

Self-efficacy of HIV-infected people adhering to HAART

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Objective The purpose of this study was to compare the self-efficacy score of HIV-infected people, who were taking highly active antiretroviral therapy (HAART).

Methods Six hundred and thirteen people, who were living with HIV/AIDS (PLHA) and had no antiretroviral (ARV) treatment experience (naïve), no HIV/AIDS symptoms, and a CD4 count of less than 200 cell/ microliter, were randomly assigned to three research arms, 181, 230, and 202 in arm I, II and III, respectively. Arm I received HAART by following a treatment guideline with an added adherence counseling program. Arm II received the same intervention as in arm I and received monthly peer education, counseling and support at the clinic with follow-up visits at their homes by PLHA volunteers. Arm III received HAART with standard care from the Ministry of Public Health. The data were collected by the ARV clinic staff at thirteen community hospitals in northern Thailand. Participants in each research arm were asked to complete two parts of a questionnaire that included 1) a demographic data form and 2) a self-efficacy questionnaire.

Results In month 0, 4 and 12 the self-efficacy scores were 41.2, 42.9, and 41.9 in arm I, 44.3, 44.4, and 43.4 in arm II, and 44.6, 45.4, and 42.7 in arm III, respectively. There was statistical difference in self-efficacy scores between month 0 and 4. However, the self-efficacy scores had a statistically significant difference between arm I and Arm III ($p=0.021$) and arm II and III in month 12 ($p=0.001$). There was no difference in self-efficacy score between arm I and II, and arm II had the highest score of self-efficacy in month 12.

Conclusion Health care providers should implement the programs in arm II in order to enhance self-efficacy in PLHA and improve adherence to antiretroviral medication. **Chiang Mai Medical Journal 2012;51(1):1-6.**

Keywords: self-efficacy, adhering to HAART

Introduction

The infections of human immunodeficiency virus (HIV) and acquired immune deficiency syndrome (AIDS) are a global public health problem [1]. At present, highly active antiretroviral therapy (HAART) is recognized as a major

advancement for the treatment of HIV infection [2]. It has had dramatic effect in reducing the viral load of persons with HIV by improving their immunologic status, physical health, their quality of life, and has contributed directly to unpre-

cedented declines in HIV-related morbidity and mortality [3]. Adherence to antiretroviral (ARV) medication regimens is widely recognized as a vital factor in the success of treatment [4]. Research indicates that adherence to HAART is a major predictor of survival for HIV-infected people [5].

Adherence, specifically in HIV/AIDS care, refers to the ability of persons living with HIV/AIDS to choose, start, manage, and maintain a given treatment or combined medication regimen to control viral (HIV) replication and improve the immune function [6]. Without adequate adherence, antiretroviral agents are not maintained at sufficient concentration to suppress HIV replication in infected cells or lower the plasma viral load. In addition, the association with poor short-term virological response and poor adherence to anti-virus medication accelerates the development of drug-resistant HIV [7]. The non-adherence rate of HAART in adult populations ranged from 33-88%, depending on how adherence is defined and evaluated [8,9]. A high rate of non-adherence occurs because of its multiple acute (e.g. nausea, vomiting) and chronic side effects (e.g., anemia, peripheral neuropathy), some of which may impair physical health and quality of life markedly [10]. Non-adherence may result in failure to achieve viral suppression, increased HIV replication, development of viral mutations and medication resistance [11], thus making newly HIV infected patients more difficult to treat [4].

Empirical studies have attempted to identify factors contributing to poor adherence; however, little is known about predictive factors of adherence in persons naive to ARV therapy [12,13]. Literature reviews indicate that self-efficacy is a factor influencing HAART adherence [14,15] and is also the most important predictor of ARV therapy in HIV/AIDS patients [16,17]. The reason why many lower literate patients might not adhere to their ARV regimen because self-efficacy relates to medication management [18]. Self-efficacy, as a construct central to the social cognitive theory, is defined as the self-evaluative belief held by individuals that he or she can perform

effectively specific activities under specified conditions [19,20]. According to Bandura's socio-cognitive theory, [19] individuals who do not believe in their ability to adhere to treatment tend to make less effort in adopting measures to facilitate adherence or modify their behavior, which increases the risk of non-adherence. Self-efficacy may be expected to influence adherence by acting on motivational, cognitive, and emotional processes, thus changing the meaning and value of external influences, evaluation following treatment, and treatment related choices.

As the availability of HAART becomes widespread in Thailand, reducing dropouts and maintaining adherence have become important issues. A 2002 Horizons funded rapid situation analysis (RSA) of HAART patients showed a high dropout and low adherence rate, with half of the patients dropping out after 15 months, and of those, close to one third had missed medication during the last month and another third had difficulties following the instructions and schedule. At present, patients enrolled in the HAART government program are asked to attend the clinic once a month to receive medication. Routine physical checkups are performed and CD4 levels are tested once every three months. Viral loads of the patients are measured, but only for a limited number, due to the cost. During the consent process, patients are informed of the possible side effects of HAART. However, no systematic counseling starts before medication or afterwards. Occasionally, a telephone call is made and sometime primary-health-care personnel make home visits. In the standard care, health care providers receive basic training for counseling and treating HAART patients. In the case of marked difference between the research arms in terms of self-efficacy, the Thai Ministry of Public Health (MOPH) is advised and encouraged to introduce the successful intervention to all people living with HIV/AIDS (PLHA) and receiving HAART. According to the literature review, people who have better self-efficacy have a very high tendency to adhere to HAART and make more effort in taking their medication correctly.

The purpose of this study was to compare the self-efficacy score between three research arms of HIV-infected people, who were taking HAART.

Methods

Participants were randomly assigned to three research arms, and a cross-sectional analysis of self-efficacy scores was performed from baseline survey data collected in month 0, 4 and 12. The researchers reviewed and analyzed the difference self-efficacy scores between the three arms. The data were collected by the ARV clinic staff at thirteen community hospitals in northern Thailand, who met to discuss the control of the data collection variability. Details of the three research arms are as follows.

Arm I included HAART following a treatment guideline with an added adherence counseling program. The HAART guideline for healthcare providers was developed to address the issue of dropouts. Furthermore, the counseling aimed to enhance provider and patient interaction through a systematic process and assist patients in developing appropriate self-management skills for their own treatment. Patients who participated in the counseling sessions received a pill organizer to remind them of their drug schedule.

Arm II included the same intervention as in arm I, and patients also received monthly peer education, counseling and support at the clinic, and follow-up visits at their home by PLHA volunteers throughout the project period.

Arm III was the control in the hospitals that included HAART with MOPH standard care, which refers to the present system available to PLHA receiving HAART treatment in Thailand.

This study was conducted among six hundred and thirteen HIV people in the ARV clinic at thirteen community hospitals in northern Thailand. Analyses were made between three research arms at month 0, 4 and 12 from people taking ARV. These patients had no ARV treatment experience (naïve), no HIV/AIDS symptoms, and a CD4 count of less than 200 cell/microliter. They were randomly assigned to three arms, i.e. 181, 230, and 202 in arm I, II and III, respectively.

The research instruments consisted of two parts: 1) the demographic data form, investigating demographic characteristics such as age, gender, education, marital status, etc. and, 2) the self-efficacy questionnaire, which was grounded in social cognitive theory and adopted from the Joint United Nations Programme on HIV/AIDS (UNAIDS) and World Health Organization adherence efficacy questionnaire. Self-efficacy expectations of adherence to antiviral therapy (personal confidence in the ability to adhere to antiretroviral medication) asked how much confidence patients had in taking medication in 10 varied situations (e.g. when experiencing side effects of medication, getting sick, feeling depressed, being very busy), which might lead to poor ad-

herence. Five confidence level responses were used in the self-efficacy questionnaire (very much confidence, much confidence, some confidence, little confidence, very little confidence).

The study was performed in accordance with the Helsinki Declaration of the World Medical Association and approved by the Ethic Committee of Research Institute of Health Science, Chiang Mai University, Chiang Mai, Thailand. The participants were guaranteed confidentiality and anonymity. They were informed that participation in this study was voluntary, and asked to sign a consent form. To maintain privacy, names of the participants were concealed.

Statistical analysis

Data were analyzed by using descriptive statistics, and mean and standard deviations were calculated for demographics. ANOVA was used for statistical analysis of difference in self-efficacy scores between the three research arms at month 0, 4, and 12.

Results

Six hundred and thirteen HIV infected participants were included in this study and their characteristics are summarized in Table 1. The sample comprised 53.2% female, 44.7% married, 48.5% married at one time, 71.1% primary school graduates, 63.8% with 2 children, 41.4% laborers, 46.7% with an income of between 1,000-5,000 Thai baht per month and 75.9% who did not donate blood.

Respective results revealed that in month 0, 4 and 12 the self-efficacy scores were 41.2, 42.9, and 41.9 in arm I, 44.3, 44.4, and 43.4 in arm II, and 44.6, 45.4, and 42.7 in arm III. There was no statistical difference of self-efficacy scores between month 0 and 4 (Table 2). However, the self-efficacy scores had a statistically significant difference ($p < 0.05$) between arm I and arm III ($p = 0.021$) and arm II and III in month 12 ($p = 0.001$). There was no difference in self-efficacy score between arm I and II (Table 3), and arm II had the highest score of self-efficacy in month 12 (Table 2).

Discussion

In this study, there was no significant difference between the 3 arms in self-efficacy of HIV-infected people adhering to HAART at month 0 and 4. Self-efficacy may develop immediately

Table 1. Characteristic of participants sample (N = 613)

Characteristic	N (%)	Characteristic	N (%)
Gender		Number of children	
Male	287 (46.8)	1	206 (33.6)
Female	326 (53.2)	2	391 (63.8)
		3	16 (2.6)
Marital status		Occupation	
Single	66 (10.8)	Labor	254 (41.4)
Married	274 (44.7)	Farmer/agriculture	106 (17.3)
Separated	47 (7.7)	Employee	22 (3.6)
Divorced	71 (11.6)	Owner business	44 (7.2)
Widowed	155 (25.3)	Government service	3 (0.5)
		House worker	20 (3.3)
		Jobless	164 (26.8)
Education		Income (Thai baht/month)	
No schooling	29 (4.7)	None	179 (29.2)
Primary school	436 (71.1)	1-1,000	108 (17.6)
Secondary school	123 (20.1)	1,000-5,000	286 (46.7)
Vocational	17 (2.8)	5,001-10,000	34 (5.5)
Bachelor or higher	8 (1.3)	>10,000	6 (1.0)
Marry (times)		Blood donation	
0	65 (10.6)	Donated	148 (24.1)
1	297 (48.5)	Did not donate	465 (75.9)
2	180 (29.4)		
3	61 (10.0)		
4	6 (1.0)		
5	2 (0.3)		
6	2 (0.3)		

or be delayed until patients create it by self-belief [19]. This may be the reason why no significant difference occurred between the 3 arms at month 0 and 4.

At month 12, self-efficacy of HIV-infected people adhering to HAART was significantly different between the three arms. Self-efficacy scores between arm I and III, and arm II and III had statistically significant difference ($p < 0.05$). No difference of self-efficacy score was found

between arm I and II. The patients in this study were randomly assigned to each arm, which enabled control of confounding variables. This meant that HAART following treatment guidelines and an adherence counseling program in arm I, as well as monthly peer education, counseling and support at the clinic, and follow-up visits at home by PLHA volunteers in arm II, can enhance more self-efficacy in those two arms than HAART with standard care in arm III.

Table 2. Comparisons self-efficacy score in three arms at month 0, 4 and 12

Month/self efficacy score	Arm 1		Arm 2		Arm 3		F	p value
	X	SD	X	SD	X	SD		
Month 0	41.23	9.37	44.32	7.73	44.60	6.82	1.87	0.150
Month 4	42.89	7.98	44.41	7.93	45.38	6.28	1.11	0.330
Month 12	41.87	8.81	43.38	7.39	42.72	10.29	6.23	0.002

Table 3. Comparison self-efficacy scores between arms at month 12

Arm/Arm		Mean difference	Standard error	p value
1	2	-0.78	0.792	0.325
	3	1.88	0.815	0.021
2	1	0.78	0.792	0.325
	3	2.66	0.768	0.001
3	1	-1.88	0.815	0.021
	2	-2.66	0.768	0.001

This result was supported by study findings of positive provider interactions, adherence to self-efficacy, and adherence to ARV medications among HIV-infected adults. In a medication model, the result revealed that implications for improving provider interactions in clinical care, and future directions for clarifying interrelationships among provider interactions, support adherence to self-efficacy and medication [15]. In another supporting study, Tuldra and colleagues employed psych educative intervention to improve patient knowledge and outcomes in handling medication. This increased self-efficacy and improved both adherence and viral load [20]. These results support Bandura's social-learning theory hypothesis that self-efficacy expectation is more a central determinant of adherence to healthy behavior than outcome expectation. People act on their beliefs about what they can do as well as those on the likely effects of various actions.

Furthermore, the result showed that the HIV-infected people in arm II, who received HAART following a treatment guideline, an adherence counseling program and peer education had higher scores of self-efficacy than the HIV-infected people in arm I and III. Generally, personal self-efficacy derives from 4 principal sources of information: performance accomplishments, vicarious experience, verbal persuasion, and physiological states [18]. The subjects in arm II had vicarious experience of HAART self-efficacy adherence from peers who educated them and shared their views on its usefulness. They received clear instructions that provided the opportunity for both skill development from health personnel and verbal persuasion from peers. The social persuasion received from others plays an important part

in the development of an individual's self-belief [19].

No comparable data baseline was the limitation of this study. Nevertheless, in arm II, the highest score of self-efficacy, followed by the activity (HAART following a treatment guideline, an adherence counseling program and peer education) recommended the best way to enhance self-efficacy of PLHA, with hope of enhancing adherence to HAART in the future.

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การรับรู้สมรรถนะแห่งตนของผู้ติดเชื้อเอชไอวี/เอดส์ที่ได้รับยาต้านไวรัสอย่างสม่ำเสมอ

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วัตถุประสงค์ เพื่อเปรียบเทียบคะแนนการรับรู้สมรรถนะแห่งตนในเดือนที่ 0, 4 และ 12 ของผู้ติดเชื้อเอชไอวี/เอดส์ที่รับประทานยาต้านไวรัสผู้เข้าร่วมในโครงการวิจัย

วิธีการวิจัย กลุ่มตัวอย่าง 613 ราย ที่ไม่เคยได้รับการรักษาด้วยการใช้ยาต้านไวรัสมาก่อน ไม่มีอาการและอาการแสดงของการติดเชื้อเอชไอวี/เอดส์ และมี CD4 น้อยกว่า 200 เซลล์ต่อมิลลิ. โดยกลุ่มตัวอย่างเหล่านี้จะได้รับการสุ่มเข้าร่วมกลุ่มวิจัย 3 กลุ่ม กลุ่มที่ 1 จำนวน 181 ราย กลุ่มที่ 2 จำนวน 230 ราย และกลุ่มที่ 3 จำนวน 202 ราย โดยกลุ่มที่ 1 เป็นกลุ่มที่ได้รับยาต้านไวรัสตามแนวปฏิบัติการรักษาด้วยยาต้านไวรัส และได้รับโปรแกรมการให้คำปรึกษา กลุ่มที่ 2 เป็นกลุ่มที่ได้รับทุกอย่างเหมือนกลุ่มที่ 1 และได้รับการให้ความรู้ การปรึกษาและประทับประคองจากกลุ่มเพื่อน กลุ่มที่ 3 ที่ได้รับการรักษาด้วยยาต้านไวรัส และได้รับการดูแลตามมาตรฐานกระทรวงสาธารณสุข

ผลการศึกษา ในเดือนที่ 0, 4, 12 ผู้ติดเชื้อเอชไอวี/เอดส์ที่รับประทานยาต้านไวรัสระหว่างกลุ่มที่ 1 มีคะแนนการรับรู้สมรรถนะแห่งตนคือ 41.2, 42.9, และ 41.9 ในกลุ่มที่ 2 มีคะแนนการรับรู้สมรรถนะแห่งตนคือ 44.3, 44.4, และ 43.4 ในกลุ่มวิจัยที่ 3 มีคะแนนการรับรู้สมรรถนะแห่งตนคือ 44.6, 45.4, และ 42.7 ไม่พบความแตกต่างของคะแนนการรับรู้สมรรถนะแห่งตนระหว่างกลุ่มที่ 1 กลุ่มที่ 2 และ 3 ในเดือน 0 และเดือน 4 ส่วนในเดือน 12 พบความแตกต่างของคะแนนการรับรู้ระหว่างกลุ่มที่ 1 และระหว่างกลุ่มที่ 3 ($p=0.021$) และระหว่างกลุ่มที่ 2 และ 3 ($p=0.001$) แต่ไม่พบความแตกต่างของคะแนนการรับรู้ระหว่างกลุ่มที่ 1 และ 2 และพบว่าในกลุ่มที่ 2 มีคะแนนการรับรู้สมรรถนะแห่งตนในเดือนที่ 12 สูงกว่าทุกกลุ่ม

สรุปผลการศึกษา การศึกษานี้แสดงให้เห็นว่าทีมสุขภาพควรนำโปรแกรมในกลุ่มที่ 2 ไปใช้ในการดูแลผู้ติดเชื้อเอชไอวี/เอดส์ เพื่อส่งเสริมการรับรู้สมรรถนะแห่งตน เพื่อช่วยให้มีการรับประทานยาต้านไวรัสอย่างสม่ำเสมอ **เชียงใหม่เวชสาร** 2555; 51(1):1-6.

คำสำคัญ: การรับรู้สมรรถนะแห่งตน การรับประทานยาต้านไวรัสอย่างสม่ำเสมอ