

**Developing an index on male partner involvement for  
the prevention of mother-to-child transmission of  
HIV in Zimbabwe**

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**Abstract**

Measuring male partner involvement (MPI) for the prevention of mother-to-child transmission (PMTCT) of HIV remains a challenge as there is no universal instrument to measure this concept. The study underpinned by the Gender and Development theory (GAD), utilised a mixed method design aimed at developing the first index for measuring MPI in PMTCT in Zimbabwe. Eight focus group discussions with men and women from diverse community groups were conducted. In addition, seven key informant interviews were conducted with managers from institutions providing PMTCT services. A ten-item tool was administered to a separate 331 respondents. Using factor analysis, seven items were extracted from a list of ten binary questions which described various activities linked to MPI in PMTCT programmes. The index, which is seen as a work in progress has strength in its inclusion of items that addressed antenatal and postnatal activities, which are crucial for the prevention of paediatric HIV.

**Keywords:** *Human immune virus; Antenatal care; Zimbabwe; Index development; Male partner involvement, Prevention of mother-to-child transmission of human immune virus, Gender, Africa.*

## **Introduction**

An increase in the study of male partner involvement in maternal and child health has been observed over the years and in particular, these studies highlight the benefits of involving male partners in the prevention of mother-to-child transmission of HIV (PMTCT) (Osoti *et al.* 2014; Amano and Musa 2016). However, their involvement remains low (Msuya *et al.* 2008; Katz *et al.* 2009).

Evaluating the progress of male partner involvement is key in interventions whose focus is to reduce mother-to-child transmission of HIV (Morfaw *et al.* 2013; Besada *et al.* 2016). However, there is no standard index or instrument that can be used in such assessments. In the absence of a standard definition of male involvement, one challenge confronted by research is the development of a standard tool for measuring men's involvement in PMTCT of HIV (Iliyasu *et al.* 2010). Scholars who attempted to measure this concept within maternal and child health context used measurements that were congruent with their understanding of what constitutes MPI in their studies (Aluisio *et al.* 2011; Mangeni *et al.* 2014; Ampt *et al.* 2015).

The unavailability of an index in Zimbabwe to measure MPI has negative consequences on the monitoring and evaluation of PMTCT programmes that seek to improve men's participation. The aim of the study was therefore to develop a tool for measuring MPI using Gokwe North District of Zimbabwe as a case study. It is a rural district which is located in the Midlands Province and is about 350 kilometres towards the north-west of Harare. At provincial level, the Gokwe North District is known to be one of the less industrialized with a population of about 245 000 people (ZIMSTAT 2012) and its major source of livelihood is subsistence farming (Taruberekera 2016). There are only three hospitals operating and health services are generally scarce.

## **Literature review**

Ampt *et al.* (2015) state that various scholars have made attempts to define and develop tools that are aimed at measuring MPI in maternal and child care research. These studies provide literature on MPI which is confined within two broad theoretical approaches. The first category is based on the Social Determinants of Health Framework which considers male involvement as a mere symbol of gender parity (Marmot *et al.* 2008). According to this approach, the notion of equity is expressed in ensuring that the roles of parents when raising children are equally shared. The 2008

Commission on the Social Determinants of Health highlights some of the negative outcomes such as sexual abuse and male dominance resulting from patriarchal systems that bestow men with ultimate power in relationships (Marmot *et al.* 2008).

One of categories is identified as an instrumental approach in which male partner involvement is associated with provision of direct assistance by male partners as a way of contributing to the health and well-being of the mother as well as the child (Montgomery, van der Straten and Torjesen 2011b; Ampt *et al.* 2015). Some of the indicators associated with the instrumental approach are; physical appearance or presence at the health facility and provision of transport to the partner during antenatal or postnatal visits. Ampt *et al.* (2015) however, argue that these two different approaches may not be effective when used in isolation as a single indicator may not provide a complete picture of MPI. In this regard, a combination of different indicators that include couple communication, HIV couple counselling and testing among others may facilitate in providing a more comprehensive measure of MPI.

In addition, previous studies used many other indicators for measuring MPI. One of the indicators that studies described as male partner involvement is couple communication and provision of instrumental support (Mangeni *et al.* 2014; Ampt *et al.* 2015; Sahu *et al.* 2016). Instrumental support was defined in some studies as means of providing support through tangible ways (Wexler *et al.* 2021). Some of these forms of support include providing money and transport to the partner and the baby. The two dimensions of support are clearly shown by scholars that portray these variations in which Aluisio *et al.* (2011) and Iliyasu *et al.* (2010) portray instrumental indicators while Mullany, Hindin and Becker (2005) provide the approach that deals with communication and joint-decision making as some of the measures of MPI. These two different approaches are considered by Ampt *et al.* (2015) as fundamental if used in unison since they all form part of the diverse ways in which male partners contribute and support their partners in PMTCT of HIV.

The essence of these indicators lies in their role in providing guidance in the evaluation of MPI in PMTCT initiatives. However, these indicators do not cover all the major aspects of PMTCT that include antenatal, intrapartum and postnatal aspects. In addition, the existing indicators which are linked to the perinatal period had no association with PMTCT of HIV but rather with aspects specifically linked to maternal and child care (Carter 2002). The involvement of male partners during the postnatal phase is also crucial as HIV can be transmitted during the period of breast

feeding (Moland *et al.* 2010). For this reason, indicators for monitoring and evaluating MPI during the postnatal phase are necessary.

## **Theoretical Underpinnings**

This study was guided by the Gender and Development (GAD) Theory, which describes the inequalities between men and women where women's subordination to men is a result of social constructions of gender (Moser 1993). The main principal underpinning of the GAD Theory is to bring about equality between men and women and to ensure that men become agents of change in women's emancipation processes. To date, it is known that health interventions that aim to engage with the male gender have utilized gender transformative methodologies, which are in essence rooted in GAD, as it is seemingly effective in changing behaviour and attitudes (WHO 2009; Chibango 2020). Additionally, the same approach ensures that while incorporating men into health interventions, women are also empowered so as to prevent any negative outcomes of men's involvement in health initiatives (WHO 2009; Chibango 2020).

In addition to the Gender and Development theory, a conceptual framework on the determinants of sexual behaviour by Eaton was used. The framework suggests that risky sexual behaviour is influenced by different factors that are individual, interpersonal and structural (Eaton, Flisher and Aaro 2003). Individual factors may include education, one's feelings, thoughts as well their knowledge regarding HIV (Eaton, Flisher and Aaro 2003). At the interpersonal level, interpersonal relationships such as couple communication may influence sexual behaviour (Nakiire *et al.* 2020). At the structural level, social constructions of gender have an impact on the sexual behaviour by creating unequal power relations between men and women (Eaton, Flisher and Aaro 2003; Organization 2013). In this study, the choices of support which the male partners can provide in PMTCT of HIV interventions are likely to be influenced by these various factors. In support of this, studies found that the support provided by male partners in these programmes was influenced by various factors such as healthcare workers' initiatives (Jefferys *et al.* 2015) and structural norms where the antenatal environment was not male-friendly (Boniphace *et al.* 2021).

## **Research methods**

The research consisted of an exploratory sequential design, which explored the subject of male partner involvement in PMTCT through a mixed

method of both qualitative and quantitative research. The findings of the qualitative research were subsequently used to develop a questionnaire, whose items were used for the index development. The main items used for the index development were those that were referred to as components of MPI. The design of the development of the index followed a standard procedure for index development, prescribed by Pallant (2010). The procedures followed in the development of the index are described below in detail. The University of KwaZulu-Natal in conjunction with the Medical Research Council of Zimbabwe granted the ethical approval for the study.

### ***Focus Group Discussions***

Focus group discussions (FGDs) were used to draw common views and understanding regarding the involvement of male partners in PMTCT. The data for this study was collected over four months. The participants that formed part of FGDs comprised of men and women 18 years and older. Participants were selected using purposive sampling methods. These participants were from key organisations that existed in the district, where the community gathers for several reasons. Some of the key organisations include but not limited to churches, healthcare facilities, community projects and non-governmental organisations. The leaders of these various organisations facilitated in identifying and recruiting focus group participants that belonged to their institutions.

We conducted eight focus group discussions. Of these, two groups were comprised of only men, other two groups had only women while the remaining groups had both men and women. In total, 66 participants consented to take part in the discussions. The age range of the women was between 18 and 50, and men were between the ages of 25 and 72.

An interview schedule was used to conduct the discussions. Shona was used as the language for communication in the FGDs, since it was the common language spoken in the district. A moderator and note-taker facilitated in the discussions, which were conducted in areas where the participants usually convened. FGDs were audio-recorded, transcribed and later translated into English. Each FGD lasted for about one and a half hours. The transcripts were read and analysed by highlighting certain components or concepts that related to the involvement of male partners (Berthran, Odetola and Abiona 2021).

### ***Key informant interviews***

The aim of the key informant interviews (KIIs) was to draw information from different knowledgeable people with direct information about the community, as well as PMTCT programmes that were conducted in the district. These included health care workers in leadership positions, district and provincial medical officers, as well as church leaders. The methods of sampling used for KII were purposive sampling and chain-referral techniques.

A total of seven KIIs were conducted over a period of two months. Four participants had managerial positions in the Department of Health at district as well as at the provincial level; two other KIIs were from humanitarian organisations which offered health services such as HIV and AIDS services, paediatric and maternal health services; and one Key Informant Interviews was a traditional health attendant.

An unstructured interview guide was used for conducting individual interviews with the KII participants. The interviews were conducted in the workplaces of the respective participants. Most of the KIIs were conducted in Shona, which was the common language used in the district. However, some of the participants switched between Shona and English. Potgieter (1997) made the comment that persons choose to speak in a second language when talking about issues of sexuality or sensitive topics and this is possibly the case with these participants as well. Interviews were audio-recorded, transcribed and translated into English. Each interview lasted for about 45 minutes to one hour. The transcripts were studied, coded and analysed using a thematic analysis.

### ***Developing Questionnaire Items from the Qualitative Data***

The researcher developed the questionnaire guided by the results obtained from the FGDs and the KIIs. The items used for the questionnaire were quotes that were extracted from the transcripts and formulated into declarative statements which represented the participants' understandings of the various meanings of a male partner's involvement in PMTCT programmes. The following example is a quote drawn from the qualitative data which was identified as relevant to the meanings of MPI:

The man gets services offered during pregnancy, especially HIV testing as well as education on HIV prevention. If they are HIV positive, they may also start on the treatment. For those that are HIV negative, they can

learn how to prevent infection during pregnancy as well as after the child is born.... However, male involvement goes beyond just being tested. It also means being able to prevent and protect oneself from HIV (Mukai, Female, 28 yrs, FGD).

From the above quote, two possible indicators of male involvement were considered: “*Man tested for HIV during pregnancy (Chibango 2018: 157)* and *Man counselled on preventing HIV during pregnancy*” (Chibango 2018: 157). Using this approach, a pool of 37 items which addressed various forms of how male partners were involved in PMTCT was initially generated from the FGDs and interviews. These items were extensively reviewed to assess their uniqueness and any redundancies were removed. As a result of this process, a total of ten items were chosen.

### ***Questionnaire Structure and Participants***

A structured questionnaire was developed using the final list of items. These included the respondents’ age, gender, marital status, occupation and religion. Twofold responses consisting of the ‘Yes’ and ‘No’ answers were used in all of the ten items to depict whether or not the respondent or the partner (in terms of female respondents) participated in any of the characteristics of the index. Below is the list of the ten items that were created.

Man had discussed reproductive desire with his partner,  
Man had discussed HIV testing with his partner,  
Man was tested for HIV during the most recent pregnancy,  
Man had disclosed HIV status to his partner,  
Man was counselled on preventing HIV during pregnancy,  
Man had accompanied his partner to ANC,  
Man was present at the birth of the child,  
Man was counselled on infant feeding,  
Man was counselled on HIV prevention following the child’s birth,  
Man had accompanied partner for Polymerase Chain Reaction Test (Chibango 2018: 157).

The responses were given an equal weight, in which ‘1=yes’ (participated) and ‘0=no’ (did not participate). A pre-test was conducted with 20 men and women who had similar characteristics to ensure that the items were clear and easy to comprehend. A few modifications were subsequently made on the questionnaire, based on the pre-test responses.

A multi-stage cluster sampling method was used to identify the participants. These were recruited from the Gokwe North District, the same geographical area where the focus group discussions and interviews were conducted. Data was collected from 331 respondents (136 men and 195 women). Previous studies suggested that 150 (Pallant 2010) and 300 (Tabachnick and Fidell 2007) cases were sufficient for exploratory factor analysis. Since the items were referring to male partners' involvement in PMTCT, female participants responded to the questions on behalf of their spouses' involvement. Participants had to have had a child in the past ten years at the time of data collection and had to have resided in the area for a minimum period of one year. A total of 195 (59%) participants were females. Most of the participants were married (88%). Most of them were 36-45 years old. A large proportion had attended school (95%), farming was the most common livelihood (56%) and most of the respondents belonged to Christian denominations, of which 32% were Catholics.

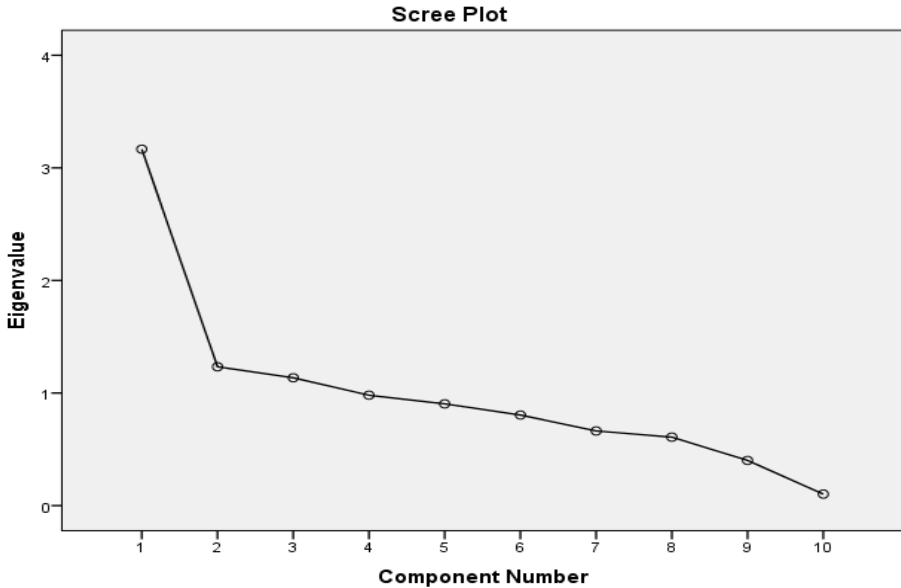
## **Results**

The ten items were subjected to a factor analysis and other forms of extraction that are the Scree Plot, Parallel Analysis and Kaiser's Criterion to confirm the index that was developed to measure male partner involvement in PMTCT activities. In order to assess the strength of the relationship between the variables (Francis 2014), the Bartlett's test of sphericity was used (Chibango 2018), which resulted in a significant outcome ( $p < 0.001$ ).

The study used a mix of an array of different factor extraction criteria to identify the factors which were to be retained in the index. The first to be used was the Kaiser's criterion, in which only factors that had an eigenvalue of 1.0 or more were retained for further analysis (Pallant 2010). Three factors were extracted with eigenvalues ranging from 3.17 to 1.14, accounting for 55.5% of variance. However, the other six items had eigenvalues which ranged from 0.981 to 0.103. Based on Kaiser's criterion principle, these factors are not fit to be included for further analysis. Nonetheless, the Kaiser's criterion has been met with criticism on the grounds of over extraction of components (Pallant 2010), thereby running a risk of excluding factors that are otherwise fit to be considered for inclusion. Other methods such as the Scree test were used for the purpose of verification (Chibango 2018). An examination of the scree plot suggests that only two components, those that are located above the first break can be retained for an additional analysis. Figure 1 shows the results from the Scree Plot analysis.



Figure 1: The Scree Plot



Source: Chibango (2018)

The Scree Plot does bear some weaknesses which reduce its suitability for independently relying on it. One of the problems associated with the Scree Plot is that there can be multiple breaks on the line, which makes it difficult to make decision on whether or not to rely on the successive breaks or not. In order to offset the shortcomings of the Scree Plot, parallel analysis was conducted.

In order to offset the limitations of the previous tests, the Horn (1965) parallel analysis was used in addition. The parallel analysis compared the size of the eigenvalues obtained from the principal component analysis against the ones obtained from the data set that was generated arbitrarily (Pallant 2010). The eigenvalues whose values were greater than those attained from the data set that was randomly generated were then kept for an additional examination. Results generated from the Monte-Carlo Principal Component Analysis show that the eigenvalues of only three components from the actual eigenvalues (PCA) were greater than 1, when matched with the criterion value from the parallel analysis (Pallant 2010). The components within the actual eigenvalues from the PCA that were retained range from 1.36 to 3.166. Based on this analysis, the first three components were retained and seven were rejected. The results concur with Kaiser's criterion displayed in the Scree Plot in Figure 1 which

retained three components only. Judging from these two methods, it can be confirmed that the first three components are eligible to be included in the index.

Results from the commonalities output indicated that out of the ten components, only three had values that were less than 0.3, hence these items did not fit perfectly with the rest. However, excluding the items with low commonalities enabled the rise in the output of the total variance explained (Pallant 2010). Table 1 is a representation of results from the commonalities

**Table 1 Representation of Commonalities**

Item		Initial	Extraction
1	Man had discussed HIV testing with his partner	1.000	0.497
2	Man was tested for HIV during the most recent pregnancy	1.000	0.703
3	Man had disclosed status to partner	1.000	0.546
4	Man accompanied his partner to ANC	1.000	0.831
5	Man was counselled on preventing baby from contracting HIV	1.000	0.301
6	Man was counselled on infant feeding	1.000	0.858
7	Man had accompanied partner for polymerase chain reaction test	1.000	0.329
8	Man had discussed reproductive desire with his partner	1.000	0.130
9	Man was present at birth	1.000	0.061
10	Man had received counselling after birth of child	1.000	0.159
<i>Extraction Method: Principal Component Analysis.</i>			

**Source:** Chibango (2018)

In the commonalities table, the variance of each item is explained. Accordingly, there are three items (8, 9, and 10) with values lower than 0.3. Following Pallant’s idea, only seven items were finally considered for the index.

**Construct validity**

A recent study was conducted to construct an index for male partner involvement in PMTCT in Kenya (Hampanda *et al.* 2020). Their study found that women in better functioning relationships, which was measured through positive interactions and relationship satisfaction, scored higher on the overall male partner involvement scale and subscales (Hampanda *et al.* 2020).

A reliability test was conducted using Cronbach’s Alpha Test to assess the internal consistency of the index. An index was developed on male partners’ active participation in PMTCT and had a Cronbach Alpha coefficient of 0.70 (Hampanda *et al.* 2020). The Cronbach Alpha coefficient of this study was 0.76. Table 2 is a representation of the reliability test.

**Table 2: Representation of Reliability Test (SPSS Output)**

Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Man had discussed about HIV testing with partner	7.34	1.533	0.357	0.228	0.578
Man had disclosed status to partner	7.36	1.533	0.436	0.315	0.564
Man was counselled on infant feeding	7.36	1.479	0.551	0.810	0.539
Man was counselled on preventing baby from HIV	7.28	1.457	0.334	0.180	0.581
Man went to ANC with partner	7.37	1.524	0.502	0.795	0.554
Man went for polymerase chain reaction test with partner	6.51	1.232	0.154	0.030	0.747
Man was tested for HIV during the most recent pregnancy	7.31	1.396	0.484	0.394	0.536

Source: Chibango (2018)

The Cronbach's Alpha of 0.74 was the most suitable output as it used the covariances from the seven items whereas the Cronbach's Alpha based on standardised items utilised correlations among the items. However, the standardised Alpha assumed that all the seven items had equivalent variances, which may not have been the same in practice. Also, an inter-item correlation was used so as to evaluate the value of the Alpha if the remaining items were removed.

## **Discussion**

This study reports the first attempt to develop an index for measuring male partner involvement in PMTCT in Zimbabwe. The index assesses a range of male partner involvement aspects using different indicators which captures activities done during the antenatal to the postnatal period. The items of the index were generated from the focus group discussions and interviews that were previously conducted in the Gokwe North District. The population that took part in the study was a homogenous group, the Shona.

The male partner involvement index is relatively short, which makes it usable for clinical or community-based studies. It covers crucial aspects for HIV prevention which can be achieved through the active involvement of male partners that are highlighted by previous studies (Byamugisha *et al.* 2010; Byamugisha *et al.* 2011; Ditekemena *et al.* 2011). Similar results can be found in other indexes developed previously which used items that show male partner involvement in its active nature (Aluisio *et al.* 2011; Mangeni *et al.* 2014; Ampt *et al.* 2015; Sahu *et al.* 2016). However, Hampanda *et al.* (2020) differ slightly in that they identified two forms of involvement that are either in the form of reminders or encouragement and active participation. The implications of active involvement are that male partners get to familiarise themselves with the processes and directly partake in PMTCT activities.

One unique characteristic of the male involvement index is its comprehensiveness in the nature of the roles that male partners take in PMTCT. In terms of roles, the index presents male partners as clients (testing for HIV, receiving counselling on PMTCT as well as on infant feeding practices). Secondly, they play an instrumental role in accompanying their partner to receive health services. Finally, they become agents of change through inter-spousal communication. In most indexes that we have examined, male partners play the instrumental role of

providing support to facilitate the uptake of services by women (Montgomery, van der Straten and Torjesen 2011a; Ampt *et al.* 2015).

Other than the uniqueness in the nature of the diverse roles or activities for the male partners, the index is not very different from some of the other indexes that have been developed in other contexts that attempt to capture items of involvement at different levels, that being during the pregnancy to postnatal period. These include studies conducted by (Iliyasu *et al.* 2010); Ampt *et al.* (2015) and Hampanda *et al.* (2020). However, none of the indexes were developed in the Zimbabwean context. In the context of HIV, this research is among the few studies whose index includes male partner participation at health care settings after the birth of the child for further HIV diagnosis of the baby as well as infant feeding support. Therefore, this study will be useful in the Zimbabwean cultural setting where infant feeding practices are traditionally seen as women's work. The findings of this study support the GAD Theory and Social Determinants of Health Framework which aim to promote gender equality and shared responsibility in raising children (Marmot *et al.* 2008; WHO 2009). The index thus demonstrates that there is an increase in male partners positively responding to the demands of the HIV pandemic, which calls for more paternal support in preventing pediatric transmission of HIV.

Although this study plays a significant role in developing the Zimbabwean male involvement index, it falls short due to its inability to capture the perspectives of couples living with HIV. The study was conducted among men and women of child-bearing age and who had had a child in the past ten years at the time of the study, who might not have had HIV/AIDS. However, this study serves as a starting point and will provide the basic information that is needed to measure MPI in the country.

## **Conclusion**

This index is the first to measure male partner involvement in PMTCT of HIV in Zimbabwe.

Prevention and elimination of mother-to-child transmission of HIV in Zimbabwe and other countries heavily burdened with HIV is important. The development of this index renders an invaluable instrument to measuring the level of male partner involvement in PMTCT initiatives. Some of the strengths that come with this index are that it is short, hence can be user-friendly for clinical and community-based studies. In addition, the items of the index form a holistic and comprehensive tool which

covers activities from the prenatal to the postnatal phase, a feature that is not common in existing indexes. This ensures that male partners are not excluded in any critical period where mother-to-child transmission is likely to occur. It is the researchers' expectation that this tool will be useful for the Ministry of Health and other organisations which provide HIV prevention services in Zimbabwe in designing, implementing as well as monitoring and evaluation interventions for PMTCT of HIV. However, the index should be seen as a work in progress and the recently developed index in Kenya (Hampanda *et al.* 2020) has variables which are important in the further development of this Zimbabwean index. In addition, future studies can be conducted to generate subscales that can be used to evaluate different fields of MPI so as to improve the representativeness of this construct. The development of indexes to measure male partner involvement is an important step but no interventions should lose sight of the fact that equitable relations between men and women is crucial to ensuring that male partners are actively involved in PMTCT of HIV.

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