reduced rate of high-risk sexual behaviors and increased HIV

testing. This discrepancy between the aforementioned studies and the current research might be due to the lack of methamphetamine use in some of their participants and only focusing on the African-American individuals as subjects.[21,23]

The HBM is a motivational model that identifies factors able to motivate an individual to perform or adopt healthy behaviors.[20] Some examples of HBM-based messages were "Don't brush your teeth two hours before sex.", "Meth will take your teeth.", and "Using? Tops get STDs, too.", which are used for the participants who are insertive partners in CAI. The use of such messages in the aforementioned studies was reported to decrease methamphetamine use and HIV-related high-risk sexual behaviors, especially anal sex with non-primary partners.[9,17,18,20] In addition, Boone and Lefkowitz reported that the use of HBM theory resulted in the reduction of sexual risks among MSM.[24] In a meta-analysis, it was demonstrated that the application of HBM-based messages led to medication adherence among HIV-positive participants.[25]

The SCT is a psychosocial theory of behavior change which posits that self-efficacy plays a central role in the enactment of healthy behavior change. Some of the examples of SCT-based messages include "You set your own limits; protect them." and "You have a choice; don't trade your rig for sex". According to the last studies, SCT could significantly decrease methamphetamine use and HIV-related high-risk sexual behaviors.[9,17,18,20] Furthermore, other studies have emphasized on the importance of self-efficacy in high-risk sexual behaviors. Correspondingly, increased self-efficacy is associated with the increased rate of condom use during anal intercourse by HIV-positive MSM.[24] In the research conducted by Reback et al., the reduced methamphetamine use and HIV-related high-risk sexual behaviors might be due to the emphasis of the theories on healthy behaviors.[9,17,18,20]

According to a meta-analysis performed by Cumming et al., the primary barriers preventing MSM methamphetamine users from accessing methamphetamine abuse treatment are psychosocial in nature (e.g., stigma/embarrassment and privacy concerns). Therefore, the incorporation of motivational and psychological theories into the content

development and structure of text messages could highly influence the decline of methamphetamine use and high-risk sexual behaviors.[26]

In addition to the effects of theory-based messages, application of simple controlling messages with weekly self-monitoring in some studies have resulted in less problematic methamphetamine use behaviors among MSM.[17,18] In such studies, self-monitoring involved the methamphetamine use and HIV-related high-risk sexual behaviors during one week. According to the obtained results, the independent use of low-intensity texting interventions sufficed to accelerate the reduction of methamphetamine use and CAI with sexual partners.[17,18] Therefore, in the communities with limited sources and inability to use theory-based text messages, application of simple interventions could reduce methamphetamine use and high-risk sexual behaviors in homosexual methamphetamine users.

Only one of the studies evaluated the effects of mobile phone application intervention. Reback et al. claimed that while the use of mobile phone applications decreased the number of the days of methamphetamine use and CAI, but declined methamphetamine use was insignificant compared to the control group.[19] As such, the effectiveness of apps compared to messaging interventions cannot be determined accurately. Therefore, further investigations are recommended to evaluate the significance of using mobile phone apps in the treatment of methamphetamine use compared to other technology-based theories.

According to the reviewed literature, use of mobile phone-based interventions, especially HBM- and SCT-based messages, could decrease the rate of methamphetamine use and high-risk sexual behaviors.[9,17,18,20] However, it should be noted that such studies have been mainly conducted in regions such as Los Angeles.[9,17-20] Meanwhile, the United Nations Office on Drugs and Crime (UNODC) has reported that more than half of methamphetamine users are the habitants of eastern and southeastern Asia, and the implementation of such interventions in these regions could play a major role in the control of global methamphetamine use and the subsequent complications. Some of the limitation of this study, were the lack of a control group,[9,20] smaller sample size in the intervention group compared to the control group,[19] and non-generalizability of the results to all homosexual methamphetamine users.[9,17,18,20]

This was the first research to evaluate and review the studies regarding the use of mobile phone-based interventions in the control of methamphetamine use and high-risk sexual behaviors in MSM. According to the results, mobile phone-based interventions, especially text messages, are a suitable, accessible, and cost-effective method to reduce methamphetamine use and high-risk sexual behaviors. Reback et al. evaluated the cost-efficiency of these interventions and demonstrated that even a simple and low-cost messaging system could be effective in this regard.[17] In addition to the effect of mobile phone-based interventions on the reduction of methamphetamine use and high-risk sexual behaviors, these interventions could enhance self-management and self-monitoring and increase knowledge of one's status. In this respect, MSM give more information on methamphetamine use through messaging method compared to other methods (e.g., audio computer-assisted self-interviews).[27,28]

The present study had three limitations. First, the limited number of the relevant articles was identified based on our study objectives. Therefore, we could not properly estimate the effects of mobile phone technology on the control of methamphetamine use and the associated high-risk sexual behaviors in various communities. Second, the use of mobile phone apps to control methamphetamine use and the associated sexual high-risk behaviors was evaluated in one study. In this study, both the independent use of apps along with counseling decreased methamphetamine use and high-risk sexual behaviors. Nevertheless, these interventions caused no significant effects compared to the control group.[19] As such, our findings may not definitely express the effects of mobile phone apps on the reduction of methamphetamine use and high-risk sexual behaviors. Third, the current study only involved MSM methamphetamine users. Although this was an inclusion criterion, few studies have been performed on women[29] and other men[30-32] who use methamphetamine. On the other hand, the effect of mobile phone interventions on the reduction of

methamphetamine use and the associated complications has not been discussed in the few reviewed studies.

## Conclusion

In recent years, the published articles have confirmed the positive impact of messaging on the reduction of methamphetamine use and HIV-related high-risk sexual behaviors. Despite the positive effects of these interventions on the reduction of methamphetamine use and the associated complications, this claim must be confirmed based on the long-term follow-ups of methamphetamine users after the interventions in order to prevent the substance use and HIV-related sexual behaviors (optimally 12 months after the intervention). In conclusion, it is suggested that further investigations could evaluate the long-term effectiveness of mobile phone interventions and comparison of various interventions in different communities and genders.

## Conflict of Interests

The Authors have no conflict of interest.

## Acknowledgements

## Authors' Contribution

AA and SK, have contributed to reviewing the literature, summarize results and writing up the manuscript. KB, has contributed to conception, design and critical revision of the manuscript. All authors had a significant contribution to finalizing the manuscript.

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# تأثیر مداخلات مبتنی بر فن‌آوری تلفن همراه بر مصرف مت‌آمفتامین و رفتارهای مخاطره‌آمیز جنسی در بین مردان هم‌جنس‌گرا: یک مرور سیستماتیک

عارفه عامری ۱، ساره کشوردوست ۲، کامبیز بهاءالدین بیگی ۳

**مقاله مروری**

## چکیده

**مقدمه:** امروزه، افزایش مصرف مت‌آمفتامین با افزایش رفتارهای مخاطره‌آمیز جنسی و شیوع ویروس Human immunodeficiency virus (HIV) در بین مردان هم‌جنس‌گرا همراه است. مداخلات مبتنی بر فن‌آوری تلفن همراه، یکی از روش‌های در دسترس و سریع برای ارایه خدمات به این گروه از افراد می‌باشد. هدف از انجام مطالعه سیستماتیک حاضر، بررسی تأثیر استفاده از مداخلات مبتنی بر فن‌آوری تلفن همراه بر مصرف مت‌آمفتامین و رفتارهای مخاطره‌آمیز جنسی در بین مردان هم‌جنس‌گرا بود.

**روش‌ها:** در این پژوهش، پایگاه‌های اطلاعاتی PubMed، Web of Science، Scopus و PsycINFO توسط دو محقق به منظور شناسایی مقالات مرتبط با مداخلات مبتنی بر فن‌آوری تلفن همراه در کنترل مصرف مت‌آمفتامین و رفتارهای مخاطره‌آمیز جنسی مورد بررسی قرار گرفت.

**یافته‌ها:** از ۲۵۰ مقاله منحصر به فرد بازیابی شده، تنها ۵ مقاله تمام معیارهای ورود به تحقیق را داشت. پیام‌های کوتاه متنی (۴ مقاله) و نرم‌افزارهای مبتنی بر تلفن همراه (۱ مقاله) از جمله مداخلات مورد استفاده بود که در آن‌ها استفاده از پیام‌های کوتاه متنی موجب کاهش معنی‌دار مصرف مت‌آمفتامین، رابطه جنسی مقعدی بدون کاندوم و در نهایت، کاهش انتقال ویروس HIV در بین مردان هم‌جنس‌گرا شده بود.

**نتیجه‌گیری:** پیام‌های کوتاه متنی به صورت کوتاه‌مدت می‌تواند منجر به کاهش مصرف مت‌آمفتامین و رفتارهای مخاطره‌آمیز جنسی مرتبط با HIV در بین مردان هم‌جنس‌گرا شود، اما با وجود تأثیر مثبت این مداخلات، نیاز به انجام پیگیری‌های درمانی درازمدت بر روی مصرف‌کنندگان این نوع ماده مخدر در جوامع مختلف، ضروری به نظر می‌رسد.

**واژگان کلیدی:** مت‌آمفتامین، پزشکی از راه دور، پیام‌های کوتاه متنی، ویروس نقص سیستم ایمنی انسان

۱- مرکز تحقیقات عوامل اجتماعی مؤثر بر سلامت، پژوهشکده آینده‌پژوهی در سلامت، دانشگاه علوم پزشکی کرمان، کرمان، ایران

۲- مرکز تحقیقات انفورماتیک پزشکی، پژوهشکده آینده‌پژوهی در سلامت، دانشگاه علوم پزشکی کرمان، کرمان، ایران

۳- مرکز تحقیقات مدل‌سازی در سلامت، پژوهشکده آینده‌پژوهی در سلامت و گروه علوم اطلاعات سلامت، دانشکده مدیریت و اطلاع‌رسانی پزشکی، دانشگاه علوم پزشکی کرمان، کرمان، ایران

**آدرس نویسنده مسؤول:** ساره کشوردوست؛ مرکز تحقیقات انفورماتیک پزشکی، پژوهشکده آینده‌پژوهی در سلامت، دانشگاه علوم پزشکی کرمان، کرمان، ایران

Email: s.keshvardoost@kmu.ac.ir