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**Behavioral Intervention Innovation on Reducing Sexual Risk Behavior  
among HIV-Positive Men Sex Men: A Literature Review**

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**Abstract.** The high degree of HIV transmission in the MSM circles resulted from the risky sexual behaviors. The study aimed to describe the behavioural intervention innovation to reduce sexual risk behavior among HIV-Positive MSM. This literature study was conducted to identify behavioral intervention innovations among HIV-Positive MSM. Articles were retrieved from Wiley Online, ProQuest, and Science Direct databases. The keywords used were behavioral Intervention, sexual risk behavior, and HIV-Positive MSM. The articles were limited based on inclusion criteria: English language full-text articles have been published from 2010 to 2019. Research studies also included several study design types, including a quasi-experimental study, a randomized control trial (RCT), and mixed-method design. Based on the research results on the selected journal, it is known that there is a wide range of behavioral therapy Innovations as an intervention carried out to reduce the sexual risk behavior among HIV-Positive MSM. Several interventions enhance the knowledge about HIV among HIV-Positive MSM, including integrated community and clinic-based intervention, Internet application, small group intervention, social network intervention, the treatment advocacy program, and brief Internet-based group intervention. In addition, man to man Sexual Health Seminar, Positive Sexual health (PoSH), Men speaking out, and community-based peer education can significantly decrease the sexual risk behavior, increase HIV tests improve attention, and search for health facilities. Behavioral intervention is an intervention that is part of nursing intervention, particularly in the hard-to-reach HIV-Positive MSM, because it is a minority group. With innovations, interventions are made more attractive and more convenient so that they are expected to change behaviors, especially sexual risk behavior that can transmit HIV and sexually transmitted diseases. This behavioral innovation tends to be more effective and can be applied in all countries, including developing countries, to reach all areas like those in Indonesia with extensive regions.

**Keyword:** Behavioral therapy, Sexual Risk Behavior, MSM with HIV

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## INTRODUCTION

HIV or *Human Immunodeficiency Virus*, is a virus cause of AIDS, where HIV is a type of virus that infects white blood cells that cause the decrease of human immunity. If a person is infected with HIV, they are more susceptible to infection and other diseases. The human body cannot kill HIV, and there is no effective cure for HIV. So, once a person is infected with HIV, they have a lifetime of HIV (1).

The number of people living with HIV in the world today is very high. Based on data from UNAIDS, there are 37.9 million people from various countries living with HIV and AIDS in the year 2018. Still sourced from the data, people with HIV/AIDS are more suffered by women, namely, 18.2 million patients. While males as much as 16.9 million sufferers. If grouped by background, people living with HIV/AIDS come from commercial sex workers (5.3%), homo-sexual (25.8%), injectable drug users (28.76%), transgender (24.8%), and those in detention (2.6%) (2)

Indonesia has accounted for 620,000 of 5.2 million people in the Asia Pacific infected with HIV/AIDS. Based on the report on HIV/AIDS Information System (SIHA), in the year 2018, five provinces in Indonesia with the largest number of HIV infections are East Java, DKI Jakarta, West Java, Central Java, and Papua. As for the case of AIDS alone, the province of Central Java is a province with the highest number of people living with AIDS in Indonesia, followed by West Java and Papua, which ranks second and third. The percentage of HIV reported in October-December 2018 (quarter 4) for the discovery of a new case of HIV/AIDS reached 60.70% of the estimated HIV/AIDS case, of which as many as 65% of HIV reported cases were males while based on the risk factors, the highest number of people living with HIV in male sex males (MSM) was 9,522 person (1)

The high number of HIV in the MSM is due to several factors due to sexual risk behavior (3). Based on some research results, there is a significant link between sexual risk behavior with HIV incidence. The sexual risk behaviors made by MSM are multi-partner, having oral sex (4). Members of various MSM communities, especially in certain regions, have very close networks and relationships (5). Consequently, if MSM alternates a sexual partner, he will usually choose a partner from the same community. This causes HIV transmission to be more marginally found in the case of same-sex enthusiasts, especially MSM (6).

The tendency to risky sexual behavior in the MSM raises a thought to find an effective way of reducing or reducing it, as it will affect the decline in HIV figures as well. Therefore, a more precise method can be entered in consultation programs to change the behavior of the MSM in a better direction. One of the approaches done in behavioral intervention. Behavioral intervention is a psychological approach through cognitive and individualized mechanisms. Mentally, this intervention will first provide information related to the problem until the solution is generated. In contrast, the mechanisms of coping will provide a strategy of the in-line mechanisms of dealing with stress so that the individual will be more relaxed and facilitate the receiving of information and want to change the behavior of itself (7).

That study explained the application of clinic-based behavioral interventions effectively reduced sexual risk behavior for most of the MSM participants but is still constrained by the distance of the house with the clinic so that there are still those who cannot follow the intervention. Therefore it takes an innovation that can facilitate behavioral intervention services. Consequently, it can be done anywhere without time and distance constraints. The behavioral interventions have proved to be effective based on evidence-based care using the Internet or online networks, using the phone media as one of the consulting media, and using a peer network in the entire region. This innovation is expected more accessible to all HIV-Positive MSM to be applied throughout the country, including in Indonesia.

## **OBJECTIVE**

The study aimed to describe the behavioral intervention innovation to reduce sexual risk behavior among HIV-Positive MSM.

## **METHOD**

This literature study was conducted to identify behavioral intervention innovations among HIV-Positive MSM. We retrieved the study from Wiley Online, ProQuest, and ScienceDirect databases. The keywords such as behavioral intervention, sexual risk behavior, and HIV-Positive MSM. The articles were limited based on inclusion criteria: English language full-text articles have been published from 2010 to 2019. Research studies also included several study design types, including a quasi-experimental study, a randomized control trial (RCT), and mixed-method design.

The synthesis results are categorized into four, including MSM and their communities, using an innovative approach, continuous follow-up, and increasing knowledge and condom use.

## **RESULTS**

Based on the criteria specified, it has selected eight journals and was set to perform a review related to behavioral intervention innovations. The eighth journal discusses behavioral interventions with different approaches and innovations. Based on the research site, four journals were conducted in the United States, one journal in Russia and Hungary. One journal was born in Myanmar, another journal in Spain, and one journal in China. The eight journals were published in 2010, 2013, 2015, 2016, 2017, and 2018. Meanwhile, based on its publication, eight selected journals were published in the Journal of Consulting and Clinical Psychology, Aiph Research, Springer Link, the Society of Behavioral Medicine, JOURNAL of AIDS, Journal of Adolescent Health, and the Guilford Press AIDS Education and Prevention.

Review the selected journal by author, year of publication, research design, number of samples, and results. The journal is a quantitative journal, with one journal using Pre-post evaluation design, and seven journals using a randomized controlled trial. The total participants from this study are 182.003. All of the journals discuss the behavioral intervention among young MSM, HIV-positive MSM to reduce sexual risk behaviors, increase HIV knowledge, and improve HIV tests in MSM. Besides that, some articles discuss condom use, disclosure of HIV status to serodiscordant partners, and increased intention and health-seeking behavior. The details were in table 1.

### ***Involving MSM and their communities***

Involving MSM and their communities is one way to increase MSM involvement in interventions so that MSM feel comfortable and more relaxed in carrying out therapy (8). The most widely used method in small groups chooses leaders as educators, which is as many as seven studies. One other study used a personal approach.

### ***Using an innovative approach***

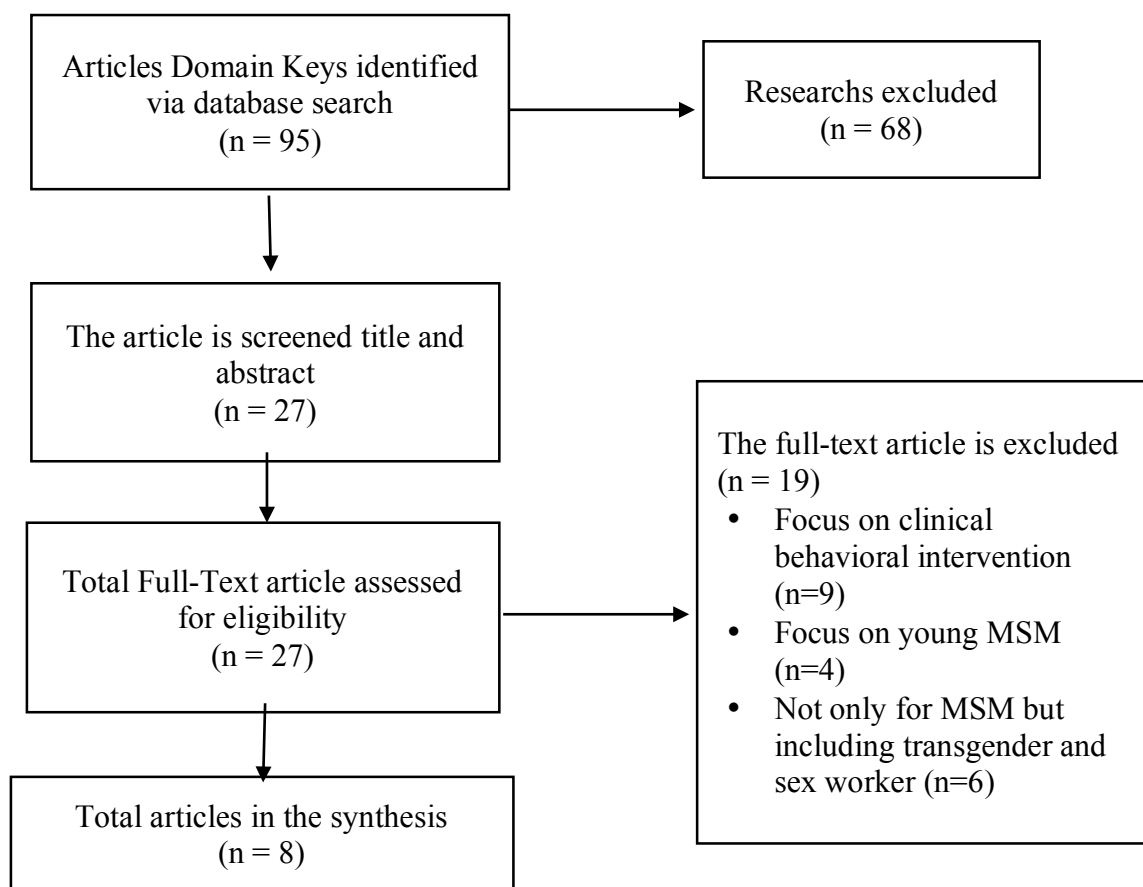
There are several innovations used in this eight journals, namely Man2Man (M2M) Sexual Health Seminar, Positive Sexual Health (PoSH), and Men Speaking Out, Treatment Advocacy Program (TAP), Community-Based Peer Intervention, Social Network HIV/STD prevention intervention, Integrated Community and Clinic-Based Intervention, Small-group intervention, Internet application, self-report and messages, and Online HIV sexual risk reduction intervention (called HINTS). The innovation uses various technologies such as video and internet applications through smartphones and computers, messaging, and self-reporting applications. Although one study from Milam et al. (2016) shows that these improvements suggest that the addition of the risk-reduction messages provided little benefit beyond the self-monitoring of risky behavior via regular self-report risk behavior Assessments.

### ***Continuous follow-up***

All of 8 journals used a 6-12 month follow-up duration. The follow-up was done individually through the application, telephone, message, and even directly to the MSM home.

### ***Increasing knowledge and condom use***

The main focus of 8 journals used in examining the contents of behavioral intervention innovation is increasing knowledge about HIV, safe sex behavior, how to use a condom, and motivation to increasing health-seeking behavior. All the creation aims to reduce sexual risk behavior, especially unprotected anal intercourse (UAI) or condomless anal intercourse (CAI). The study from Rhodes et al. (2017) shows that this behavioral intervention innovation was also improving intention for health-seeking behavior and sexual communication skills.



**Picture 1.** Flowchart of the search process

Table 1. Articles Characteristics of included studies

No.	Author & Years	Title	Research Design	Sample	Result
1.	Rosser et al. (2010)	Effects of a behavioral intervention to reduce unsafe serodiscordant sex among HIV positive men who have sex with men: The positive Connections randomized controlled trial study	Quantitative: Randomized controlled trial	675 HIV + MSM from Seattle (n = 114); Washington, DC (n = 71); Boston, MA (n = 64); New York, NY (n = 177); Los Angeles, CA (n = 146); and Houston, Texas (n = 103)	The intervention in this study was Man2Man (M2M) Sexual Health Seminar, Positive Sexual Health (PoSH), and Men Speaking Out. There were four major findings. First, the scores on the sexual health variables were high in this sample of highrisk HIV + MSM. Second, substantial reductions were found in reported Serodiscordant Unprotected licking Intercourse (SDUAI) frequency in the PoSH arm. Third, sexual health interventions resulted in a short-term change in behavioral intentions. Fourth, sexual health interventions did not differentially affect SDUAI.
2.	McKirnan et al. (2010)	The Treatment Advocacy Program: A Randomized Controlled Trial of a Peer-Led Safer Sex Intervention for HIV-Infected Men Who Have Sex with Men	Quantitative: Randomized controlled trial	313 HIV-Positive MSM	The Treatment Advocacy Program (TAP) reduced transmission risk among HIV positive MSM, especially unprotected, licking intercourse (UAI), and TAP with computer-based programs preferred and recommended.
3.	Zhang et al. (2013)	Community-Based Peer Intervention to Reduce Hiv Risk Among men Who Have Sex with Men in Sichuan Province, China	Quantitative: Pre-Post evaluation design	200 MSM in Mianyang (Intervention) and 200 MSM in Yinbin (control)	Community-Based Peer Intervention as an effective strategy for reducing sexual risk behavior in MSM communities in China. The research was found that significantly higher level of HIV/STI knowledge at post-intervention, significant declines in the intervention city in unprotected licking sex with primary male partners and unprotected licking sex with casual and commercial male partners, as well as increased condom use at last sex with primary male partners and at last sex with casual and commercial male partners, and a significant increase in multiple casual or commercial male partners and a substantial reduction in condom

					use at last sex with casual or commercial male partners.
4.	Amirkhanian et al. (2015)	Effects of a social network HIV/STD prevention intervention for MSM in Russia and Hungary: a randomized controlled trial	Quantitative: Randomized controlled trial	Russia: 10 Network, 339 MSM, completed follow-up 314 MSM Hungary: 8 Network, 287 MSM, completed follow-up 272 MSM	Social Network HIV/STD prevention intervention can significant reduce sexual risk behavior: unprotected licking intercourse (UAI), UAI with a nonmain partner, and UAI with multiple partners. This intervention can also improve safer sex intentions for MSM.
5.	Milam et al. (2016)	Randomized Controlled Trial of an Internet Application to Reduce HIV Transmission Behavior Among HIV Infected Men Who have Sex with Men	Quantitative: Randomized controlled trial	179 MSM, 90 (intervention), with completed follow-up 72 MSM, and 89 (control) with 67 completed follow-up	An Internet Application monthly Internet survey alone or a monthly survey plus Avolio tailored risk reduction messages over 12 months, reported that unprotected sex decreased and disclosure increased over time in both study arms. These improvements suggest that the addition of the risk-reduction messages provided little benefit beyond the self-monitoring of risky behavior via regular self-report risk behavior Assessments.
6.	Aung et al. (2017)	Effectiveness of an Integrated Community-and Clinic-Based Intervention on HIV Testing, HIV Knowledge, and Sexual Risk Behavior of Young Men Who Have Sex with Men in Myanmar	Mixed-Methods Quantitative: Cross-sectional and quasi-experimental Qualitative	Quantitative: 267 MSM (intervention) and 318 young MSM (Control) Qualitative: 54 Young MSM and 18 peer educator	Integrated community-and clinic-based intervention on HIV testing, HIV knowledge, and sexual risk behavior, the difference was not statistically significant. Still, the results showed some trends toward increases in health-seeking behaviors and HIV Knowledge. Qualitative findings showed that the intervention was acceptable to young MSM.
7.	Rhodes et al. (2017)	Small-Group Randomized Controlled Trial to Increase Condom Use and HIV Testing Among Hispanic/Latino Gay, Bisexual, and Other Men Who Have Sex with Men	Quantitative: Randomized controlled trial	304 Hispanic/Latino MSM, 152 (intervention group), 152 (control group)	The small-group intervention can significantly increase condom use, knowledge of HIV, HIV testing, and condom use skills among Hispanic/Latino MSM. This intervention also improving intention for health-seeking behavior and sexual communication skills.

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8. Cruess et al. (2018)	A Randomized Clinical Trial of a Brief Internet-based Group Intervention to Reduce Sexual Transmission Risk Behavior Among HIV-Positive Gay and Bisexual Men	Quantitative: Randomized clinical trial	85 MSM with HIV (intervention), with 70 completed follow-up And 82 MSM (Control), with 70 MSM completed follow-up	Online HIV sexual risk reduction intervention (called HINTS) successfully reduced HIV transmission risk behavior in a sample of gay and bisexual men living with HIV. The result reported decreased condomless hardcore sex (CAS) with serodiscordant partners, compared to the control group.
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## DISCUSSION

According to a review of eight journals, behavioral intervention innovations among young MSM, HIV-positive MSM, or HIV-negative MSM almost all positively impact the alteration of sexual risk behaviors. Behavioral intervention is an intervention carried out through a psychological therapy approach based on the problem (7). This behavioral intervention is also more about cognitive clients. They are experiencing problems, so the client is invited to understand the issues through problem recognition and problem identification until the client is expected to change the behavior that is considered problematic. In providing behavioral therapy, the client will first be provided with periodic information and motivation that will positively impact the expected change of behavior (9). Behavioral interventions are also not only through cognitive approaches but also through the approach of coping mechanisms. It could reduce the stress of a therapeutic client so that the client will feel more relaxed, disclosure, and more accessible to the information, which will positively impact his behavior (10). This intervention was developed in sufferers of exceptional cases such as HIV, where people living with HIV tend to experience stress and adverse conduct.

HIV is a particular case that is considered suitable if it is conducted approach with behavioral intervention. The aim is to change the behavior in a better direction, to prevent the transmission of HIV more widely. This intervention has been done in the past using a direct and clinic-based face-to-face counseling method for people with HIV/AIDS. Furthermore, this intervention is often referred to as HIV-positive persons, and lately, behavioral interventions are more commonly applied to minority circles like men sex with men (MSM). Besides, the HIV phenomenon in the MSM circles is always increasing every year because the HIV-infected MSM still performs sexual risk behavior so that HIV transmission among the MSM remains high (11).

As minority groups, MSM tends to be more challenging to health-seeking behavior. This particular strategy is needed to improve HIV testing by involving the community (12-13), especially for peer educators and counselors. The method was sufficient to promote safe sex behavior (14). But this community must still be integrated with the clinic so that it remains monitored (15). Based on some research results, behavioral interventions on risky groups such as the MSM, have a goal is to reduce sexual risk behaviors, improve HIV test, and compliance with antiretroviral medication (ART), thereby minimizing the spread of HIV. The high rate of HIV on MSM is more due to the sexual risk behaviors, which are bareback and oral sex, and often change partners (multi partners), so it is a priority in behavioral intervention. The behavioral intervention is conducted in MSM with a four-component approach, namely preventive, access to HIV health services, environmental support, and ease of information (16).

Many innovations can be applied to conduct behavioral interventions such as videos, messages, seminars, and even internet applications. The video is believed to add insight MSM in conducting condom installation directly (17). The application in self-reports is also quite useful, although it must be monitored now (18). As a media of message delivery and counseling, Internet technology, especially for HIV-positive MSM, has already begun to be developed. It is not without reason because it turns out that MSM is a community of pornographic media users or Sexual Explicit Media (SEM) (19). This may be the opportunity to include positive content, especially for safe sex behavior and routine health tests such as HIV and sexually transmitted diseases (STD), making it easier to affects the cognitive and coping of HIV-positive MSM. The internet technology has a positive effect (20). Besides that, the point of innovation is involving HIV-positive MSM. Therefore they feel comfortable as the subject, not the object.

## CONCLUSION

Behavioral intervention is an intervention that is part of nursing intervention in particular to special case among HIV-Positive MSM because it is a minority group. With innovations in behavioral intervention, interventions are made more attractive and more convenient. They are expected to change behaviors, especially sexual risk behaviors, that transmit HIV and sexually transmitted diseases (STD). This behavioral innovation tends to be more convenient, more effective. It can be applied across countries, including developing countries, to reach all areas such as Indonesia with a very wide area.

## STRENGTH AND LIMITATION

This article is written with a review literature method to reveal the journals of the studies conducted, particularly regarding the innovation of behavioral intervention among HIV-positive MSM. In this literature review, the readers would see various methods that can be applied to reduce the sexual risk behavior among HIV-positive MSM from multiple countries in Asia, Europe, and America. However, the limitation also found related to the journal that is discussed only slightly. This is due to the limited searching of the author.

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