

Original Research Report

Characteristics of Voluntary Counseling and Testing (VCT) Acceptance among Pregnant Women Attending an Antenatal Care Clinic at Lerdsin Hospital, Bangkok, Thailand

Reiko SATO^{1,2,3}, Boonyong KEIWKARNKA², Sirikul ISARANURUG²,
Junya PATTARA-ARCHACHAI⁴, Hideki YANAI¹ and Keiko TSUNEKAWA⁵

¹TB/HIV Research project, the Research Institute of Tuberculosis, Japan: ²ASEAN Institute of Health Development (AIHD), Mahidol University, Thailand: ³Japan Overseas Cooperation Volunteers (JOCV), JICA Zambia: ⁴Faculty of Medicine, Thammasat University, Thailand: ⁵Visiting Research Fellow, Centre for Health Economics, Chulalongkorn University, Bangkok

Objective : Mother to child transmission (MTCT) accounts for the majority of HIV infections among children. As it is necessary to know the HIV status of pregnant women to implement the preventive measures against MTCT, Voluntary Counseling and Testing (VCT) is promoted as the entry point to the prevention of MTCT (PMTCT). Since VCT coverage among pregnant women in Thailand is high compared with that in other countries, it could be a model of an effective VCT service.

Materials and Methods : A cross-sectional study was conducted to illustrate characteristics of VCT at an antenatal clinic in Lerdsin Hospital in Bangkok. The data was collected from 311 pregnant women in January 2003, using a self-administered questionnaire.

Results : Factor analysis covered 4 aspects of VCT: 1) Accessibility and quality of services, 2) Social circumstances, 3) Personal concern and 4) Decision making process. Fourteen components were then extracted: 1) Availability of services, 2) Low-cost accessibility, 3) High-cost accessibility, 4) Local support, 5) Support from the government, 6) People's negative reaction, 7) Maturity of epidemic, 8) Concern about health, 9) Fear of HIV testing result, 10) Recognition of HIV/AIDS as an unavoidable and problematic disease, 11) Expectation for being saved from problems, 12) Influence from other people, 13) Role of counseling and 14) Time required to make a decision.

Conclusion : Significant policy implications were: 1) Integrating VCT into antenatal service is recommended for PMTCT for its convenience and low cost, 2) Continuity of prevention, care and treatment services for sero-positive mothers and their babies is important to increase VCT acceptance, 3) As the reaction of people close is an important factor for accepting VCT, pre- and post-test counseling should concentrate on increasing women's confidence in making an informed choice about the test result and 4) Allowing VCT clients enough time to make a voluntary decision is important, together with the quality of counseling.

Key words : Voluntary Counseling and Testing (VCT), Mother-to-child transmission (MTCT), Factor analysis

The Journal of AIDS Research 7 : 131-140, 2005

Introduction

Mother-to-child transmission (MTCT) accounts for the largest number of HIV infections in children below the age of 15. According to the Joint United Nations Programme on AIDS (UNAIDS) in 2001, about 2.6

Correspondence : Hideki YANAI, MD, Dr. PH, Research Institute of Tuberculosis, 3-1-24 Matsuyama, Kiyose, Tokyo 204-0021, Japan
Fax : 81-424-92-8258

Received November 25, 2004 ; Accepted May 23, 2005

million pregnant women were infected with HIV worldwide and more than 500,000 transmitted the virus to their infants¹⁾. At the end of 2001, the estimated number of children living with HIV/AIDS was 2.7 million and 800,000 children were newly infected. In other words, more than 2,000 children daily become infected with HIV through MTCT¹⁾. The number of deaths of children due to HIV/AIDS was 580,000 in 2001²⁾.

There are effective interventions to prevent MTCT, but to take advantage of the interventions, pregnant women need to know their sero-status and they must therefore have access to Voluntary Counseling and Testing (VCT)²⁾. However, since the majority of countries where HIV is highly prevalent are also the poorest, VCT is often not widely available due to a lack of resources. For VCT services to be prioritized and for necessary resources to be provided for its development, demonstrating the effectiveness of VCT is essential.

In Thailand, the estimated number of adults and children with HIV/AIDS at the end of 2001 was 670,000 including 220,000 women between 15 and 49 years old and 21,000 children under 15 years old³⁾. HIV prevalence among pregnant women was 1.4% in 2002⁴⁾ and approximately 10,000 children are born at risk for MTCT each year⁵⁾. The estimated number of AIDS orphans was 290,000 in 2001³⁾.

A programme launched in 1997 including VCT for women attending antenatal care, a short course of antiretroviral drugs during pregnancy for HIV-positive women and subsidies for breast milk for one year, achieved a 50% reduction in number of HIV-infected children under four by 1999⁶⁾. In early 2000, the Ministry of Public Health established a national policy on preventing MTCT⁷⁾.

The latest study in 2002 showed that VCT acceptance rate among pregnant women was 97% in Thailand⁴⁾, which was significantly high compared with that in other countries⁸⁾. Although there are many factors affecting VCT acceptance, the high VCT acceptance rate in Thailand is seen as an effect of the government's strong commitment in dealing with the HIV/AIDS problem. It is said that Thailand is leading perinatal HIV prevention programs not only in Southeast Asia but also throughout the developing world⁹⁾.

Although previous studies pointed out numerous factors affecting VCT acceptance, no study has been conducted to describe those factors with orders of relevance, which gives useful information for policy-making for VCT implementation. Since the high VCT acceptance rate is regarded as a success of intervention, it is meaningful to explore and summarize reasons for such success to share information with other countries facing a similar problem. Hence, this study aimed to

illustrate the characteristics of VCT acceptance among pregnant women attending an antenatal care clinic at Lerdsin Hospital in Bangkok, Thailand.

Materials and Methods

A cross-sectional study was conducted with 311 pregnant women who had accepted VCT and attended at Lerdsin Hospital located in Bangkok City between 17th and 24th January 2003. Although they were purposively selected, only those who had agreed to participate in the study were included.

Data collection tool

Data was collected using a self-administered questionnaire. The questionnaire was initially prepared in English and then translated into Thai. A pretest of the questionnaire had been conducted with 30 pregnant women at Lerdsin Hospital and some wordings of the questionnaire had been corrected. The questionnaire covered the following main three issues:

1) Socio-demographic characteristics

Six items including age, residence, marital status, employment status, educational level and family income were collected.

2) Characteristics of VCT acceptance

Fifty-six variables related to VCT acceptance were derived from the literature review. The variables were grouped into 4 different aspects of VCT: 1) Accessibility and quality of services (15 variables), 2) Social circumstances (20 variables), 3) Personal concern (11 variables) and 4) Decision-making process (10 variables). The answers had 5 levels and scores for the levels were given as follows: "Strongly agree"=5 points, "Agree"=4 points, "Not sure"=3 points, "Disagree"=2 points and "Strongly disagree"=1 point. The score was calculated for each variable and was transformed into standardized scores for analysis. Factor analysis was done for each group.

3) Knowledge

Eighteen questions about the study participants' knowledge of MTCT, VCT and the National Policy were collected.

Factor analysis

Factor analysis is an analytical method which summarizes complex and diverse relationships among a set of observed variables by uncovering a new set of fewer numbers of hypothetical components which express what is common among the original variables. Less important variables are excluded in the process and correlated variables are grouped to constitute one component. Factor analysis helps illustrate a given phe-

nomenon with the fewer number of extracted components instead of dealing with many variables.

The result of factor analysis is given with factor loadings, common variances and total variances.

Factor loading indicates the relationship between a variable and a component. The variables that have high factor loadings, which represent they are highly correlated with one another, will be grouped together and constitute one component. The component will be named based on the constituent variables.

Common variance indicates the degree to which a variable can be explained only by the shared components. For example, if a common variance is 70% (0.7), it means 70% is explained by the shared components but another 30% is specific to the variable.

Total common variance shows the percentage that shared components account for all of the variance in all variables. When the total common variance is 70% (0.7), the shared components can explain the specified phenomenon by 70% of what all the remaining variables can.

A variable will be excluded either when 1) it has low factor loadings because it has less contribution to each component or 2) it has low common variance since the variable cannot be explained by the shared components.

Results

Socio-demographic characteristics (Table 1)

Age of the respondents ranged between 17 and 42 years old with the mean of 26.5 years. The majority of them were between 20 and 35 years old (87.5%). Approximately 94% of the respondents lived in Bangkok. The majority of them were married (94.9%). Nearly half of the respondents (44.1%) had primary school education, and a quarter (25.7%) had secondary school education. There were 2 pregnant women who had no education. Monthly family income ranged between 3,000 Baht and 50,000 Baht, with a median of 10,000 Baht. Since the income distribution was skewed, the median and the quartile values were used for grouping.

Factor analysis on characteristics on VCT acceptance

Factor analysis I: Accessibility and quality of services (Table 2)

Four variables related to the health system which had low factor loadings or low common variances were excluded from the analysis. These were: variable 1 (v1) Well-established health service system in the country will encourage pregnant women to accept VCT, v2) Safe delivery will encourage pregnant women to accept VCT, v7) Providing enough information about VCT

will encourage pregnant women to accept VCT and v9) Satisfaction with health services will encourage pregnant women to accept VCT. Although a well-functioning health system is essential as a basis for an effective VCT, the result implied that the study partici-

Table 1 Socio-demographic characteristics of 311 pregnant women who accepted VCT at an antenatal care clinic in Lerdsin Hospital, Bangkok, Thailand

Socio-demographic characteristics	Frequency (n=311)	Percentage
Age groups (years)		
< 20	22	7.1
20-35	272	87.5
> 35	17	5.5
Mean \pm SD = 26.5 \pm 5.3 Min. = 17 Max. = 42		
Residence		
In Bangkok	291	93.6
Outside of Bangkok	20	6.4
Marital status		
Single	9	2.9
Married	295	94.9
Separated/divorced	7	2.3
Employment status		
Employed	258	83.0
Unemployed	52	17.0
Educational level		
No education	2	0.6
Primary school	137	44.1
Secondary school	80	25.7
High school	59	19.0
College/University or above	33	10.6
Family income (Baht/month)		
< 7,000	74	23.8
7,000-9,999	59	19.0
10,000-14,999	95	30.6
\geq 15,000	83	26.7
Median = 10,000 Min. = 3,000 Max. = 50,000		

Table 2 Factor analysis I (Accessibility and quality of services)

Variables	Factor loadings			Common variance
	Comp 1	Comp 2	Comp 3	
v 5. Continuity of care from hospital for HIV+	0.816	-0.122	-0.114	0.694
v 4. Availability of medical care for HIV+ women	0.813	-0.150	-0.133	0.701
v 3. Availability of ARV for HIV+ women	0.798	-0.090	-0.148	0.667
v 6. Availability of ARV for children of HIV+	0.580	-0.487	0.114	0.586
v 8. Availability of trained health personnel	0.561	-0.441	0.103	0.519
v11. VCT available at all health facilities	0.133	-0.749	-0.028	0.579
v14. VCT provided at low cost	0.099	-0.681	-0.422	0.652
v13. VCT provided for free of charge	0.153	-0.664	-0.420	0.641
v10. Offering VCT at ANC	0.439	-0.555	0.091	0.509
v15. VCT provided at high cost	0.057	-0.092	-0.814	0.675
v12. Far distance to VCT	0.072	-0.067	-0.810	0.666
% Total variance	26.1	20.6	16.0	62.6

pants did not recognize it as important when making the decision whether to accept VCT or not.

Three components were created by grouping the highly correlated variables. The first component consisted of five variables: v3) Availability of ARV for sero-positive pregnant women will encourage them to accept VCT, v4) Availability of medical care for sero-positive pregnant women will encourage them to accept VCT, v5) Continuity of care from the hospital for sero-positive pregnant women will encourage them to accept VCT, v6) Availability of ARV for children born to sero-positive mothers will encourage pregnant women to accept VCT and v8) Availability of trained health personnel who take care of VCT will encourage pregnant women to accept VCT. All the variables concern the availability of services, hence the first component was named "Availability of services".

The second component consisted of four variables: v 10) Providing VCT at an antenatal care clinic will encourage pregnant women to accept VCT, v11) If VCT is available at all health facilities, it will encourage pregnant women to accept VCT, v13) VCT provided free of charge will encourage pregnant women to accept VCT and v14) Low cost will encourage pregnant women to accept VCT. If VCT is provided at all facilities, pregnant women will be able to select the most convenient place for them which will result in reducing the transportation cost. VCT at an antenatal care clinic is also convenient for pregnant women as they do not need extra transportation for getting the VCT service. As all the variables will lead to low cost, the second component was named "Low cost accessibility".

The third component consisted of two variables: v 12) If VCT is provided at a distant place, it will discourage pregnant women and v15) High cost will discourage pregnant women from accepting VCT. As these two variables will lead to high cost, the component was named "High cost accessibility".

Factor analysis II: Social Circumstances (Table 3)

In the process of analysis, four variables were excluded: v1) Advice from husband/partner to access VCT will encourage pregnant women to accept VCT, v 6) Being able to receive emotional support when the result is positive will encourage pregnant women to accept VCT, v14) the Government's responsibility of tackling HIV/AIDS problem will encourage pregnant women to accept VCT and v16) Providing VCT to all pregnant women by the government will encourage them to accept VCT.

Four components were created. The first component consisted of six variables: v2) Husband or partner's accompaniment will encourage pregnant women to accept VCT, 3) Support from family members will encourage pregnant women to accept VCT, v4) Support from community members will encourage pregnant women to accept VCT, v5) Having someone to talk to about VCT will encourage pregnant women to accept VCT, v7) Being able to receive financial support when the result is positive will encourage pregnant women to accept VCT and v8) Recognition of HIV/AIDS problem will encourage pregnant women to accept VCT. These variables are related to support from people who are close to pregnant women. Rec-

Table 3 Factor analysis II (Social circumstances)

Variables	Factor loadings				Common variance
	Comp 1	Comp 2	Comp 3	Comp 4	
v 5. Talk with someone about HIV test	0.747	0.169	-0.060	0.022	0.591
v 4. Support from community people	0.712	0.181	-0.017	0.099	0.550
v 2. Husband/partner's accompanying	0.677	0.146	0.019	0.039	0.482
v 7. Financial support when HIV+	0.670	0.173	0.069	0.163	0.511
v 3. Support from family members	0.648	0.219	0.042	0.179	0.502
v 8. Recognition of HIV/AIDS	0.541	0.299	0.067	0.335	0.498
v19. ARV to babies of HIV+ by Gov.	0.179	0.815	0.071	0.087	0.710
v17. ARV to HIV+ by Gov.	0.206	0.768	-0.042	-0.081	0.640
v20. Medical care to HIV+ babies by Gov.	0.258	0.767	0.018	0.164	0.683
v18. Medical care to HIV+ by Gov.	0.169	0.759	0.076	0.131	0.628
v15. Cooperation bet. Gov. and NGOs	0.385	0.520	0.037	0.143	0.440
v11. Fear of discrimination by family	0.017	-0.004	0.926	-0.029	0.859
v12. Fear of discrimination by neighbors	0.017	0.046	0.925	0.003	0.857
v13. Stigmatization and discrimination	0.031	0.074	0.868	-0.114	0.773
v 9. Seriousness of HIV/AIDS problem	0.157	0.036	-0.080	0.857	0.767
v10. High HIV/AIDS prevalence	0.224	0.192	-0.072	0.774	0.692
% Total variance	19.2	18.7	15.7	10.1	63.6

ognition of HIV/AIDS problem will let people give support to those who are suffering from the disease. The first component was hence named "Local support".

The second component consisted of five variables: v 15) Cooperation between the government and NGOs will encourage pregnant women to accept VCT, v17) Providing ARVs for sero-positive pregnant women by the government will encourage them to accept VCT, v 18) Providing medical care for sero-positive pregnant women by the government will encourage them to accept VCT, v19) Providing ARVs for babies born to sero-positive mothers by the government will encourage pregnant women to accept VCT and v20) Providing medical care for babies born to sero-positive mothers by the government will encourage pregnant women to accept VCT. The results implied that the government's role in providing services such as ARVs and medical care for both sero-positive mothers and their babies had an influence on VCT acceptance. The second component was named "Support from the government".

The third component consisted of three variables: v 11) Fear of discrimination by family members will discourage pregnant women from accepting VCT, v12) Fear of discrimination by neighborhoods will discourage pregnant women from accepting VCT and v13) Stigmatization and discrimination towards HIV/AIDS

among people in the country will discourage pregnant women from accepting VCT. These variables concern the negative reaction to HIV positive patients and the component was named "People's negative reaction".

The fourth component consisted of two variables: v9) Recognition of the seriousness of the HIV/AIDS problem will encourage pregnant women to accept VCT and v10) High HIV/AIDS prevalence in the country will encourage pregnant women to accept VCT. This component was named "Maturity of epidemic".

Factor analysis III: Personal Concern (Table 4)

One variable concerning mandatory HIV testing (v 11) was excluded and four components were grouped from the remaining 10 variables.

The first component consisted of three variables: v1) Concern about a pregnant woman's own health will encourage her to accept VCT, v2) Concern about a pregnant woman's baby's health will encourage her to accept VCT and v3) Concern about sero-status will encourage her to accept VCT. The component was named "Concern about health".

The second component consisted of two variables: v 5) People with HIV/AIDS will be stigmatized and v9) Fear of knowing the results of HIV testing will discourage pregnant women from accepting VCT. These two

Table 4 Factor analysis III (Personal concern)

Variables	Factor loadings				Common variance
	Comp 1	Comp 2	Comp 3	Comp 4	
v 2. Concern about baby's health	0.866	-0.005	-0.073	-0.053	0.758
v 1. Concern about own health	0.856	-0.008	-0.040	-0.028	0.736
v 3. Concern about own sero-status	0.755	-0.019	-0.043	-0.229	0.655
v 5. PLWHA will receive stigma	-0.021	0.809	-0.111	0.112	0.680
v 9. Fear of the result of HIV test	-0.038	0.747	-0.021	-0.328	0.668
v 4. Everyone is at risk of infection	0.159	-0.122	-0.817	-0.235	0.763
v 6. AIDS is mortal disease	-0.075	0.459	-0.601	0.118	0.591
v 8. MTCT can cause trouble in family	0.073	0.480	-0.571	-0.038	0.563
v 7. MTCT can be prevented	0.089	-0.068	-0.047	-0.853	0.742
v10. Secrecy of the results of HIV test	0.244	0.355	-0.150	-0.577	0.541
% Total variance	21.9	18.0	14.0	13.1	67.0

variables concern pregnant women's fear of the test result and its negative consequences. Hence, the second component was named "Fear of HIV testing result".

The third component consisted of three variables: v 4) Everyone runs the risk of being infected with HIV, v 6) AIDS is a mortal disease and v8) MTCT will cause trouble in the family. These variables mention that HIV/AIDS is a deadly disease with a potential for everybody to contract it. The third component was named "Recognition of HIV/AIDS as an unavoidable and problematic disease".

The fourth component consisted of two variables: v7) MTCT can be prevented and v10) Secrecy of the results of HIV testing will encourage pregnant women to accept VCT. The second variable is related to the perception that confidentiality will prevent further problems such as stigmatization and discrimination. The component was named "Expectation of being saved from the problems".

Factor analysis IV : Decision Making Process (Table 5)

One variable concerning opinions from health personnel (v7) was excluded and three components were grouped.

The first component consisted of four variables: v4) Opinion of the husband/partner of a pregnant woman will influence her decision on VCT, v5) Opinion of the family of a pregnant woman will influence her decision on VCT, v6) Opinion of the friends of a pregnant woman will influence her decision on VCT and v8) Other pregnant women's decision to accept VCT will influence a pregnant woman's decision on VCT. The results implied that a pregnant woman's decision on

VCT acceptance was influenced by the opinions of her friends and by other pregnant women's decisions. Opinion from husbands or partners and family members came as the next important factor. On the other hand, 'opinions from health personnel' was excluded by the analysis. The first component was named "Influence from other people".

The second component consisted of three variables: v 3) Belief in self-decision-making will influence pregnant women to accept VCT, v9) A pregnant woman should decide whether she accepts VCT before counseling and v10) A pregnant woman should decide whether she accepts VCT after receiving proper counseling. V3 and v9 are both about decisions made by pregnant women themselves. V9 and v10 are about the timing of decision making in relation to counseling. The result implied that counseling influences pregnant women's decision on accepting HIV testing. This component was named "Role of counseling".

The third component consisted of two variables: v1) Adequate time to consider will influence pregnant women to make a voluntary decision for VCT acceptance and v2) Enough time to consider VCT will influence pregnant women's decision making. Both variables were about necessary time to consider VCT. The third component was named "Time required to make a decision".

The characteristics of VCT acceptance were illustrated with the 14 components categorized by four aspects of the service uptake as follows:

- I) Accessibility and quality of services
 - 1) Availability of services
 - 2) Low-cost accessibility

Table 5 Factor analysis IV (Decision making process)

Variables	Factor loadings			Common variance
	Comp 1	Comp 2	Comp 3	
v 6. Opinion of friends	0.851	-0.022	0.011	0.726
v 8. Other pregnant women's decision	0.687	-0.043	0.296	0.561
v 4. Opinion of husband/partner	0.641	-0.380	0.202	0.597
v 5. Opinion of family members	0.601	-0.243	0.350	0.543
v10. Decide after receiving proper counseling	0.079	-0.822	0.075	0.687
v 9. Pregnant women should decide by herself	0.076	-0.708	0.187	0.542
v 3. Belief in self-decision-making	0.434	-0.531	0.144	0.491
v 2. Enough time to consider about HIV testing	0.226	-0.095	0.862	0.804
v 1. Adequate time to consider about HIV testing	0.185	-0.254	0.814	0.762
% Total variance	25.1	19.3	19.1	63.5

- 3) High-cost accessibility
- II) Social circumstances
 - 4) Local support
 - 5) Support from the government
 - 6) People's negative reaction
 - 7) Maturity of epidemic
- III) Personal concern
 - 8) Concern about health
 - 9) Fear of HIV testing result
 - 10) Recognition of HIV/AIDS as an unavoidable and problematic disease
 - 11) Expectation of being saved from problems
- IV) Decision making process
 - 12) Influence from other people
 - 13) Role of counseling
 - 14) Time required to make a decision

Knowledge (Table 6)

Women were relatively knowledgeable about the VCT service provided by the government. However, they were less informed about the availability of treatment and care for HIV-positive mothers and infants. Only 5.8% of the respondents knew that the seropositive mothers could not continue to receive ARV free of charge after the delivery. A few (9.7%) knew the universal health insurance policy did not include the provision of ARVs at the time of the study. More than 80% of respondents knew about neither the potential HIV infection through breastfeeding, nor the service of providing infant formula by the government. Nearly 70% of the respondents were aware that the infection could occur during pregnancy.

Discussion

Factor analysis summarized the 56 variables by extracting shared components holding important variables for VCT acceptance. Instead of dealing with many variables, the smaller number of the extracted components are used to understand necessary factors for an effective implementation of VCT.

This study is limited in its method since the extracted components relied on the researchers' view. In addition, the 56 variables were purposely derived from the literature review, so the study might not cover all aspects of VCT. Furthermore, the variables were grouped into four aspects of VCT based on the researchers' hypothesis. If the grouping was done with another assumption, the result might have been different. The study participants were those who accepted VCT. Therefore, the result lacks representation of those who did not accept VCT.

The remaining variables which constitute the 14 components imply important factors for VCT implementation. Four important implications were identified from the remaining variables as follows.

First, integrating VCT into antenatal service is recommended for PMTCT because of its convenience and low cost.

Cost is thought to be one of the most important factors which influences acceptance of VCT. On one hand, high cost of VCT discourages poor people from accessing it¹⁰. On the other, client fees are considered a way to attach a value to the services and bearing the cost by themselves may motivate people to go back to

Table 6 Knowledge

Statements	Correct answers	
	Frequency (n=311)	Percentage
Knowledge about MTCT		
1. Mother will infect her baby with HIV during pregnancy	215	69.1
2. Baby will be infected with HIV through breastfeeding	21	6.8
3. All babies of HIV+ mothers will be infected with HIV	122	38.9
4. There are drugs which reduce the chance of MTCT	109	35.1
5. Avoidance of breastfeeding can reduce MTCT	115	37.0
Knowledge about VCT		
6. HIV testing looks for the presence of HIV in the blood	171	55.0
7. It takes 3 months after being infected to detect HIV	82	26.4
8. Early detecting of HIV infection in pregnancy allows appropriate treatment in order to reduce MTCT	222	71.4
9. Early detecting of HIV infection in pregnancy enables the woman to take decisions on continuation or termination of the pregnancy and on future fertility	200	64.3
10. HIV testing requires a small amount of blood	181	58.2
Knowledge about the national program		
11. In Thailand, VCT are available for all pregnant women	194	62.4
12. ARV will be provided to all HIV+ pregnant women	83	26.7
13. ARV will be provided to all infants of HIV+ mothers	77	24.8
14. Infant formula will be provided to infants of HIV+ mothers for 12 months	49	15.8
15. Infants of HIV+ mothers will have HIV testing	255	82.0
16. Thai government will provide proper medical care and treatment for mothers and children	174	56.0
17. All HIV+ mothers will be able to continue receiving ARV free of charge after delivery	18	5.8
18. Treatment of HIV/AIDS is included into 30 Baht scheme (Universal coverage policy)	30	9.7

the VCT centre for their results. It can work to discourage inappropriate utilization¹¹⁾. The study indicates that the high levels of acceptance of VCT at an antenatal care clinic setting can be explained by the low total cost. Location of VCT centres is also an important issue to consider when VCT is set up. If the VCT facility is far from clients' houses, people need more money to reach VCT services and as the transport system is often poor in developing countries, it may reduce the up-take of VCT.

One of the biggest barriers to accepting VCT is a fear of disclosure to their partners, other family members and neighbors. A study suggests that the fear forces people select VCT facilities far from their home¹²⁾. VCT services offered at antenatal care clinics is convenient for pregnant women since pregnant women can have tests without making others suspicious. In addition, the total cost for the service will be low because pregnant women do not have to pay extra money for traveling to a special center for VCT.

Although making VCT services available at every health facility might not be feasible in some developing countries, integrating it into the routine antenatal care service is viable and is recommended as part of PMTCT.

Secondly, ensuring the continuity of prevention, care and treatment services for sero-positive mothers and their babies is important to increase VCT acceptance.

In developing countries, lack of ARVs and medical and social support services for people with HIV is reported as an obstacle to increasing the uptake of VCT¹¹⁻¹³⁾. Although VCT is recommended as an opportunity to encourage behaviour change to prevent further infections and positive living even when there are no prevention and care strategies¹⁴⁾, it was implied in this study that provision of treatment and care services is important to motivate people to access the VCT service. It is said that VCT services without any support will enhance the suffering of sero-positive people¹⁴⁾.

Although general health care services are less

prioritized in this study, a well-functioning health care system is necessary since it is the basis of an effective VCT implementation. The health care system in Thailand has been established and has been prepared for VCT implementation. Availability of general health care services should be considered when VCT is implemented in other developing countries.

It is recommended that response to MTCT should be extended to include prevention, care and treatment services to the sero-positive mothers and their children for a longer term.

Thirdly, the reaction of people close to the pregnant women would be an important factor for accepting VCT. The study indicated that the perceived reactions from people close to pregnant women influence VCT uptakes. Access to VCT and other services offered to sero-positive people makes it virtually impossible for them to keep their status secret from their families and people in the community. Fear of stigmatization by their families, friends, and communities discourages people from accepting VCT^{13,15,16}. Counseling, if done in the right way, can help women to feel more confident to disclose their status or can even help them learn that there are options of not disclosing. Therefore, pre- and post-test counseling should concentrate on increasing women's confidence in making informed choices about the test result including disclosing it to their partners and families. In addition, the study indicated that the decision on VCT acceptance should be made voluntarily. There is no justification whatsoever to force women to accept VCT against their will.

Finally, allowing enough time to make a voluntary decision whether or not to accept VCT is also important, together with the quality of counseling. As the counseling is an essential element for a pregnant woman to make a voluntary decision on VCT, its quality must be maintained high. Unless women receive adequate and appropriate counseling to understand the benefits of testing, it may not be translated into beneficial outcomes for the mother and child¹². Counseling is also critical for supporting the effectiveness of medical interventions.

Acknowledgement: The authors would like to thank the directors and all nursing staff at Lerdsin Hospital for permitting us to conduct this study and for their collaboration. Our special thanks go especially to Ms. Sangsuee Tassanapoonchai for her support and valuable counsel during the data collection. We are deeply indebted to Ms. Sidaa Ratnawan, Ms. Pornnipa Kumsuk and Ms. Saengjun Nongna for their assistance in data collection. This study was conducted as the first author's dissertation at Mahidol University. Sincere gratitude and deep appreciation go to the members of the

dissertation advisory committee, for their continued support and understanding.

References

- 1) Mitka M: MTCT-Plus program has two goals: End maternal HIV transmission + treat mothers. *JAMA* 288 (2): 153-154, 2002.
- 2) Joint United Nations Programme on HIV/AIDS. Prevention of HIV transmission from mother to child Strategic options [Online]. Geneva: The Organization; 1999 May. Available from: <http://www.unaids.org/publications/documents/mtct/strat0599.html> [Accessed 2002 Oct 20].
- 3) Joint United Nations Programme on HIV/AIDS. Epidemiological Facts Sheets on HIV/AIDS and sexually transmitted infections [Online]. Geneva: The Organization; 2002. Available from: http://www.unaids.org/hivaidinfo/statistics/fact_sheets/pdfs/Thailand_en.pdf [Accessed 2002 Aug 20].
- 4) Sugawara Y (iwana@k2.dion.ne.jp): The program for prevention of mother-to-child HIV transmission: analysis of options in Thailand. Email to Sato R (reikosat@hotmail.com). 2002 Nov 13.
- 5) The Thai Working Group on HIV/AIDS projection: Projections for HIV/AIDS in Thailand: 2000-2020: Bangkok: Karnsana; 2001.
- 6) Health a key to prosperity. Mekong countries join hands in preventing HIV transmission to children [Online]. Available from: <http://www.who.int/inf-new/mate2.htm> [Accessed 2002 Oct 10].
- 7) Amornwichee P, Teerarattkul A, Simonds RJ, Naiwatanakul T, Chantharajwong N, Culnane M, Tappero JW, Kanshana S: Preventing Mother-to-child HIV transmission The first Year of Thailand's National program. *JAMA* 288 (2): 245-248, 2002.
- 8) Cartoux M: Accessibility of voluntary counseling and testing (VCT) and interventions to reduce mother-to-child transmission of HIV. 12th World AIDS Conference. 1998 Jun 28-Jul 3; Geneva; 1998. Abstract no. 23310.
- 9) Arthur JA: Thailand visit report [Online]. Global strategies for HIV Prevention; 2002. Available from: http://www.globalstrategies.org/resources/country_profile_thailand.html [Accessed 2002 Oct 28].
- 10) Stanford University: Increasing Universal Offering VCT and Test Acceptance during Prenatal Care in California. Slides [Online]. 2002. Available from: http://www.cdc.gov/hiv/projects/perinatal/materials/ws-vct-antenatal_slide2.pdf [Accessed 2002 Nov 6].
- 11) Alwano-Edyegu MG, Wheeler M: Knowledge is power: Voluntary HIV counseling and testing in Uganda, UNAIDS case study. Geneva: UNAIDS; 1999. UNAIDS/99.8E.
- 12) Miller D, Olsson J: The impact of voluntary counseling and testing: A global review of the benefits and chal-

- lenges. Geneva: UNAIDS; 2001. UNAIDS/01.32E.
- 13) Bwalya V : Counseling, testing and psychosocial support, Lusaka[Online] : Health and Development Networkes; 1999. Available from : http://www.hdnet.org/Lusaka_1999_reports/416.htm [Accessed 2002 Oct 30].
 - 14) Health a key to prosperity, Success stories in developing countries. Thailand achieves sustained reduction in HIV infection rate [Online]. Available from : <http://www.who.int/inf-new/aids1.htm> [Accessed 2002 Oct 15].
 - 15) Michaels Opinion Research for the Henry J. Kaiser Family Foundation. Hearing their voices, a qualitative research study on HIV testing and higher-risk teens. California [Online]. Available from : http://www.kff.org/content/1999/1492/HearingVoices_2.PDF [Accessed 2002 Nov 3].
 - 16) d'Adesky A : Preventing Mother-to-Child Transmission in Uganda [Online]. American Foundation for AIDS Research; 2001. Available from : <http://www.aegis.com/pubs/amfar/2001/AM011002.html> [Accessed 2002 Nov 13].