

ORIGINAL ARTICLE

The Effectiveness of Motivational Interviewing on HIV Awareness and Prevention Behavior Among Adolescents in Bandung City, Indonesia: A Randomized Controlled Trial

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ABSTRACT

Introduction: *Motivational Interviewing (MI)* is one of the intervention strategies for influencing various kinds of health. However, based on several research results, it is still rare to find motivational interview-based research on well-controlled HIV prevention behavior. **Methods:** This study was a between-subjects randomized controlled trial with two conditions, comparing changes in mechanisms of HIV prevention awareness and behavior change pre- to post-intervention and behavior change three months after receiving MI. Participants had to be between the ages of 14 and 18 years old, have no cognitive impairment, be willing to participate as a respondent, and be free of HIV infection HIV-related knowledge assessment and Sexual behavioral abstinence and avoidance of high-risk situations questionnaire (SBAHAQ) is used to examine HIV preventive behavior. **Results:** The mean age of the respondents was 16.89 (SD = 0.76). The majority of respondents (65%) were male, 35% were in grade XI, and up to 84.2% of respondents had received risky behaviours education. The value of HIV awareness before and after the motivational interviewing intervention increased significantly from 3.05 (SD = 0.57) to 3.22 (SD = 0.76) with t value = - 1.46 and p-value = 0.15. Furthermore, in the scores for each domain, it was found that the intervention group data showed a significant difference in the risk behavior domain from 4.18 (SD = 0.89) to 4.28 (SD = 0.89) with p-value = 0.00, the domain of sexual relations showed a significant difference from 6.85 (SD = 0.89) to 6.60 (SD=0.83) with p-value = 0.03, HIV prevention domain from 6.17 (SD=1.44) to 6.45 (SD=1.33) with p-value = 0.01. **Conclusion:** There is a significant effect between motivational interviewing on awareness and behavior of HIV prevention in adolescents. This research can be a program of activities for the health service unit in collaboration with the school to prevent HIV transmission in adolescents.

Keywords: HIV, Awareness, *Motivational interviewing*, Preventive Behavior, HIV Prevention

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INTRODUCTION

Human immunodeficiency virus (HIV) remains a significant global public health issue, with an estimated 38 million HIV-positive persons by 2019 (1). From 1987 to March 2020, Indonesia had 511,955 HIV/ Acquired immunodeficiency syndrome (AIDS) cases, 388,724 HIV, and 123,231 AIDS deaths (1). In 2020, there will be 543,075 new HIV cases (2). West Java has 49,440 cases of HIV/AIDS, with 41,878 HIV and 7,562 AIDS, ranking 4th nationally (2). The most common HIV age groups were 25-49 years (70.4%), 20-24 years (15.3%), 15-19 years (3%), and 14 years (2.7%). (Ministry of

Health of Indonesia, 2020). The highest percentage of HIV risk factors were heterosexual (73.8%), a male who has sex with a male (10.5%), use of unsterile needles by injecting drug users (5.2%), and perinatal (2,6%) (2). Early adolescent development includes a vital phase for developing character and identity and a critical transition from childhood to adulthood (3). Adolescents begin to judge and standardize themselves but cannot perceive social comparisons (4). Many adolescents display an insatiable need to replicate what they see, hear, or experience in their surroundings. Additionally, teenagers' need for sexual health and the extent to which these requirements are met varies significantly (4). This lack of knowledge and comprehension might lead to risky behavior. Adolescence is inextricably linked to psychological maturation during a time known as puberty, which is followed by sexual development (4). This condition makes adolescents prone to risky

behaviors such as premarital sexual encounters, which can lead to STIs and HIV (5).

In Indonesia, effective government programs aim to achieve the three zero targets by 2030: no new HIV infections, no AIDS deaths, and no stigma and discrimination against HIV-positive persons (2). The government implemented an accelerated technique known as Flash, Find, Treat, and Maintain (STOP) to accomplish this goal. In addition, counseling is conducted through education to ensure that 90% of individuals understand HIV and 90% of persons living with HIV are aware of their status through early testing. However, there is an issue in this government program, mainly budget constraints, as monies are used for three purposes: stunting treatment, tuberculosis treatment, and malaria elimination (2).

Patients' intrinsic motivation to engage in healthful behavior is leveraged in motivational interviewing, a client-centered, prescriptive therapy method, primarily through the exploration and resolution of ambivalence (6,7). A study in Thailand showed that motivational interviewing could be used to improve adherence to alcohol usage and antiviral medication (8). (9) Interventions based on the principles of motivational interviewing have been shown in the United States to significantly decrease high-risk sexual behavior and increase condom use. Another study highlighted that combined motivational interviewing, and cognitive-behavioral approaches decreased alcohol use (10). Adolescent drug abuse can be reduced and sexual health can be improved through the use of motivational interviewing, and this is especially true for adolescents who identify as sexual minorities (11).

When it comes to lowering drug use and HIV transmission risk behaviors, the Young Men's Health Project (YMPH) is a 4-session motivational interview-based intervention (12). However, studies examining the effect of motivational interviewing on awareness and HIV prevention behaviors in Indonesia were limited. Therefore, this study aimed to assess the impact of Motivational Interviewing on HIV prevention awareness and behavior among adolescents in Bandung.

MATERIALS AND METHODS

Study design

There were two groups in this randomized controlled trial that tracked participants from before the intervention until three months afterward to see if they had improved their HIV prevention knowledge and behavior change mechanisms. April and May of 2021 were used for the research.

Using a random number generator, the research team created a random assignment table for each gender. After gaining participants' informed consent, a research

assistant recruited them and randomly allocated them, based on gender, to either the MI or control group. Due to behavioral tests, individuals may not be completely condition-blind. However, they did not know about the second intervention condition or the study's assumptions. Therefore, they were unable to draw a conclusion.

Sample

Participants had to be between the ages of 14 and 18, have no cognitive impairment, be willing to participate as a respondent and be free of HIV infection. Adolescents with mental health disorders and those on school leave were not included in the study.

The sample size was determined so as to test the hypotheses of the primary study with a two-tailed alpha of .05 and a power of .80. Estimates of the Cohen d 's were calculated in G*Power 3 (13). Three points of behavior measurement were used in the larger trial from which these data were extracted for the power analysis. To conduct the study, we determined that a total of 156 people (78 in each group) would be required, assuming a minor effect size of 0.10. Our sample size is therefore greater than the minimal amount needed to maintain statistical significance.

Intervention

The objective of the motivational interviewing intervention were to promote motivation and personal accountability, and to develop goals for reducing sexual risk behavior and drug use in order to reduce the risk of HIV transmission. By using motivational interviewing, therapists may address each client's unique barriers to change. In order to encourage and support participants' intrinsic drive for behavior change, all motivational interviewing treatments were done in a consistent manner, that is, they were all open, strength-based, affirming, non-judgmental, and compassionate.

Researchers conducted MI sessions with masters and doctoral level students who had completed a three-day motivational interviewing training program and were receiving weekly individual and group supervision. A complete training handbook was created, pilot tested, and revised to serve as a guide for trainers. Therapists were required to videotape all motivational interviewing sessions and meet for supervision every other week to review the recordings and talk about any implementation concerns that had arisen. Eighty percent of all motivational interviewing sessions were examined by a certified clinical psychologist with specialty in motivational interviewing. Treatment integrity was monitored utilizing the Motivational Interviewing Treatment Integrity (MITI) coding system to ensure consistency (14). The MITI coding system was developed to evaluate a random twenty-minute segment of a MI therapy session in terms of both specific

Table I : Motivational interviewing session and activities

Session	Activity
1	<p>Purpose: (Miller, C'de Baca, Matthews, and Wilbourne, 2001) To present an overview of the MI approach, highlighting how the program focused on the participant's readiness to change rather than forcing an individual to change, as well as a values card sorting activity.</p> <p>Activities:</p> <ul style="list-style-type: none"> • Participants were asked to select one of two behaviors (sexual risk behavior or drug usage) to concentrate on initially. • Using normal motivational interviewing methods, the therapist elicited the participant's perspective on the conduct. • The session centered on strengthening commitment to change, or contemplation for those in the early stage of change, as well as the preparation of a change plan that included goals and potential hurdles.
2	<p>Purpose: Followed by a review of structured, tailored comments on both behaviors and how they interact, based on the participant's data from the baseline assessment.</p> <p>Activities: In addition, participants completed a staging ruler and a decisional balance exercise evaluating their assessments of the advantages and disadvantages (pros/cons) of both practices.</p>
3	<p>Purpose: To assess progress with regard to ambivalence and readiness for change, to address motivation, and to validate gains and dedication.</p> <p>Activities: As the therapist and participant reevaluated readiness to change, decisional balance, and goals for both behaviors, the two target behaviors were integrated.</p>
4	<p>Purpose: Included a final assessment and adjustment of the participant's goals and change plan.</p> <p>Activities:</p> <ul style="list-style-type: none"> • A focus was focused on assessing self-efficacy for goal attainment, and the relationship between substance abuse and sexual risk behavior was discussed further. • The final session also included a review of community resources and support services, a customized referral list, and an emphasis on relapse prevention if a change had taken place.

therapist behaviors and a gestalt evaluation of the use of the MI style. The MITI has been shown to have high convergent validity with its predecessor. Every session of motivational interviewing is detailed in Table I.

Measures

The first questionnaire asked about age, gender, location of residence, class, school grades, absences, and whether or not respondents had jobs.

HIV-related knowledge assessment was adopted from (15). This questionnaire contains seven questions addressing common misconceptions about sexual awareness and other sexual transmissions. The answer choices are divided into two categories: yes, no, and uncertain. A score of 1 is assigned to each correct response. A score of 2 is assigned if the answer is in dispute. A score of 0 is assigned if the answer is not valid. This Cronbach Alpha was 0.73 (15).

The sexual behavioral abstinence and avoidance of high-risk situations questionnaire (SBAHAQ) is used to examine HIV preventive behavior. This questionnaire contains 14 question items with three domains: 1) four self-efficacy (SE) questions about individual control, rejecting risky situations, and behavioral ability to say no; 2) four behavioral intention (BI) questions about abstinence and refusing negative answers; and 3) six perceived benefits (PB) questions about the individual and social benefits of abstinence, rejection of risky behavior, negative responses to risky offers, and rejection of high-risk situations. Each question has three options: Yes, no, and don't Know. The SBAHAQ was valid with a Content Validity Ratio (CVR) of 0.85 (16). In addition, SBAHAQ's reliability test was found to be valid, with a score of 0.85 for self-efficacy, 0.87 for perceived benefit, and 0.77 for behavioral intention (16).

Procedure

The University's Institutional Review Board approved all study protocols involving human subjects. Between February and August of 2021, participants were enrolled, treated, and followed up on. The initiative was started by the study team at a single facility in the southwestern United States that is home to numerous day treatment juvenile justice programs (community diversion and alternative to jail programs). It was made clear to the juveniles that their participation was completely optional and unrelated to any legal proceedings. Teens were also told that dropping out of the study would have no negative consequences. Written informed consent was provided by the teenager, and verbal permission was acquired from the teen's parents or legal guardians. A Google form served as the medium for all of the surveys. Anyone may have avoided answering a question if they so desired.

Data analysis

The Kolmogorov Smirnov test showed that data were normally distributed. Using independent t-tests, we assessed baseline demographic factors and outcome measures of interest to determine if random assignment to condition was effective. First, a paired t-test was used

to determine the effect of motivational interviewing on life skills before and after the intervention. Then, the ANCOVA test was used to determine the difference of life skills before and after intervention between the two groups. All analysis was done using the IBM Statistical Product and Service Solutions (SPSS) software version 23. A P-value less than 0.05 was considered statistically significant.

Ethical Clearance

The Health Research Ethics Committee of an affiliated university provided ethical approval for this study (reference No. G.3/019/STIKEP-PPNI/III/2021).

RESULTS

Table I shows that the mean age of the respondents was 16.89 (SD = 0.76). Most respondents (65%) were male, 35% were in grade XI, and up to 84.2% of respondents had received education on risky behaviors. The majority of information was obtained from the internet (44.2%). There was no significant difference between intervention and control groups regarding age, gender, grade, education, and source of information.

Table I : Demographic comparison between intervention and control group at baseline (n=240)

Variable	Total n = 240, (%)	Intervention group n = 120, (%)	Control group n = 120, (%)	p-value
Age (Mean ± SD)	16.89 ± 0.76	17.12 ± 0.84	16.67 ± 0.60	0.121
Gender				0.702
Male	156(65)	80 (66.7)	76 (63.3)	
Female	84 (35)	40 (33.3)	44 (36.7)	
Grade				0.243
X	82 (34.2)	22 (18.3)	60 (50)	
XI	84(35)	62 (51.7)	22 (18.3)	
XII	74 (30.8)	36 (30)	38 (31.7)	
Education on risky behaviors				0.803
Yes	202 (84.2)	100 (83.3)	102(85)	
No	38 (15.8)	20 (16,7)	18 (15)	
Source of information				0.654
Internet	106 (44.2)	50 (41.7)	56 (46.7)	
Friend	18 (7.5)	8 (6.7)	10 (8.3)	
Teacher	64 (26.7)	32 (26.7)	32 (26.7)	
Parent	4 (1.7)	4 (3.3)	0 (0)	
Mass media	48 (20)	26 (21.7)	22 (18.3)	

Table II shows that the value of HIV awareness before and after the motivational interviewing intervention increased significantly from 3.05 (SD = 0.57) to 3.22 (SD = 0.76) with t value = - 1.46 and p -value = 0.15. Furthermore, in the scores for each domain, it was found that the intervention group data showed a significant difference in the risk behavior domain from 4.18 (SD = 0.89) to 4.28 (SD = 0.89) with p -value = 0.00, the domain of sexual relations showed a significant difference from 6.85 (SD = 0.92) to 6.60 (SD=0.83) with p -value = 0.03, HIV prevention domain from 6.17 (SD=1.44) to 6.45 (SD=1.33) with p -value = 0.01.

Table III, using the ANCOVA statistical test, shows that there are differences in awareness scores after the motivational interviewing intervention, which shows that the awareness scores of adolescents who received motivational interviewing (intervention group) had a significant difference compared to the group that did not receive treatment (control group) with p -value = 0.01 ($p < 0.05$).

Table IV, using the ANCOVA statistical test, shows that there are differences in HIV prevention behavior scores after the motivational interviewing intervention, which shows that the HIV prevention behavior scores

Table II : Differences in life skill scores before and after motivational interviewing in the intervention and control groups (n = 240)

Variable	Pre-test (Mean \pm SD)	Post-test (Mean \pm SD)	t	Mean difference	p-value
HIV-related knowledge					
Intervention group	3.05 \pm 0.57	3.22 \pm 0.76	-1.46	-0.17	0.15
Control group	3.17 \pm 0.91	3.40 \pm 0.83	-1.43	-0.23	0.16
HIV preventive behavior					
Intervention group	15.18 \pm 2.37	17.33 \pm 2.47	-12.95	-2.15	0.00
Control group	15.87 \pm 3.30	18.27 \pm 2.75	-15.54	-2.40	0.00
Domain scores					
Self-efficacy					
Intervention group	4.18 \pm 0.89	4.28 \pm 0.89	-1.14	-0.10	0.00
Control group	4.22 \pm 0.70	4.50 \pm 1.00	-2.60	-0.28	0.01
Behavior intention					
Intervention group	6.85 \pm 0.92	6.60 \pm 0.83	2.16	0.25	0.03
Control group	7.15 \pm 1.01	6.72 \pm 0.70	3.36	0.43	0.00
Perceived benefits					
Intervention group	6.17 \pm 1.44	6.45 \pm 1.33	-2.80	-0.28	0.01
Control group	7.00 \pm 2.10	7.05 \pm 1.87	-0.43	-0.05	0.67

Table III : The effect of motivational interviewing on adolescent HIV-related knowledge

Source	Type III Sum of Square	Df	Mean Square	F	<i>p-value</i>
Corrected Model	1.010 ^a	2	0.505	0.792	0.455
Intercept	71.236	1	71.236	111.752	0.000
Pre-test	0.002	1	0.002	0.003	0.957
Group	0.996	1	0.996	1.562	0.214
Error	74.582	117	0.637		
Total	1389.000	120			
Corrected Total	75.592	119			

Table IV : The effect of motivational interviewing on adolescent HIV preventive behaviors

Source	Type III Sum of Square	Df	Mean Square	F	<i>p-value</i>
Corrected Model	680.757	2	340.379	264.714	0.000
Intercept	100.555	1	100.555	78.202	0.000
Pre-test	654.624	1	654.624	509.103	0.000
Group	38852.000	120	0.996	1.562	0.214
Error	831.200	117	0.637		
Total	680.757	2			
Corrected Total	100.555	1			

Table V : The effect of motivational interviewing on HIV prevention behavior in adolescents (N=120)

Source	Type III Sum of Square	Df	Mean Square	F	Sig.	
Corrected Model	680.757	2	340.379	264.714	0.000	0.819
Intercept	100.555	1	100.555	78.202	0.000	0.401
Pre-test	654.624	1	654.624	509.103	0.000	0.813
Group	38852.000	120	0.996	1.562	0.214	0.013
Error	831.200	117	0.637			
Total	680.757	2	340.379	264.714	0.000	0.819
Corrected Total	100.555	1	100.555	78.202	0.000	0.401

in adolescents who received motivational interviewing (intervention group) were significantly different compared to the group that did not receive treatment (control group).) with p -value = 0.013 ($p < 0.05$).

DISCUSSION

This study's results indicate a significant increase in adolescent preventive behavior before and after being given the motivational interviewing intervention. This study's findings corroborate those of an earlier study by Pettifor, which found that counseling grounded in motivational interviewing can illustrate effective strategies for lowering risky behaviors, and that patients who received such therapies learned more quickly and effectively than those who did not (17). In motivational interviewing, the counselor works with the client to increase the person's own motivation for making positive behavioral changes and to eliminate any conflict between the client's immediate and long-term priorities (7). In order to prevent the spread of HIV among young people, it is clear that counseling employing motivational interviewing is highly effective. This research confirms previous findings that HIV-prevention education using motivational interviewing can decrease sexual activity among adolescents.

Furthermore, this study shows that motivational interviewing counseling affects increasing awareness of HIV transmission prevention behavior in adolescents. The results of the ANCOVA analysis also concluded that motivational interviewing counseling had a significant effect on increasing adolescent awareness, as indicated by a p -value of 0.00 ($p < 0.05$). This research is in line with (Ekasari et al., 2020), who prove that structured awareness with counseling will help develop positive changes in adolescents (18). In this study, the intervention provided consisted of 5 stages according to (19) theory: pre-contemplation, contemplation, preparation, action, and maintenance. These stages can make motivational interviewing more effective in overcoming client problems (19). The intervention in this study was divided into three sessions. The first session is pre-contemplation-contemplation, where this session aims to bring awareness of the client's problems and increase awareness about the change options that will be made. The second session is preparation-action, where this session aims to develop action strategies and make commitments to make changes. The third session is maintenance, during which the researcher helps the client maintain focus on the behavior change strategies.

CONCLUSION

There is a significant effect between motivational interviewing on adolescents' awareness and behavior toward HIV prevention. Therefore, this research

can be a program of activities for the health service unit in collaboration with the school to prevent HIV transmission in adolescents. Counseling programs, incredibly motivational interviewing. The school can guide education and information on the prevention of communication and can work together with health service units to conduct counseling programs for adolescents.

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