Improving access to PMTCT services via a novel implementation model organizational support health education and HIV testing at the community level

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Improving access to PMTCT services via a novel implementation model: organizational support, health education, and HIV testing at the community level of West Java, Indonesia

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ABSTRACT

In Indonesia, access to services for the prevention of mother-to-child transmission (PMTCT) is quite lo The objective of this study was to design and implement a model to improve a ess to PMTCT services. This study was a quasi-experimental design involving 770 pregnant women in 2 districts (intervention and contr district; n = 385 each). The implementation model had four stages: exploration, installation, initial implementation, and full implementation. The key activities included the provision of health education, an offering HIV testing, and the implementation of HIV tests for pregnant women in the community. The success of the model was assessed using three indicators: 1) the increase in the proportion of health facilities offering PMTCT services, 2) increase in the proportion of pregnant women who were offered HIV testing, and 3) increase in the proportion of pregnant women underwent HIV testing. The effectiveness of the model was assessed using multiple logistic regression analysis. In the intervention district, the number of facilities that offered PMTCT services increased from 6% to 34%, and the number of pregnant women who underwent HIV tests increased from 4.7% to 85.5%. Pregnant women in the intervention district showed greater access to PMTCT after controlling by the education of pregnant women, the role of decision making in the family, education and knowledge of the husband (o ds ratio = 63.6; 95% confidence interval: 38.9–103.8; p = 0.000). The implementation model effectively improved access to MTCT services. A multi-phased approach implemented in this study was able to overcome the barriers to access PMTCT services.

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KEYWORDS
Implementation model; PMTCT; HIV testing; health education; West Java

Introduction

Indonesia is one of the countries in the Asia-Pacific that have high HIV transmission burden (UNAIDS 2017). The annual number of HIV infection have been risen from 2015

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to 2016 respectively 30.935 and 41.250 (Indonesian MoH 2017). Furthermore, sexual transmission is predicted to be the most dominant mode of HIV transmission in the future. In 2015, 30.6% of new infections occurred among 'low-risk' women, and this phenomenon could lead to an increase in the mother-to-child transmission (MTCT) of HIV (Indonesian National AIDS Commission 2014). These projections are in line with national data showing that the proportion of women with new HIV infections in Indonesia increased from 34% in 2008 to 41.2% in 2014 (Indonesian MoH 2016). The feminization of the HIV epidemic has caused women, particularly housewives, to be at risk for HIV. This phenomenon is likely to affect the transmission of HIV from mother to baby. In 2017 there are 180,000 newly HIV infections among children aged 0–14 (UNICEF 2018). Even though there is declining from 270,000 in 2010, but, globally there were still 1.4 (1.1 – 1.7) million pregnant women with HIV in 2017 that can risk infecting the newborn baby (WHO 2019).

HIV infection in pregnant women is not only a threat to the safety of the mother but also a threat to the unborn child. Moreover, HIV and AIDS in the household have both economic and social repercussions and adversely affect the quality of life of children (Muhaimin 2010). Therefore, the prevention of HIV transmission is important. Without Prevention of Mother-to-Child HIV Transmission (PMTCT) intervention during pregnancy, delivery, and breastfeeding, as many as 45 percents, an infant born from women who positive HIV, will become infected with HIV (Yacobson, Malkin, and Lebetkin 2016). Preventive measures can only be implemented if the HIV status of the mother is known, and HIV testing in pregnant women is a critical intervention. Missed opportunities for HIV diagnosis can result in the unnecessary death of both the mother and the baby (Kako et al. 2013). Until June 2014, the prevention of MTCT policy in Indonesia has not been implemented properly, e.g. the proportion of pregnant women who underwent HIV testing only reached 2.5% (Indonesian MoH. 2013). The key constraints that hamper access to PMTCT services include fragile health systems, the lack of skilled human resources, personnel transfers, budgetary constraints, poor recording and reporting, and lack of awareness among pregnant women. Therefore, the PMTCT services in different provinces in Indonesia show much variability (The Association of Positive Women Indonesia 2012; WHO 2013). This study hypothesizes that the application of implementation model PMTCT accessibility will increase the proportion of pregnant women tested for HIV in West Java–Indonesia.

Method

This study aimed to design and implement a model to improve access to PMTCT services. This study was an operational quasi-experimental study that used pre- and post-test control groups. The study was conducted over a period of seven months (October 2014 to April 2015) in two districts in West Java, Indonesia, namely, Karawang District (intervention area) and Bekasi District (control area). The districts were selected on the basis of the following considerations: 1) the ability of the region to implement the PMTCT policy, 2) the Public Health Development Index (PHDI) of the region, both of them has high PHDI

and 3) the comparibility of characteristics of pregnant women in the region (knowledge, ages and the role of women in the family).

The implementation model in the intervention area (Karawang District) consisted of four stages (exploration stage, installation stage, initial implementation, and full implementation) with the objective of improving PMTCT access by providing health education, offering HIV testing, and conducting HIV testing among pregnant women in the community. The model controlled by the characteristic of pregnant women (e.g. ages, education, knowledge, occupation, role in the family, partner support, husband's occupation, husband education and family income), providers (e.g. ages, education, length of working, HIV training, supervision) and Public Health Centre's (PHC's) (e.g. PHCs region, availability of MTCT services, rapid test, the counselor and the distance to PHCs).

Setting and data collection

The study population was divided into the intervention and control areas. The population in the intervention area consisted of the 1) district leader, 2) head of the health office, 3) midwives, and 4) pregnant women. The study population in the control area included pregnant women only. From the population, a total sample of 770 pregnant women was selected using cluster random sampling (385 pregnant women each in Karawang and Bekasi Districts). Pregnant women who participants in this study are pregnant women with gestational age is not more than four months and willing to be participating in this study.

The data for this study were collected using a questionnaire consisted, 1) Sociodemography; 2) Knowledge of pregnant women; 3) Rapid assessment of behavioral risk of HIV; 4) Family support and 5) Health provider. The questionnaire for knowledge, rapid assessment and provider was adopted from a combination of a questionnaire developed by UNICEF and UNAIDS in a study in Armenia in 2006 (Leshabari et al. 2006) and a questionnaire about risk factors in pregnant women in Rwanda (Ina 2009). The validity and reliability of the adopted questionnaire were tested on pregnant women and their husband used Cronbach's alpha (> 0.8).

Access to PMTCT services can be measured by three key indicators: 1) the proportion of health care facilities that provide PMTCT services, 2) the proportion of pregnant women offered HIV testing at a health facility, and 3) the proportion of pregnant women who agree to be tested for HIV (Johnson 2009). Data was analyzed using STATA software. Descriptive statistic was used to describe each of the variables. We used chi square to see the difference in proportions between groups (intervention and control area) including to see the effectiveness of the model with significant level .05. Multiple logistic regression was used to see the effect of the model to increase access of MTCT by controlling confounding variables.

Ethical consideration

The study protocol was approved by the Ethics Committee of the Public Health Faculty of Universitas Indonesia (2015). Written informed consent was obtained from all pregnant women after detailed counseling about the study and its objectives.

Results

a. The Model of PMTCT Access Improvement

The PMTCT access model in this study is based on the active implementation framework. The framework guided the approach used by the authors to implement the intervention of improving access to PMTCT services. Figure 1 illustrates the framework.

b. Results of the Implementation Model

(1) The Exploration Stage

In this stage, there's are several activities including: 1) Observation to MTCT facility services; 2) Observation to the ability of midwives in the community; 3) In depth interview to the stakeholder of MTCT program and 4) Advocacy to the head of the District Health Office in Karawang Distric. The study showed that the prevention of HIV transmission from mother-to-child was not a program priority. Lack of number of PHCs that provide PMTCT services, lack of the number of laboratory personnel, lack of knowledge about HIV, and the distance to the PHCs are becoming to the barriers of PMTCT access.

According to the result, we try to implement a new program that can match community needs, program needs, community resources, and evidence-based practice to get policy support. This program focused to resolve access barriers and improve PMTCT services in the community consisted; 1) Adding the number of PHCs that provide

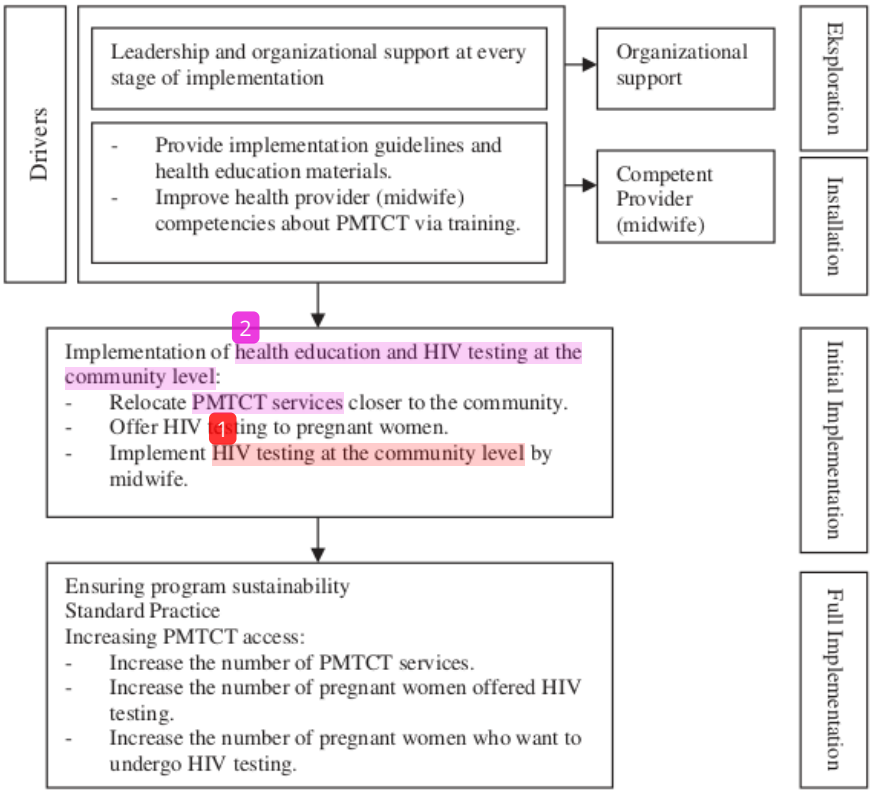

Figure 1. The model of PMTCT access improvement.

PMTCT services; 2) Facilitate pregnant women to get HIV testing in the community, and 3) Improving knowledge of pregnant women by health education. The success of these stage was visible from the support of Ministry of Health at the district level to implement a new program to improve PMTCT access in the form of adding the number of the PHCs that can provided PMTCT services by facilitation of provision of rapid test kits for PHCs, facilitation of HIV trainings for midwives, and allocation of midwives for conducting HIV tests at the community level.

(2) The Installation Stage

Preparation of resources is needed at this stage to implement a new program. The new program is based on the result from exploration stage. At this stage we try to develop the guidelines and increase the competencies of midwives in the community, especially for giving health education and do an HIV check with rapid test.

The success of this phase was shown by the 1) availability of relevant guidelines, such as HIV health education modules for midwives, booklets, and flipcharts, and the 2) training of midwives to increase the competence of health providers.

(3) The Initial Implementation Stage

This stage involved the implementation of new policies that were prepared during the exploration and installation stages, including consistent coaching. During this stage, we tried to improve PMTCT access by imparting health education to pregnant women and their partners in the community. HIV testing was offered to pregnant women, and tests were conducted at the same time and venue after providing health education.

Health education sessions (90–120 mins) were conducted by trained midwives at various places including at Posyandu (Integrated Health and Family Planning posts in villages), the midwife's home, and even in community settings (e.g. mosques) according to the agreement between the midwife and pregnant women. The health education topics that were covered in the community included the concept of HIV prevention; the magnitude of the HIV problem; the transmission of HIV; the signs and symptoms of HIV; the concept of PMTCT, including HIV transmission in women, children, and the whole family; the risk of HIV transmission; the prevention of HIV transmission, particularly in women and children; the handling and treatment of pregnant women with HIV; and the legal aspects of PMTCT.

After the health education sessions, HIV testing was offered to pregnant women and their partners. HIV testing was conducted by trained midwives with licenses from the Ministry of Health of Karawang District. The constraints in this stage included issues with the supply of rapid test kits and the rejection of HIV tests by the partners of pregnant women.

(4) Full Implementation Stage

Health education and HIV testing at the community level has become a new standard and is now practiced at 17 Public Health Centres in Karawang District. At the end of the study, 329 out of the 385 (85.5%) pregnant women agreed to undergo HIV testing and showed nonreactive results; the remaining 56 (14.5%) pregnant women refused to undergo HIV testing.

c. Effectiveness of the Model

The results showed that the application of the model effectively improved access to PMTCT services. The number of PHCs in the intervention area that offer PMTCT services increased from 6% to 34%, and the number of pregnant women who willingly underwent HIV testing increased from 4.7% to 85.5%. The proportion of pregnant women who underwent HIV tests in the intervention area was significantly greater than that in the control area (odds ratio (OR) = 49.4; 95% confidence interval (CI): 32.1–76.0; p = 0.000). Figures 2 and 3 show the increased access to PMTCT services.

d. Effect of the Model

The effect of the model and the contribution of each variable to the improved access to PMTCT services was assessed by multivariate analysis using multiple logistic regression. Table 1 shows the individual variables. Pregnant women living in the intervention area were 64 times more likely to access PMTCT services than pregnant women living in the control area after controlling by the role of decision making in family, the education level of the pregnant women, and the education level and knowledge of the husband. In the

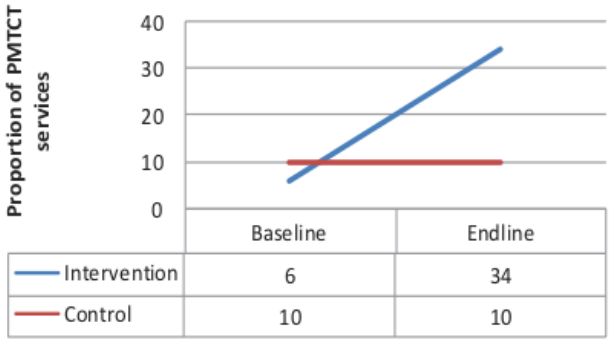

Figure 2. Proportion of PHCs offering PMTCT services before and after the intervention.

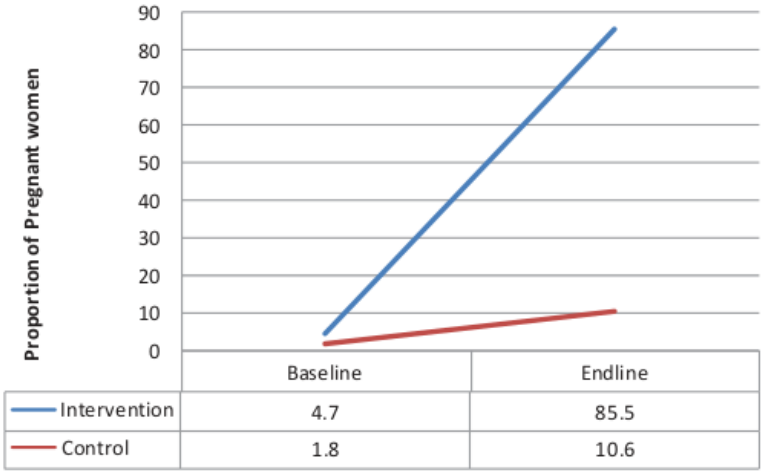

Figure 3. The proportion of pregnant women who had an HIV test before and after the intervention.

Table 1. Results of multivariate analysis showing individual variables that affect access to PMTCT services (n = 771).

				95% CI	
Variable	Category	p value	OR	Lower	Upper
Education level of pregnant women*	High	0.004	2.43		Ref
	Low			1.34	4.41
Role of pregnant women	Yes	0.009	5.64		Ref
	No			1.55	20.5
Education level of the husband	High	0.028	1.82		Ref
	Low			1.07	3.12
Husband's knowledge level*	Good	0.007	1.84		Ref
	Less			1.18	2.88
Intervention Area	Intervention	0.000	63.6		Ref
	Control			38.9	103.8

Confounding factor

PHC variable, we can see that pregnant women living in the intervention are had 72.1 times greater possibility of access to PMTCT than their counterparts living in the control area. The greater possibility to access PMTCT in the intervention area was due to the availability of health provider who had been trained in HIV (Table 2).

Discussion

This study demonstrates the successful development of an implementation model to improve access to PMTCT services. This study is the first ever study of its kind conducted in Indonesia, particularly in the context of PMTCT. The application of the four-stage implementation model can enhance PMTCT services and serve as a bridge between the policies of the central government and their implementation under the stewardship of the local government. Active implementation implies the use of strategies to support the adoption and implementation of a new program (Greenhalgh et al, 2004). The model of implementation strategy used in this study involved active implementation stages (the exploration phase to the sustainability phase) (Fixen et al. 2005). Schackman (2010) emphasized the importance of better coordination between the funding agency and program implementation team and the need for collective decision making based on scientific evidence to achieve the successful outcomes of applied research in the field of HIV and AIDS. The success in increasing access to PMTCT services in Kenya shows that leaders at all levels play important roles in the implementation of PMTCT. In particular, the involvement of the Ministry of Health at the district level in all stages of the program (from planning to implementation), as well as supportive supervision and quality control, was instrumental in improving access to PMTCT

Table 2. Results of multivariate analysis showing PHC variables that affect access to PMTCT services (n = 771).

				95% CI	
Variable	Category	p value	OR	Lower	Upper
Training of HIV	Yes	0.000	10.7		Ref
	No			6.1	18.9
Intervention Area	Intervention	0.000	72.1		Ref
	Control			41.7	124.8

services; this aspect was reflected in the remarkable increase in coverage from 1,300 women in 2003 to more than 25,000 women in early 2005 (Colton 2005).

The model was successfully implemented in Karawang owing to the excellent organizational support at the local level, enhanced capabilities and competence of the midwives, and empowerment of pregnant women by increasing their knowledge about HIV. This finding is consistent with Fixen et al. (2005), who stated that successful implementation relies on innovations coupled with appropriate infrastructural support, systemic improvement, and stakeholder involvement. Peters, Tran, and Adam (2013) indicated that a strategy can be successfully implemented by (1) increasing the ability of the government (public policy, oversight, and financial institutions), (2) improving the implementation performance and capability of provider organizations, (3) strengthening the capacity and performance of individual providers and front-line workers, (4) empowering communities and households, and (5) supporting the involvement of a wide range of stakeholders. Study in South Africa shows that with methods to improve the system, changes the protocol, and the addition/reallocation of resources contributed to the increased capacity and uptake of PMTCT services (The proportion of HIV-exposed infants who tested positive for HIV decreased from 7.6% to 5%. PMTCT increased from 75% to 86%, the use of ART increased from 10% to 25%, and postnatal HIV test increased from 75% to 95%) (Youngleson et al. 2010).

Organizational support

Organizational support in this study is reflected in the amendment of a routine protocol for HIV testing. HIV testing was allowed to be performed by trained midwives at the community level. This increased the accessibility of PMTCT services at the community level (e.g. in Posyandu). This policy helped resolve the distance barrier because distance from the health facility is a key barrier that prevents the access of pregnant women to HIV testing services (Nguyen, Christoffersen, and Rasch 2010). In the control area, HIV testing services were only available at PHCs that had adequate infrastructure and equipment for HIV testing. Therefore, pregnant women who were referred for HIV testing often did not undergo an HIV tests because of their distance from the PHC.

Improvement of health provider (midwife) competencies by training

The training of health providers is important to improve the quality of care. The training of midwives is one variable that affects the effectiveness of PMTCT services. In this study, we found that most of the midwives lacked information about HIV and PMTCT. Moreover, cultural barriers often prevented them from discussing the details of HIV with pregnant women. Training not only increases their knowledge about HIV and PMTCT but also increases their skills to perform rapid HIV testing. Njororai, Bates, and Njororai (2010) said that competent training for health care is very important to increase and expand the knowledge and skill base of providers.

Empowering pregnant women with health education

The empowerment of women, particularly pregnant women and families, is necessary. Empowerment implies that pregnant women can make their own decisions on their health status. In this study, we empowered pregnant women by increasing their knowledge with health education. The knowledge of pregnant women can be best applied to enhance their role in the family (Kako et al. 2013), which is one of the variables that affect the effectiveness of PMTCT access, in addition to the education level of the husband. Malaju and Alene (2012) showed a significant association between maternal knowledge about HIV/AIDS and PMTCT and the testing of HIV and AIDS in Gondar Town, North West Ethiopia. Pregnant women who have good knowledge are more open to participate in an intervention than pregnant women who have less knowledge. Health education increases the knowledge about health problems in the community (Nwachukwu et al. 2008). Health education on HIV at the community level is expected to increase the knowledge level of pregnant women and empower them to make decisions about their health. Health education is a strategy that enhances the uptake of voluntary counseling and testing services as part of antenatal care (Sekoni, Aderibigbe, and Akande 2014).

Limitations

This study aimed to test the implementation model to improve PMTCT access. Strong commitment from the local government is required to implement this model. Moreover, this study was implemented only in one district. Although we used a control area, the study was not designed to test the variations of the implementation model. Furthermore, we did not assess the wider acceptance of this model and the potential problems that may arise during its implementation at a larger scale. The successful implementation of the model in Karawang District may be attributable to the strong commitment of the local government, particularly the Ministry of Health, and to the pre-existing MTCT program in the district.

Implications

Access to PMTCT services has specific characteristics; therefore, not all health services can provide PMTCT services (Indonesian MoH 2017). PMTCT access can be developed step by step according to the status of the epidemic area. The lack of capacity for PMTCT services is a key constraint that prevents access to PMTCT. In this study, we demonstrate that the lack of access to PMTCT services can be resolved if government, other stakeholders, and the community work together. This implementation strategy involved policy-level changes, capacity building of providers, and empowerment of pregnant women by increasing their knowledge about HIV and PMTCT.

Conclusions

The implementation model shows that with support from the Ministry of Health at the district level and by increasing the competency of health providers, providing health education, and implementing HIV testing at the community level, the access barriers to PMTCT services can be overcome, and health services can be improved. This model can

be used as a tool to implement the policies made by the central government with the active involvement of local government units.

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Disclosure statement

No potential conflict of interest was reported by the authors.

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