Development of a measure of the patient-provider relationship in antenatal care and its importance in PMTCT

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The prevention of mother-to-child HIV transmission (PMTCT) is a complex challenge in heavily affected and resource-limited settings such as South Africa. Management of PMTCT requires a cascade of interventions that need to be addressed to effectively decrease the risk of HIV transmission to infants. This PMTCT cascade includes incremental components that can be shaped and influenced by the patient-provider relationship. The relationship that a pregnant woman has with her care providers may possibly affect decisions that she makes concerning her antenatal care and may, in turn, influence the quality of the care provided. A patient-provider relationship scale was developed in Pretoria, South Africa with two aims: first, to quantify the patient-provider relationship in an antenatal population in a resource-limited setting and provide preliminary evidence of its reliability and validity; and second, to determine whether the patient-provider relationship has an effect on PMTCT. The instrument was administrated in a cross-sectional pilot study to a group of women at discharge after delivery (n=192) at two major hospitals in South West Tshwane. Statistical analysis of the instrument showed high reliability ($\alpha = 0.91$) and preliminary evidence of its validity including significant associations with participants' attitudes regarding the functioning of the clinics and a single statement (the clinic staff "know me as a person", R=0.47, p<0.001) that has been shown previously to have a significant association with adherence to antiretroviral treatment. For HIV-positive participants, the patient-provider relationship scale (PPRS) scale was significantly associated with statements related to important components of the PMTCT cascade. In addition, those with substantially inadequate antenatal care (≤ 2 visits) and those who did not initiate highly active antiretroviral therapy (HAART), although eligible, had significantly poorer PPRS scores. The PPRS is a potentially useful, context-appropriate instrument that could have an important role in future research focused on improving PMTCT and decreasing the risk of HIV infection in children.

Keywords: patient-provider relations; adherence; prevention of mother-to-child transmission; South Africa

Introduction

According to the 2010 WHO Progress Report on HIV/AIDS, there were

approximately 1.4 million HIV-positive pregnant women annually in need of PMTCT

services to reduce transmission to their HIV-exposed infants (WHO, UNAIDS, & UNICEF, 2010). Most new cases of pediatric HIV infection occur in sub-Saharan Africa and despite substantial efforts aimed at PMTCT in these areas, programs are not functioning optimally and vertical transmission of HIV remains a critical contributor to high child mortality (Bancheno, Mwayumba, & Mareverwa, 2010; WHO, et al., 2010).

Effective PMTCT is a cascade of incremental interventions that includes antenatal counseling and patient education, CD4 testing, adherence to medications, perinatal management and postnatal issues including infant feeding practices and family planning. Increased access to and availability of PMTCT services and medications have been achieved in several areas of sub-Saharan Africa (Bancheno, et al., 2010; Horwood, et al., 2010; Msellati, 2009). Despite these achievements, full PMTCT coverage remains relatively low because of incomplete adherence to components of the PMTCT cascade (Navario, et al., 2010, Stringer, et al., 2010). Specific weak points in the cascade have been identified, such as women not returning to collect CD4 test results (Bancheno, et al., 2010; Msellati, 2009) and failure to initiate highly active antiretroviral therapy (HAART) when appropriate (Horwood, et al., 2010; Msellati, 2009).

Qualitative studies done in Africa have suggested that the relationship between the patient and provider has an important role in PMTCT. Kebaabetswe in Botswana described negative attitudes of healthcare providers as a significant barrier for women enrolling in PMTCT (Kebaabetswe, 2007), and a study done in South Africa described disrespectful treatment of patients by providers resulting in PMTCT participants abandoning treatment (Aspeling & Van Wyk, 2008). Similarly in a study done in Côte d'Ivoire, Painter et al. interviewed women who had failed to return to

PMTCT and reported that the majority blamed interactions with staff for why they had not returned, with some women describing being fearful of the staff (Painter, Diaby, Matia, & Lin, 2004).

A number of studies conducted with non-pregnant, HIV-infected patients have shown that the quality of the relationship between the patient and provider can have an important effect in other areas of HIV care (Bakken, Holzemer, & Brown, 2000; Ingersoll & Heckman, 2005; Molassiotis, Morris, & Trueman, 2007; Schneider, Kaplan, Greenfield, Li, & Wilson, 2004). Beach et al. showed that medication adherence was significantly increased among individuals who responded positively to the one statement, "My HIV provider really knows me as a person" (Beach, et al., 2006).

Scales have been previously developed in the United States to evaluate patient-provider relationship in HIV-affected populations and have demonstrated the importance of this relationship in other areas of management such as adherence to antiretroviral therapy. However, to our knowledge, there is currently no validated quantitative instrument for assessing the quality of the patient-provider relationship within antenatal care in an African setting. The development of such a measure would bring a focus to this area that likely has important consequences on the vertical transmission of HIV. Furthermore, deficiencies in the patient-provider relationship are potentially remediable and an instrument could be used to first identify deficiencies and document improvement. Thus, there were two specific aims of this research. First, we sought to develop a scale to quantify the patient-provider relationship for all antenatal clinic attendees, and provide early evidence of its reliability and validity. Second, we aimed to use the scale to determine whether the patient-provider relationship has an effect on adherence to PMTCT.

Methods

The research was conducted in three phases: (1) development of a patient-provider relationship scale through adaptation of previously constructed scales, addition of items appropriate for the local context, and formulation of items into one scale; (2) implementation of the scale in a study sample of women at discharge after delivery in the South West Tshwane sub-district in Pretoria, South Africa; (3) analyses to evaluate relationships between scale scores and components of PMTCT. The study protocol was approved by the Research Ethics Committee of the Faculty of Health Sciences of the University of Pretoria and the Yale University Human Investigation Committee.

Development of the scale

Preliminary scale items for the evaluation of the patient-provider relationship were selected after review of four previously developed instruments in the United States. (Bakken, et al., 2000; Galassi, Schanberg, & Ware, 1992; Littlefield & Adams, 1987; Schneider, et al., 2004). Items were selected based on the relevance of each item to this study population and objectives. Interviews were held subsequently with clinical and research staff members in SW Tshwane to assess the relevance and context of the selected items.

A focus group discussion was conducted with six women of unknown HIV status attending an antenatal clinic at Kalafong Hospital in order to gain insight on cultural elements and understandings, to aide in the adaptation of the scale to the local

context. The patient-provider relationship scale was then created, consisting of 19

items, each with four responses, ranging from "always"(4) to "never"(1).

Administration of the scale

The scale was administered to a convenience sample of mothers following delivery at

two hospitals in SW Tshwane – Kalafong Hospital and Pretoria West Hospital – over

a period of nine weeks from June to August 2008. The hospitals are located in a

historically disadvantaged area of the Tshwane Metro Council and serve a largely

black, low to middle socioeconomic class, urban population. Written consent was

obtained for all participants and interviews took place in private locations to ensure

confidentiality. In addition to the scale items, participants were asked about the

number of antenatal visits they attended and their opinions regarding specific

operations of the antenatal clinic. All women were also asked whether they had HIV

testing done in pregnancy and, if so, the result of the test. Women who identified

themselves as HIV-positive were asked additional questions relating to PMTCT. The

researchers used the patient's medical file for independent validation of health

measurements, including HIV status, number of antenatal visits, CD4 count and

current medications, specifically antiretroviral treatment regimens.

Data analyses

Analyses were performed to evaluate each of the scale items for possible inclusion in

the final instrument. Item-total correlation analysis was conducted to identify poorly

performing items and items with low correlations (using $r < 0.5$) were removed from

the scale. Principal components analysis was conducted to identify potentially different factors present in the scale. Items that had a factor loading > 0.40 and did not load on multiple factors were considered part of a factor. The internal consistency was examined using the α-coefficient statistic.

A measure of the concurrent validity of the scale was provided by comparing scores using Student's t-test for those agreeing or disagreeing with the single statement "the clinic staff know me as a person", a statement that has been shown previously to have significant association with adherence to antiretroviral treatment (Beach, et al., 2006). Additionally, the association between PPRS and the patients' experiences with the clinic operations was examined to provide evidence supporting the face validity of the scale. Analyses were conducted on all HIV-positive participants to determine whether there were associations between PPRS and identified components of PMTCT, using t-tests and ANOVA when appropriate. All analyses were conducted using SPSS® (Versions 16.0 and 18.0; SPSS Inc., Chicago, IL, USA).

Results

Of the 196 women interviewed, four were excluded from all analyses because they had not attended any antenatal care. The 192 participating women received antenatal care from over 50 clinics, although the majority of care was received at the 11 antenatal clinics located within the SW Tshwane sub-district. Fifty-three women (27.6%) reported having received antenatal care at two different clinics. The mean age of the study sample was 26.1 years, and 83% of participants had completed at least Grade 10 (Table 1). More than three quarters (77%) of the participants attended

the antenatal clinic nearest to their home and averaged 4.60 visits during their pregnancy. Of the 192 participants, 25% (n=48) were HIV-positive. One participant was found to be HIV-positive on chart review alone and therefore was not asked further questions related to PMTCT. The HIV-positive participants were significantly older, less educated, and had more children than those who were HIV-negative (Table 1). Five participants did not know their HIV status and no test results were documented in the medical file.

Item analysis

As seen in Table 2, all item-total correlations were relatively high, ranging from .759 to .425, with only four items with correlation coefficients less than 0.5. The results of the factor analysis indicated a single factor solution (Table 2) and that all scale items contributed to the measurement of the patient-provider relationship. The four items with lowest item-total correlations also had the lowest factor loadings and the decision was made to exclude these items. One further item ("kept my information confidential") was also eliminated because a relatively large number of participants (13.8%) chose not to answer the question. The internal consistency of the final 14-item scale demonstrated high reliability ($\alpha = 0.91$).

Scores for the final 14-item patient-provider relationship scale (PPRS) ranged from 17 to the maximum score of 56 with the higher score indicating a more positive relationship. The mean PPRS score was 41.46 [SD = 11.01]. There was not a significant difference between HIV-positive (mean = 42.24 [SD = 10.84]) and HIV-negative participants (mean = 41.30 [SD = 10.99]).

Results supporting the validity of the scale

A single measurement of participants' relationship to the clinic staff was used to provide supporting data for the validity of the developed scale. The participants were asked whether they agreed or disagreed with the following statement: "The staff at the clinic really know me as a person". This single measurement was found to have a significant association with the PPRS scores (R=0.47, p<0.001).

Significant associations were also found between the PPRS score and participants' experiences regarding the operations of the antenatal clinics (Table 3). Higher PPRS values (better relationships) were associated with positive responses to statements about the clinic staff arriving at work on time (p<0.001) and having convenient clinic hours (p<0.001). Relationships were also significantly better for women who did not attend the antenatal clinic nearest to their home (p<0.001). Conversely, lower PPRS scores (worse relationships) were associated with being turned away from the clinic while it was open (p<0.001) and difficulties understanding the staff because they spoke different languages than the participant (p=0.011).

Associations with components of PMTCT

For the HIV-positive sample, associations between PPRS score and various components of the PMTCT cascade were examined. The first component analyzed was the number of antenatal visits attended. The Basic Antenatal Care (BANC) program in South Africa follows the World Health Organization recommendation that every pregnant woman should visit the antenatal clinic at least five times during

pregnancy (Pattinson, 2007). Therefore, in this study, attending the antenatal clinic five or more times was deemed "adequate care", attending three to four visits was deemed "inadequate care" and attending only one to two visits was deemed "substantially inadequate care". As shown in Table 4, in the HIV-positive subgroup, 27 women (57.4%) had adequate care, 15 (31.9%) had inadequate care and five (10.6%) had substantially inadequate care. Those with substantially inadequate care had significantly lower PPRS scores (mean 32.83, SD = 11.52) than those with inadequate care (mean 46.74, SD = 11.28) and those with adequate care (mean 41.75, SD = 9.77) (P<0.05 for differences between the three groups). The second component of PMTCT examined was the information provided by antenatal clinic staff regarding HIV testing, care and follow-up care (Table 4). Women who felt poorly informed about testing and that they had not been allowed to decide about testing had poorer relationship scores, although differences were not statistically significant. Better relationships were significantly associated with women reporting that they had been given enough information about HIV (p<0.05), that staff had answered all of their questions about HIV (p<0.01) and that the staff had clearly explained why it was important to take medicines as prescribed (p<0.01). Higher PPRS scores were also associated with participants' responses to statements that related to follow-up care: patient-provider relationships were significantly better among those who reported that the staff had explained the baby's immunizations (p<0.05) and had discussed family planning (p<0.01).

CD4 count testing and initiation of HAART were analyzed as a third component of PMTCT and associations with PPRS score were examined. Testing was done for 41 participants (87.2%). No significant difference was found between those who had a CD4 count performed and those who did not. Additionally, the

number of antenatal visits did not significantly differ between those who had CD4 testing and those who did not. The local policy of the SW Tshwane sub-district regarding initiation of HAART at the time of the study was based on the national government policy (National Department of Health, 2008), but allowed for initiation of HAART at a slightly higher CD4 count (250 versus 200), or clinical manifestations of advanced disease (Stage IV WHO clinical classification). Of those who had CD4 counts done, 19 (50.0%) were above 250, five (13.2%) had counts between 200 and 250 and 14 (36.8%) were below 200. Results were not known or documented for five participants. A total of 22 participants (53.7%) were deemed eligible for HAART, however, five of these women (22.7%) did not receive HAART during the antenatal period. Importantly, PPRS scores were significantly lower for those women who did not receive HAART when eligible (mean PPRS = 33.09 [SD 7.38]) compared to those women who did receive HAART (mean PPRS = 43.05 [SD = 9.19], $p<0.05$).

Discussion

Scale development

The primary aim of this research was to develop a scale to quantify the patient-provider relationship for antenatal clinic attendees and provide evidence of its reliability and validity. The scale developed was tailored to the cultural context in South Africa, was easy to use, relatively quick to administer and the final scale was shown to have good reliability. While a factor analysis demonstrated that the scale was composed of just one factor, it was perhaps notable that the two items that had the strongest correlation with the total scores relate to being shown "respect" by staff

and the next three items had to do with being supported and helped with problems, suggesting that these were important components of the patient-provider relationship.

Evidence supporting the validity of the scale included the fact that PPRS correlated with a global measure of the patient-provider relationship that has previously been shown to be associated with patient characteristics such as being more adherent to HAART and having an undetectable serum viral load (Beach, et al., 2006). In addition patients with lower PPRS scores tended to be more critical of the operations of the clinics, reporting such things as staff not arriving on time and having been turned away from the clinic.

The potential effect of the patient-provider relationship on PMTCT

The study results demonstrated compelling associations relating to the application of the scale to the HIV-positive subgroup, which have important implications for PMTCT programming. Relationship scores were worse for women who reported poor communication by clinic staff relating to HIV care and follow-up for themselves and their children – all of which are critically important to the success of PMTCT programming. Women with lower relationship scores also reported they had not been informed about the importance of HIV testing and felt they had decreased autonomy in deciding about testing although in this small sample these differences were not statistically significant. These findings would suggest that even in instances where testing is routine and provider initiated, the quality of the relationship between provider and patient may have an important effect on the patient's acceptance of PMTCT. Poorer relationships were also associated with lower clinic attendance and sub-standard HIV care; women reporting poorer relationships were less likely to be

initiated on HAART. This latter finding is particularly important because mothers with low CD4 count have an increased risk of mother-to-child HIV transmission both intrapartum and postnatally (Chasela, et al., 2008; Jourdain, et al., 2007). The HIV-positive sample in this study was relatively small, however, and more research is needed for validation of this instrument in other HIV-positive populations.

A further potential limitation of the study was that the results may have been affected by recall bias as all data relating to antenatal care and relationships were obtained by self-report. Medical chart reviews were conducted, however, to independently validate available data points such as initiation of HAART. Also, it should be noted that the relationship between substantially inadequate antenatal care for HIV-positive participants and PPRS score may have been in the opposite direction than described. Namely, if participants did not come often to the clinic for antenatal visits, perhaps they did not have the opportunity to develop better relationships with the healthcare providers.

Conclusions and Implications

The study results demonstrated quantitatively what has been observed in prior qualitative studies – that the relationship between the patient and her provider can have an important effect on her ability to participate fully in PMTCT. In this study, we were not able to assess all of the necessary components of PMTCT, such as the need for a woman to take all of her antiretroviral medications, and we were not able to examine the possible relationship between the patient-provider relationship and the likelihood that she would return for family planning after delivery, or be able to maintain exclusive breast feeding.   We would hypothesize, however, that each of

these important components of the PMTCT cascade, is affected by the relationship between a patient and her provider.

An instrument that has been specifically developed for the context of antenatal care in a resource-limited country will enable further examination of the role of the patient-provider relationship in PMTCT. More important, it brings focus to ways in which PMTCT can be improved. By quantitatively assessing the patient-provider relationship and seeking to improve this within health care systems, there is the potential for improving adherence to PMTCT and decreasing the risk of HIV infection among infants.

References

Aspeling, H., & Van Wyk, N. (2008). Factors associated with adherence to antiretroviral therapy for the treatment of HIV-infected women attending an urban care facility. *International Journal of Nursing Practice*(14), 3-10.

Bakken, S., Holzemer, W., & Brown, M.-A. (2000). Relationships between perception of engagement with health care provider and demographic characteristics, health status, and adherence to therapeutic regimen in persons with HIV/AIDS. *AIDS Patient Care and STDs, 14*(4), 189-197.

Bancheno, W. M., Mwayumba, F., & Mareverwa, J. (2010). Outcomes and challenges of scaling up comprehensive PMTCT services in rural Swaziland, Southern Africa. *AIDS Care, 22*(9), 1130-1135.

Beach, M., Keruly, J., & Moore, R. (2006). Is the quality of the patient-provider relationship associated with better adherence and health outcomes for patients with HIV. *J Gen Intern Med, 21*, 661-665.

Chasela, C., Chen, Y. Q., Fiscus, S., Hoffman, I., Young, A., Valentine, M., et al. (2008). Risk factors for late postnatal transmission of human immunodeficiency virus type 1 in sub-Saharan Africa. *Pediatr Infect Dis J, 27*(3), 251-256.

Galassi, J., Schanberg, R., & Ware, W. (1992). The Patient Reactions Assessment: A Brief Measure of the Quality of the Patient-Provider Medical Relationship. *Psychological Assessment, 4*(3), 346-351.

Horwood, C., Haskins, L., Vermaak, K., Phakathi, S., Subbaye, R., & Doherty, T. (2010). Prevention of mother to child transmission of HIV (PMTCT) programme in KwaZulu-Natal, South Africa: an evaluation of PMTCT implementation and integration into routine maternal, child and women's health services. *Tropical Medicine and International Health, 15*(9), 992-999.

Ingersoll, K., & Heckman, C. (2005). Patient-clinician relationships and treatment system effects on HIV medication adherence. *AIDS Behavior, 9*(1), 89-101.

Jourdain, G., Mary, J. Y., Coeur, S. L., Ngo-Giang-Huong, N., Yuthavisuthi, P., Limtrakul, A., et al. (2007). Risk factors for in utero or intrapartum mother-to-child transmission of human immunodeficiency virus type 1 in Thailand. *J Infect Dis, 196*(11), 1629-1636.

Kebaabetswe, P. M. (2007). Barriers to participation in the prevention of mother-to-child HIV transmission program in Gaborone, Botswana a qualitative approach. *AIDS Care, 19*(3), 355-360.

Littlefield, V., & Adams, B. (1987). Patient participation in alternative perinatal care: Impact on satisfaction and health locus of control. *Research in Nursing & Health, 10*, 139-148.

Molassiotis, A., Morris, K., & Trueman, I. (2007). The importance of the patient-clinician relationship in adherence to antiretrovirial medication. *International Journal of Nursing Practice, 13*, 370-376.

Msellati, P. (2009). Improving mothers' access to PMTCT programs in West Africa: a public health perspective. *Soc Sci Med, 69*(6), 807-812.

National Department of Health. (2008). *Policy and guidelines for the implementation of the PMTCT programme*. Pretoria, South Africa.

Navario, P., Bekker, L., Blecher, M., Darkoh, E., Hecht, R., McIntyre, J., et al. (2010, July 16, 2010). Special Report on the State of HIV/AIDS in South Africa. *Global Health Magazine,* 1-8.

Painter, T., Diaby, K., Matia, D., & Lin, L. (2004). Women's reasons for not participating in follow-up visits before starting short course antiretroviral prophylaxis for prevention of mother-to-child transmission of HIV: qualitative interview study. *BMJ, 329*, 513-517.

Pattinson, R. (2007). *Basic Antenatal Care Handbook*. Pretoria, South Africa: MRC Maternal and Infant Health Care Strategies Research Unit.

Schneider, J., Kaplan, S., Greenfield, S., Li, W., & Wilson, I. (2004). Better physician-patient relationships are associated with higher reported adherence to antiretroviral therapy in patients with HIV infection. *J Gen Intern Med, 19*, 1096-1103.

WHO, UNAIDS, & UNICEF. (2010). *Towards Universal Access: Scaling up priority HIV/AIDS interventions in the health sector*. Geneva, Switzerland: World Health Organization.

Table 1. Socio-demographic characteristics of study sample (n=192)			
Characteristic	**Total study sample (n=192)**	**HIV-negative women (n=139)**	**HIV-positive women (n=47)**
Average age (years)	26.1	25.0	29.6**
Completed Grade 10 or higher	83%	84%	77%*
Mean number of children	2.00	1.86	2.51**
Mean number of people living in home	4.97	4.92	5.02
Visited antenatal clinic nearest to home	77%	78%	71%
Mean number of antenatal clinic visits	4.60	4.57	4.81

Significant difference between HIV-positive and HIV-negative women in study sample: * $p < 0.05$, ** $p < 0.01$

Table 2. Item-total correlations and factor analysis for items in Patient-Provider Relationship instrument		
	Item-total correlation	**Factor Loading**
Items retained in final instrument		
Respected my choices	.759	.805
Treated me with respect	.696	.750
Supported my decisions	.673	.728
Helped to solve my problems	.672	.726
Talked to me about my problems	.659	.707
Answered my questions	.658	.707
Listened to me	.646	.703
Spent enough time with me	.628	.686
Cared about me	.601	.667
Made me wait too long	.583	.651
Spoke to me rudely	.584	.649
Scared me so I did not speak to them about my problems	.521	.577
Referred me to the right people if they could not help me	.516	.563
Explained to me what choices I had	.506	.548
Items deleted from final instrument		
Kept my information confidential	.503	.544
Respected my privacy	.479	.535
Encouraged me to come back before my next appointment if I had any problems	.476	.531
Involved me in decisions	.433	.477
Explained why they had to do certain tests	.425	.466

Table 3. Patients' report of clinic operations and association with patient-provider relationship scores (PPRS)

All participants (n=192)

	Mean PPRS (SD)		
	Response		
Item	*Yes*	*No*	*p*
When you went to the clinic early, did the staff arrive at work on time?	43.48 (10.30)	30.91 (10.52)	<0.01
Were the clinic hours convenient for you?	43.50 (10.06)	31.26 (9.96)	<0.01
Were you ever turned away from the clinic while it was open?	33.78 (11.03)	43.11 (10.32)	<0.01
Did you have problems understanding the staff because you speak different languages?	35.53 (10.37)	41.96 (10.95)	<0.05
Is the clinic you visited your nearest clinic?	39.95 (10.90)	46.38 (10.01)	<0.01

Table 4. Patient-provider relationship scores (PPRS) and associations with components of PMTCT

HIV-positive participants (n=47)

Antenatal care visits	Mean PPRS (SD)		*p*
Totally inadequate care – 1-2 clinic visits (n=5)	32.83 (11.52)		<0.05††
Inadequate care – 3-4 clinic visits (n=15)	46.46 (11.28)†		
Adequate care – 5 or more clinic visits (n= 27)	41.75 (9.77)†		
	Response to statement		
Item	*Yes*	*No*	
HIV care			
Did the clinic staff inform you about the importance of HIV testing?	43.08 (10.63)	35.86 (12.69)	0.17
Did the clinic staff let you decide whether or not to be tested for HIV?	43.05 (10.87)	39.87 (11.35)	0.40
Did the clinic staff give you enough information about HIV?	44.21 (9.94)	35.91 (12.49)	<0.05
Did the clinic staff answer all your questions about HIV?	44.09 (9.57)	26.18 (5.63)	<0.01
Did the staff explain clearly why it is important to take prescribed medicine regularly according to the instructions?	47.09 (7.81)	36.87 (11.60)	<0.01
Follow-up care			
Did the clinic staff explain the baby's immunizations to you?	45.78 (9.66)	39.25 (11.28)	<0.05
Did the clinic staff discuss future family planning with you?	45.04 (10.49)	36.49 (9.84)	<0.05

† P value between these two groups was not significant
†† P value given is between all three groups