

Effects of Motivational Interviewing or an Educational Video on Knowledge about HIV/AIDS, Health Beliefs and Antiretroviral Medication Adherence among Adult Thais with HIV/AIDS

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Abstract: Patient adherence to antiretroviral therapy is linked to suppression of viral replication. Inadequate adherence to the use of antiretroviral therapy may lead to failure of treatment outcomes and viral resistance. The purpose of this study was to examine the effectiveness of two interventions (motivational interviewing, along with counseling, and an educational video) on knowledge about HIV/AIDS, health beliefs and adherence to antiretroviral therapy.

The study used a pretest/posttest design involving 90 adults with HIV/AIDS who were randomly assigned to one of three groups: motivational interview (n = 30); educational video (n = 30); or, usual care (n = 30). Subjects in all three groups had similar demographic and health status characteristics. Data were obtained using four questionnaires that assessed the subjects': demographic and health status characteristics; knowledge about HIV/AIDS; health beliefs; and, antiretroviral therapy adherence.

The usual care group showed significant improvements in knowledge about HIV/AIDS and adherence to antiretroviral therapy adherence, but no significant improvement in health beliefs. However, following completion of the two interventions, significantly greater improvements were noted in knowledge about HIV/AIDS, health beliefs and, antiretroviral therapy adherence among subjects in the motivational interviewing, along with counseling, group and the educational video group, compared to those in the usual care group. No significant differences were found, between the motivational interviewing, along with counseling, group and the educational video group, regarding these factors. The findings suggest the effectiveness of using motivational interviewing, along with counseling, or an educational video for enhancing adherence to antiretroviral therapy.

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Introduction

Human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS) clinical care has advanced rapidly through growing understanding of the dynamics and pathogenesis of

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these illnesses.^{1,2} In addition, people with HIV/AIDS, in countries with limited health resources, have better access to antiretroviral therapy (ART) (i.e. use of anti-HIV medications) than in the past.⁶

Considerable progress has been made, in Thailand, regarding the provision of access to care for people with HIV/AIDS. For example, the Thai Department of Communicable Disease Control established a clinical research network, in 1997, and developed health services and a monitoring system, in 2000, to enhance the efficacy of care. In 2002, the Government Pharmaceutical Organization, a state enterprise, began generic production of a number of antiretroviral medications at less than one tenth of the previous cost.³ As a result, the Thai Ministry of Public Health was able to offer, in 2002, the Access to Care Program,⁴ and, in 2004, the National Antiretroviral Therapy for People with HIV/AIDS Program.⁵ Later in 2004, antiretroviral medications were covered by the social security health care scheme and the universal health care program. Hence, the number of Thais receiving ART rapidly grew, with some 200,000 persons with HIV/AIDS receiving ART in 2009.⁶

While antiretroviral medications have proven effective in reducing HIV replication and forestalling immune system damage, in order to achieve durable suppression of viral loading, they require a high level of adherence (> 95%) to dosing.^{7,8} Patient adherence to ART is linked to suppression of viral replication, with higher proportions of undetectable human immunodeficiency virus-ribonucleic acid (HIV-RNA) among those who have adequate medication adherence.^{8,9} Failure to take antiretroviral medications, as prescribed, results in sub-therapeutic drug levels and frequently leads to viral resistance. Only 22% of those with an adherence level of 95% or greater have been found to develop virologic failure, while the risk of treatment failure among those with 80% – 94.9% adherence, as well as with those with less than 80% adherence, have been found to have an increase in failure by 61% and 80%, respectively.⁸

Numerous cross-sectional descriptive and prospective studies of interventions to improve adherence have been launched. However, the majority of these studies have been conducted among persons with HIV/AIDS from developed countries, whose economic/social contexts and adherence behaviors may be different from individuals with HIV/AIDS from developing countries.¹⁰⁻¹²

Despite moderate to high proportions of Thais (53%–83%) with good adherence to ART (>95%),¹³⁻¹⁵ resistance to three types of antiretroviral medications has been reported.¹⁶⁻¹⁹ In a cohort of 88 patients, from four regions of Thailand, prevalence of resistance to nucleoside reverse transcriptase, non-nucleoside reverse transcriptase and protease inhibitors was 48%, 21% and 12%, respectively.¹⁶ In fact, the annual medication resistance, between 2003 and 2006, increased from 0 to 5.2% ($p = 0.06$).¹⁸ Since an adherence of at least 95% to ART leads to clinical effectiveness, the development of interventions that increase antiretroviral medication adherence is needed.^{8, 10-12}

Review of Literature

Various interventions implemented to improve adherence to ART have included providing appropriate support, educational programs, counseling, and cognitive behavior therapy.^{10, 11, 20} Other therapies also have been used to deal with adherence issues among people with other chronic illnesses. For example, Miller and Rollnick's²¹ motivational interviewing technique has been used to improve treatment adherence among patients with hypertension,²² diabetes mellitus,²³ schizophrenia,²⁴ and HIV/AIDS.²⁵ Motivational interviewing is patient-centered and does not use coercive or persuasive approaches. Instead, it involves strategies (i.e. verbalization of self-motivational statements) to motivate patients to change their behavior by helping them recognize and resolve discrepancies between their present behavior, and their

future goals and values.²¹ Since one's thoughts and behaviors vary according to his/her readiness or stage of change (i.e. pre-contemplation, contemplation, preparation, action and maintenance), motivational interviewing often is used in conjunction with Transtheoretical Theory.²⁶ When health care providers understand the stage of change an individual is experiencing, they are better able to develop strategies that foster desired behavioral changes.

A review of interventions to enhance long-term medication adherence, conducted by Haynes and colleagues,¹⁰ revealed that many of the interventions are exceedingly complex and labor-intensive. In addition, because of cost-containment and inadequate personnel, it is difficult to conduct a number of these interventions in non-research settings.

The use of educational materials also has been noted to be an effective means for addressing medication adherence. For example, using an instructional video, as part of an educational intervention, has been shown to be a successful way to enhance adherence to ART.²⁷ In addition, the use of picture-based, easy-to-understand, health education materials that explain medications in lay terms have been recommended when dealing with health related issues among patients who have a low level of literacy.²⁸ Thus, based upon prior research and review of literature, the purpose of this study was to examine the effectiveness of motivational interviewing, along with counseling, and an educational video on knowledge about HIV/AIDS, health beliefs and adherence to antiretroviral therapy.

Method

Study design: This intervention study used a pretest/posttest design with three groups (motivational interviewing, along with counseling, group; educational video group; and, usual care group).

Ethical considerations: Prior to data collection, permission to conduct the study was granted by

the Committee on Human Rights Related to Research Involving Human Subjects, at the primary investigator's (PI) academic institution, and the ambulatory care clinic used as the study site. All potential subjects were informed about the: nature of the study; details regarding involvement; right to withdraw at any time without repercussions; confidentiality and anonymity issues; and, risks and benefits of study involvement. Those who consented to participate were asked to sign a consent form. To further protect anonymity of the subjects, because of the nature of the illness being studied, a pseudo-name was used for each subject.

Sample and setting: A sample of 90 adult Thais with HIV/AIDS was recruited from the ambulatory care clinic, specifically for HIV/AIDS patients, of a 400-bed infectious disease hospital that was operated by the Department of Disease Control, Ministry of Public Health in central Thailand. The ambulatory care unit was operated, Monday through Friday, by a physician who treated only HIV patients. The hospital, in an attempt to reduce stigma and make patients feel more comfortable, named the clinic the ambulatory care unit instead of the HIV clinic. The clinic was selected because it provided health care to a large number of people with HIV/AIDS.

The names of potential subjects were obtained from the list of patients being seen in the clinic on any given day. Their respective medical records were reviewed to determine if they met the selection criteria that included: being diagnosed with HIV/AIDS; being at least 18 years of age; being on antiretroviral medications for more than four weeks; and, having a less than 95% adherence to medication. If a potential subject met the selection criteria, he/she was approached and told about the study. After consenting to participate, he/she was assigned to one of the three research groups (motivational interviewing, along with counseling, group; educational video group; and, usual care group) depending upon the day of the week he/she was being seen in the clinic. Group assignments, based upon

the day of the week, were randomly determined via a lottery drawing. As a result of the lottery drawing, subjects for the motivational interviewing, along with counseling, group were obtained on Tuesdays, Wednesdays and Fridays. Subjects for the educational video group were obtained on Thursdays, while subjects for the usual care group were obtained on Mondays.

For the motivational interviewing, along with counseling, group, 180 patients were screened, with 42 meeting the selection criteria. Of those 42 patients, 34 agreed to take part in the study. Six of them failed to complete the entire research procedure. As a result two new subjects were added so the group had a total of 30 individuals. One-hundred and twenty patients were screened for the educational video group, with 44 meeting the selection criteria. Of the 44 patients, only 36 agreed to participate. Six failed to complete the entire research procedure, resulting in a group size of 30 subjects. For the usual care group, 120 patients were screened, with 40 meeting the selection criteria. Of the 40 patients, 37 consented to participate. Seven failed to complete the entire research process, resulting in a group size of 30. Reasons given, by potential subjects, for not consenting to participate included: lack of time to participate; and, no personal phone available for making contact with the PI.

The background and health status characteristics of the three groups were not significantly different in terms of: age; gender; marital status; educational level; occupation; health insurance; monthly income; period of time infected with HIV/AIDS; disclosure of HIV/AIDS status to others; length of ART; current medications; and/or, medication side-effects. The average age of the subjects in the motivational interviewing, along

with counseling, group, educational video group and usual care group, respectively, were: 40 years (range = 23–52 years); 42.3 years (range = 25–61 years); and, 39.3 years (range = 22–67 years). Most subjects in the three groups, respectively, were: males ($n = 22$, 73.3%; $n = 20$, 66.7%; and, $n = 22$, 73.3%); single ($n = 13$, 43.3%; $n = 10$, 33.3%; and, $n = 14$, 46.7%); high school graduates ($n = 19$, 63.3%; $n = 17$, 56.7%; and, $n = 19$, 63.3%); merchants/sellers ($n = 9$, 30.0%; $n = 8$, 26.7%; and $n = 8$, 26.7%); covered by health care insurance ($n = 21$, 70%; $n = 18$, 60%; and, $n = 21$, 70%); with an average monthly income of 11,341 baht (range = 3,000 – 40,000 baht), 10,700 baht (range = 3,000 – 30,000 baht), and 12,100 baht (1,000 – 70,000 baht); disclosing their HIV/AIDS status to others ($n = 28$, 93.3%; $n = 27$, 90%; and, $n = 27$, 90%); on ART for an average of 49 months (range = 9–120 months), 68.2 months (range = 1–84 months), and 40.3 months (range = 1–120 months); prescribed a combination of three medications in one tablet ($n = 24$, 80%; $n = 24$, 80%; and $n = 24$, 80%); and, experiencing at least one side effect from the antiretroviral medications ($n = 25$, 83%; $n = 23$, 76.7%; $n = 21$, 70%). Subjects stated they failed to take their medications due to: forgetting; being busy; falling asleep; not being at home; being tired of taking medication; experiencing side effects; feeling they did not need medications; not having enough money to travel to the clinic; and, being afraid to take medications when around others. In addition, with respect to their knowledge about HIV/AIDS, health beliefs and adherence to ART, at the time of initial assessment, no significant differences were noted among the groups (see **Table 1**).

Instruments: Data were obtained using four self-report questionnaires that assessed: demographic and health status characteristics; knowledge about HIV/AIDS; health beliefs; and, antiretroviral therapy adherence. Demographic and health status data were obtained via a researcher-developed *Demographic and Health Status Questionnaire*. This questionnaire addressed each subject's: age; gender; marital status; educational level; occupation; health insurance; monthly income; period of time infected with HIV/AIDS; disclosure of HIV/AIDS status to others; length of ART; current medications; and, antiretroviral medication side effects experienced. It took approximately 5 minutes to complete the questionnaire. The subjects' stated reasons for missing medication doses were recorded throughout the research process.

Adherence to ART was assessed via use of the *Adherence to Antiretroviral Therapy Visual Analogy Scale*.²⁹ The scale consisted of a 100 millimeter horizontal line with an anchor value of 0% on the left end of the line and an anchor value of 100% on the right end. Each subject was asked to place a mark at the point on the horizontal line that best corresponded to his/her estimate of the proportion of medication doses taken over the past four weeks. Subjects were told that 0% meant not taking any of the medication, while 100% meant taking the medication as prescribed. The distance the subjects marked from 0% indicated the percentage they adhered to taking the antiretroviral medication. The use of a visual analogy scale to assess ART adherence has been found to be reliable in that its measurement outcome has been noted to be associated with lower plasma HIV-RNA levels among HIV/AIDS patients in London,²⁹ San Francisco,³⁰ Ugandan,³¹ and Thailand.³² It took subjects approximately one minute to complete the scale.

Each subject's level of knowledge about HIV/AIDS was measured by the researcher-developed *HIV/AIDS Knowledge Level Questionnaire* that was based on a review of the HIV/AIDS literature.

The questionnaire was composed of 38 items that measured: disease pathology and treatment (13 items); antiretroviral (ARV) medication use (12 items); and, side effects of ARV medications and their management (13 items). Possible responses to each of the items were: "yes," "no," or "don't know." Examples of each of the three types of items were: a) "A higher HIV viral load can shorten the disease progression" (disease pathology and treatment); b) "If you forget to take an ARV medication, you could add it in the next dose" (ARV medication); and, c) "Persons with HIV, who are on ARV medications, may have a skin rash" (side effects of ARV medications and their management). For each correct response to an item a value of "1" was given, while each incorrect response or "don't know" response received a value of "0." A total score, which could be determined by summing across all item responses, could range from 0-38. A high total score suggested a good understanding of information about HIV/AIDS. Prior to use, the questionnaire was validated by six experts, including two physicians, two nursing faculty members and two nurses who specialized in HIV/AIDS care. Face validity was determined by all of the experts who agreed the content in all items was valid and correct. Following the experts' assessment, the questionnaire was pilot tested on 48 individuals with HIV/AIDS who had similar demographic and health status characteristics as the study subjects. The internal consistency coefficient alphas of the three subscales, found during pilot testing were: 0.73 (disease pathology and treatment); 0.71 (ARV medication use); and, 0.79 (side effects of ARV medications and their management). The overall questionnaire coefficient alpha was 0.86. Subjects took approximately 10 minutes to complete the questionnaire.

The *Health Belief Regarding ART* questionnaire that was developed, in Thai, by Hanwong,¹³ was used to assess each subject's health beliefs. The questionnaire consisted of 28 items, within four categories, that

assessed perception regarding: susceptibility to the impact of non-adherence to ART (5 items, i.e. "Not taking ARV medications as prescribed can lead to a chance of getting opportunistic infections."); severity of non-adherence to ART (5 items, i.e. "Not taking ARV medications as prescribed can seriously increase severity of the disease"); benefit of adherence to ART (8 items, i.e. "Taking ARV medications as prescribed can reduce the virus in the blood"); and, barriers to ART adherence (10 items, i.e. "Side effects of ARV medications include such symptoms as nausea, vomiting, rash, make me sick and want to stop taking them"). Each item was scored on a 5-point scale that ranged from strongly agree = 5 to strongly disagree = 0. A total score, which could range from 28 to 140, was obtained by summing across the scores from each category. For each of the four categories, the score ranges were: 5 to 25 (susceptibility to non-adherence to ART); 5 to 25 (severity of non-adherence to ART); 8 to 40 (benefit of adherence to ART); and, 10 to 50 (barriers to ART adherence). Prior research found the coefficient alphas for the four categories to be: 0.68 (susceptibility to non-adherence to ART); 0.79 (severity of non-adherence to ART); 0.82 (benefit of adherence to ART); and, 0.85 (barriers to ART adherence), with an overall coefficient alpha for the entire questionnaire to be 0.80.¹³ A previous study also reported similar alpha coefficients for this questionnaire.³³ It took subjects approximately 10 minutes to complete the questionnaire.

Interventions: Three interventions were used in the study: usual HIV/AIDS care; motivational interviewing, along with counseling, plus usual HIV/AIDS care; and, an educational video, plus usual HIV/AIDS care. Usual care, which was provided to all patients receiving health care at the ambulatory clinic used as a study site, involved being instructed at the time of initial diagnosis, by a clinic nurse counselor and the clinic physician, about: the causes, pathology and symptoms of HIV/AIDS; their present illness and

symptoms; and, ART. Subjects also were asked if they wanted a printed booklet that addressed the causes, pathology, symptoms and treatment of HIV/AIDS, as well as the type of antiretroviral medications available, their anticipated clinical outcomes, and side effects. Most individuals did not want to take the printed material due to the stigmatization regarding HIV/AIDS.

All of the subjects in this study received usual care. However, the usual care group received only usual care, while subjects in the other two groups received, in addition to usual care, one of the two interventions (motivational interviewing, along with counseling, or educational video).

Motivational interviewing was conducted in conjunction with a counseling program.

Using motivational interviewing, along with counseling, fosters a direct, patient-centered approach that focuses on an individual's readiness to change behavior.^{22, 25} The motivational interviewing process focused on assisting the HIV/AIDS patients in clarifying their health care goals and perceived barriers to ART adherence, and making a commitment to change their behavior so as to adhere to their ART. The counseling process, using motivational interviewing, was applied via a four step process recommended by the Thai Department of Mental Health, that consisted of: establishing a relationship with and acceptance of services by the patient; assessing and understanding the patient's specific problems; problem solving and planning relevant care along with the patient; and, providing counseling to the patient based upon his/her specific problems and plan of care.³⁴ The counseling program was carried out in three separate sessions over a 4 week period. The sessions were conducted two weeks apart. Sessions one and three were conducted face-to-face in the clinic, while session two was conducted telephonically. The first session involved steps one through four of the counseling process and took approximately 40 minutes to complete. Session two, which lasted 25 to 30 minutes, involved

step four of the counseling process and was done telephonically, as a follow-up, two week after session one. The purposes of the telephonic follow-up were to: assess whether subjects had overcome problems/barriers identified in the first session; monitor their adherence to treatment; give feedback and encouragement to comply with treatment; and, remind them about their next visit.³⁵ Session three, which occurred two weeks after the second session and took about 30 minutes to complete, involved step four of the counseling process. In addition, patients were re-assessed regarding whether they had overcome problems/barriers identified in previous sessions and were adhering to their respective treatments. Feedback and encouragement were given regarding patients' achievements with adherence to treatment goals. All three sessions were carried out by a nurse, who served as a research assistant, was trained in counseling, and followed a written protocol. The protocol was prepared by the PI, who had experience in conducting adherence to ART research, and verified for accuracy by a psychiatrist trained in motivational interviewing. The protocol provided specific guidelines for the four steps of the counseling process recommended by the Thai Department of Mental Health.³⁴ Prior to implementation, the protocol was assessed for appropriate terms, content, and length by ten adults with HIV/AIDS, who had similar characteristics to the study subjects. Three of the ten adults felt session one was too long. Thus, it was shortened from 50 to 40 minutes. The revised version of the entire motivational interviewing, along with counseling, protocol (steps one through four) was reassessed by seven additional adults, who had similar characteristics to the study subjects. All seven adults felt the revised version of the protocol was appropriate.

A 24 minute, instructional video was used with subjects assigned to the *educational video* group. The video, which was shown once, was developed by the PI based upon content obtained from three focus group discussions with ten people with HIV/AIDS, their respective caregivers and ten nurses caring for

patients with HIV/AIDS. The content addressed: the HIV/AIDS infectious process, antiretroviral medications and their side effects; how adherence to ART relates to its effectiveness; and, how to appropriately take and enhance the effectiveness of antiretroviral medications. Prior to use, the video was reviewed for accuracy and appropriateness by a physician specializing in HIV/AIDS care, 30 nurses caring for HIV/AIDS patients, and 12 adults with HIV/AIDS and their respective care givers. Based upon the reviews of these individuals, revisions were made in the video regarding: letters and background colors; loudness of the music; speed of the presentation; and, content length.

Procedure: Once a subject consented to participate and was assigned to one of the three groups, he/she was administered, in a private room in the clinic, the four questionnaires (pre-test). After a subject completed the questionnaires, and based upon his/her group assignment, he/she was administered either: the first session of the motivational interviewing, along with counseling, intervention and usual care; the educational video intervention and usual care; or, only usual care. As previously described, session two of the motivational interviewing, along with counseling, intervention was carried out two weeks after completion of session one, while session three was conducted two weeks after completion of session two. At the close of session three of the motivational interviewing, along with counseling, all of the questionnaires (except the Demographic and Health Status Questionnaire) were again administered (post-test).

For the educational video group, all of the questionnaires (except the Demographic and Health Status Questionnaire) were administered, a second time (post-test), four weeks after they completed the first round of questionnaire administration and watched the video. For the usual care group, all of the questionnaires (except the Demographic and Health Status Questionnaire) were administered, a second time (post-test), four weeks after they

completed the first round of questionnaire administration. After completion of the second round of questionnaire administration, all subjects were verbally thanked for participating in the study and given a small pouch in which to carry their medications when traveling.

Data analysis: Descriptive statistics were used to assess the subjects' demographic data and responses to each of the questionnaires. For comparison of differences, among the three groups, regarding demographics and results of the pre-test, one-way ANOVA for variables with interval/ratio scales and Chi-square for variables with nominal/ordinal scales were used.

For within group comparison, between the pre-test and post-test results, the paired t-test was carried out. Differences in the post-test, among the three groups, were assessed using one-way ANOVA for variables with interval/ratio scales. If the mean scores were found to be significantly different, the Bonferroni test was used to determine the differences among the groups.

For comparison of differences of mean scores between the pre-test and the post-test, among the three groups, one-way ANOVA was used for variables with interval/ratio scales. If the means scores were found to be significantly different, the Bonferroni test was used to determine the differences among the groups.

Results

For within-group comparisons between pre-test and post-test average scores, for the motivational interviewing, along with counseling, group and the educational video group (see **Table 1**), post-test scores were significantly better from pre-test scores regarding knowledge about HIV/AIDS, health beliefs and adherence to ART. For within-group comparisons between pre-test and post-test average scores, for the usual care group, post-test scores were significantly higher regarding knowledge about HIV/AIDS and adherence to ART, but not for health beliefs.

Table 1 Within Group Comparisons between Pre-test and Post-test Average Scores regarding Knowledge about HIV/AIDS, Health Beliefs and Adherence to ART

Variables	Mean (S.D.)		<i>t</i>	p-value
	Pre-test	Post-test		
<i>Knowledge about HIV/AIDS</i>				
MI Group	30.2 (5.6)	35.9 (1.8)	7.47	.000
EV Group	28.8 (5.0)	35.5 (1.4)	9.39	.000
UC Group	26.9 (7.1)	28.1 (6.6)	2.30	.029
<i>Health Beliefs</i>				
MI Group	11.2 (11.4)	121.4 (7.9)	7.37	.000
EV Group	105.9 (8.1)	121.8 (7.2)	10.74	.000
UC Group	106.8 (10.3)	107.1 (9.9)	0.21	.839
<i>Adherence to ART</i>				
MI Group	85.6 (11.6)	97.1 (3.3)	5.44	.000
EV group	86.7 (14.1)	98.7 (1.6)	4.83	.000
UC Group	86.9 (9.8)	89.8 (5.6)	2.35	.026

Note: MI = Motivational interviewing, along with counseling, group; EV = Educational video group; UC = Usual care group

As shown in **Table 2**, the post-test average scores on knowledge about HIV/AIDS, health beliefs and adherence to ART, among all three groups, were significantly different. Multiple comparisons, using the Bonferroni test, revealed post-test average scores regarding knowledge about HIV/AIDS, health beliefs, and adherence to ART for the motivational interviewing, along with counseling, group and the educational video

group were significantly higher than those of the usual care group. Post-test average scores regarding knowledge about HIV/AIDS, health beliefs, and adherence to ART, between the motivational interviewing, along with counseling, group and educational video group, were found not to be significantly different.

Table 2 Between Group Comparisons of Post-test Average Scores regarding Knowledge about HIV/AIDS, Health Beliefs and Adherence to ART

Variables	Mean (S.D.) Post-test	F	p-value
Knowledge about HIV/AIDS			
MI Group	35.9 (1.8)	36.17	.000
EV Group	35.5 (1.4)		
UC Group	28.1 (6.6)		
Health Beliefs			
MI Group	121.4 (7.9)	29.71	.000
EV Group	121.8 (7.2)		
UC Group	107.1 (9.9)		
Adherence to ART			
MI Group	97.1 (3.3)	18.58	.000
EV Group	98.7 (1.6)		
UC Group	89.8 (5.6)		

Note: MI = Motivational interviewing, along with counseling, group; EV = Educational video group; UC = Usual care group

The mean differences between the pre-test and post-test average scores regarding knowledge about HIV/AIDS, health beliefs and adherence to ART, among all three groups, were significantly different (see **Table 3**). Multiple comparisons, using the Bonferroni test, revealed the differences regarding knowledge about HIV/AIDS, health beliefs and adherence to ART, for both the motivational interviewing,

along with counseling, group and the education video group, were significantly higher than those of the usual care group. However, differences between pre-test and post-test average scores regarding knowledge about HIV/AIDS, health beliefs and adherence to ART, between the motivational interviewing, along with counseling, group and educational video group, were not found to be significantly different.

Table 3 Mean Differences between Pre-test and Post-test Average Scores regarding Knowledge about HIV/AIDS, Health Beliefs and Adherence to ART

Variables	Mean difference (S.D.)	F	p-value
Knowledge about HIV/AIDS			
MI Group	5.7 (1.13)	28.70	.006
EV Group	6.7 (1.38)		
UC Group	1.2 (0.17)		
Health Beliefs			
MI Group	10.2 (1.53)	25.87	.006
EV Group	15.9 (2.80)		
UC Group	0.3 (0.02)		
Adherence to ART			
MI Group	11.5 (1.90)	31.97	.001
EV Group	12.0 (1.83)		
UC Group	2.9 (0.64)		

Note: MI = Motivational interviewing, along with counseling, group; EV = Educational video group; UC = Usual care group

Discussion

The findings suggest that both the motivational interviewing, along with counseling, group and the educational video group had significantly higher post-test average scores, regarding knowledge about HIV/AIDS, health beliefs and adherence to ART, compared to their pre-test average scores. Such results suggest the effectiveness of both programs. The fact the motivational interviewing, along with counseling, approach was found to be effective is similar to prior studies in other cultures.^{25, 36}

Motivational interviewing is individual-centered and provides for assessment of a person's level of readiness to change behavior. In addition, counseling has direction and a counselor becomes a medium for assisting an individual to clarify his/her goals and perceptions regarding barriers and benefits of adherence to ART. As a person understands his/her conflicts between non-adherence behavior and goals of life, motivational interviewing can serve as a strategy

for stimulating verbalization of self-motivational statements.²¹ After repeatedly hearing a self-motivational statement, a person is more likely to have a greater drive for changing behavior (i.e. adherence to ART).^{25, 36} Dilorio and colleagues³⁷ found individuals receiving motivational interviewing demonstrated an improved mean percent of prescribed medication doses taken and an improved mean percent of doses taken on schedule.³⁷ In addition, similar to prior research that found a relatively high percentage of individuals reaching target antiretroviral therapy adherence levels when motivational interviewing was carried out via telephone,³⁸ this study also used motivational interviewing, via telephone, which also may have contributed to the success of the study's motivational interviewing approach.

Use of an educational video was shown to be effective for providing essential information about: the HIV/AIDS infectious process, antiretroviral medications and their side effects; how adherence to ART relates to its effectiveness; and, how to appropriately

take and enhance the effectiveness of antiretroviral medications. As demonstrated in prior research,³⁹ providing essential information about HIV/AIDS, ART and the consequences of poor adherence to ART can assist an individual in overcoming problems and barriers raised by his/her belief system.³⁹ In addition, the video allowed each learner an opportunity to: view actual objects and realistic scenes; see sequences in motion; and, listen to narration.⁴⁰ The effectiveness of the educational video approach was similar to international studies that have found the use of videos to facilitate ART adherence by persons with HIV/AIDS.^{27, 37, 41, 42}

When comparing the effectiveness of the motivational interviewing, along with counseling, approach to the educational video approach, the educational video approach demonstrated higher t scores on knowledge about HIV/AIDS and health beliefs, but slightly lower t scores on adherence to ART. However, no significant differences, between the two groups, in post-test scores or within-individual pre and post-test scores were noted. When interpreting these findings, given limited resources, one may find it would be more cost effective to use the educational video than the motivational interviewing, along with counseling, approach. The video was less labor-intensive than the motivational interviewing, along with counseling, approach and not as costly to produce.

Interestingly, subjects in the usual care group had a significant increase in their post-test average scores, compared to their pre-test scores, regarding knowledge about HIV/AIDS and adherence to ART. However, no changes were noted in their health beliefs. These results possibly were due to "testing effects."⁴³ As the usual care group members were completing the questionnaires, some of them may have begun to self-evaluate and raise their awareness about the importance of knowledge about HIV/AIDS and adherence to ART.

Limitations and Recommendations

Like all studies, this study had limitations. The effectiveness of the motivational interviewing, along with counseling, approach and the educational video approach took place over a limited period of time (4 weeks). Thus, the long-term effects of these two interventions remain unknown. Since adherence to ART needs to be sustained over a period of time, future studies need to address multiple assessment periods, after intervention, and objective measures of medication adherence (i.e. viral load).^{11, 44} In addition, Only one facility was used to obtain study participants. Therefore, future studies need to use multiple data gathering sites throughout the various regions of Thailand.

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ผลของโปรแกรมการให้การปรึกษาโดยใช้การสัมภาษณ์เพื่อสร้างแรงจูงใจ และการใช้สื่อการสอนแอนิเมชันในการส่งเสริมการรับประทานยาต้านไวรัสเอดส์อย่างต่อเนื่องสม่ำเสมอในผู้ติดเชื้อเอชไอวีและผู้ป่วยเอดส์

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บทคัดย่อ: การรับประทานยาต้านไวรัสอย่างต่อเนื่องสม่ำเสมอมีความสัมพันธ์กับประสิทธิภาพของยาในการลดจำนวนเชื้อไวรัสเอชไอวีในเลือด การรับประทานยาต้านไวรัสไม่ต่อเนื่องสม่ำเสมอตามแผนการรักษาของแพทย์ทำให้การรักษาไม่ได้ผลและเกิดเชื้อไวรัสดื้อยา การศึกษานี้มีวัตถุประสงค์เพื่อทดสอบประสิทธิผลของการให้การปรึกษาโดยใช้การสัมภาษณ์เพื่อสร้างแรงจูงใจ และการใช้วีดิทัศน์สื่อการสอนในการส่งเสริมการรับประทานยาต้านไวรัสเอดส์อย่างต่อเนื่องสม่ำเสมอในผู้ติดเชื้อเอชไอวีและผู้ป่วยเอดส์ต่อความรู้เกี่ยวกับโรคเอดส์ ความเชื่อด้านสุขภาพ และการรับประทานยาต้านไวรัสเอดส์อย่างต่อเนื่องสม่ำเสมอ การศึกษานี้เป็นงานวิจัยแบบทดลองโดยมีการประเมินก่อนและหลังทดลอง กลุ่มตัวอย่างเป็นผู้ติดเชื้อเอชไอวีและผู้ป่วยเอดส์ จำนวน 90 คนซึ่งถูกสุ่มให้เข้า กลุ่มทดลองหนึ่งในสามกลุ่ม ในจำนวนที่เท่ากันดังนี้ กลุ่มที่ได้รับการปรึกษาโดยใช้การสัมภาษณ์เพื่อสร้างแรงจูงใจ (n=30) กลุ่มทดลองที่ได้รับการสอนโดยใช้วีดิทัศน์ (n=30) และกลุ่มที่ได้รับการดูแลตามปกติ (n=30) กลุ่มตัวอย่างทั้ง 3 กลุ่มมีลักษณะประชากรและสภาวะสุขภาพคล้ายคลึงกัน การศึกษาในครั้งนี้เก็บข้อมูลโดยใช้แบบสอบถาม 4 ฉบับ คือ ลักษณะประชากรและสภาวะสุขภาพ ความรู้เกี่ยวกับโรคเอดส์ ความเชื่อด้านสุขภาพ และการรับประทานยาต้านไวรัสเอดส์อย่างต่อเนื่องสม่ำเสมอ

ภายหลังการทดลอง กลุ่มที่ได้รับการดูแลตามปกติมีการเพิ่มขึ้นของคะแนนอย่างมีนัยสำคัญทางสถิติในด้านความรู้เกี่ยวกับโรคเอดส์ และการรับประทานยาต้านไวรัสเอดส์อย่างต่อเนื่องสม่ำเสมอ แต่ไม่พบความแตกต่างอย่างมีนัยสำคัญทางสถิติในด้านความเชื่อด้านสุขภาพ อย่างไรก็ตาม ภายหลังการทดลอง พบว่า กลุ่มทดลองที่ได้รับการปรึกษา และกลุ่มทดลองที่ได้รับการสอนโดยใช้วีดิทัศน์มีการเพิ่มขึ้นของคะแนนในด้านความรู้เกี่ยวกับโรคเอดส์ ความเชื่อด้านสุขภาพ และการรับประทานยาต้านไวรัสเอดส์อย่างต่อเนื่องสม่ำเสมออย่างมีนัยสำคัญทางสถิติมากกว่ากลุ่มที่ได้รับการดูแลตามปกติ และไม่พบความแตกต่างอย่างมีนัยสำคัญทางสถิติของคะแนนในทุกด้านระหว่างกลุ่มทดลองที่ได้รับการปรึกษา และกลุ่มทดลองที่ได้รับการสอนโดยใช้วีดิทัศน์

ผลการศึกษานี้สนับสนุน ประสิทธิภาพของโปรแกรมการให้การปรึกษาโดยใช้การสัมภาษณ์เพื่อสร้างแรงจูงใจ และการใช้วีดิทัศน์สื่อการสอนในการส่งเสริมการรับประทานยาต้านไวรัสเอดส์อย่างต่อเนื่องสม่ำเสมอในผู้ติดเชื้อเอชไอวีและผู้ป่วยเอดส์

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คำสำคัญ: การให้การปรึกษาโดยใช้การสัมภาษณ์เพื่อสร้างแรงจูงใจ วีดิทัศน์สื่อการสอนการรับประทานยาต้านไวรัสเอดส์อย่างต่อเนื่องสม่ำเสมอ ผู้ติดเชื้อเอชไอวี ผู้ป่วยเอดส์

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