MEASURING GENDER DIFFERENTIALS THROUGH DOMINACE RATIOS: CASE OF HIV PREVALANCE AND RELATED KNOWLEDGE, ATTITUDES, AND BEHAVIOUR IN BOTSWANA AND LESOTHO

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Abstract

The HIV/AIDS epidemic has been and still is eroding the vital human resources component of the economy in countries like Lesotho and Botswana. This has led to governments and people in these countries to take stern and serious measures to control the spread and mitigate the impact of the epidemic. However, for the related MDGs targets to be attained, it is imperative that there exists equally in male and female populations a satisfactory level of knowledge, conducive attitudes, and appropriate behaviour in relation to the epidemic. In this paper, we apply our newly introduced concepts of dominance and dominance ratios to look into gender differentials in the prevalence of HIV/AIDS and related knowledge, attitudes, and behaviour in Lesotho and Botswana across both time and space; ultimately contributing to information on the existence or non-existence of gender dominance in relation to the epidemic in the two countries.

1. INTRODUCTION

The importance of human resources to social-economic development need not be overemphasised, while on the other hand the HIV/AIDS epidemic has been and still is eroding the vital human resources component of the economy in countries like Lesotho and Botswana. However, it is gratifying to note that governments and people in these countries – specifically in the mentioned two – have taken the reduction in the HIV infection and spread with the seriousness it deserves, with the MDGs targets as a background and a focus on knowledge of the epidemic and behavioural change in the communities concerned. That is to say, the two countries have been seriously putting up policies and structures in place to curb and reduce the infection, and alternatively slow down the spread of the epidemic. This is with emphasis on generation and dissemination of related information, with recognition that there is need for a satisfactory level of knowledge, conducive attitudes and behaviour change in the population. The efforts are cognitive with the recognition by WHO (1992:2) that there is no doubt that even without a vaccine or cure the spread of the epidemic can be slowed down through carefully mapped out strategies, and the observation by Ndongko (1996) for example that in the absence of a vaccine, treatment or cure, the preventive measures which have been identified are those which involve change in behaviour.

In Botswana, the first case of the HIV was identified in 1985 (Ministry of Health - Botswana, 1993). The initial reaction to the presence of HIV in the country by the government was the establishment of a National AIDS Control Programme (NACP) and a Short Term Plan – which was drawn to cover the periods 1987 to 1989. The main objective of the programmes was to monitor and control the spread of HIV. The Ministry of Health was given the sole responsibility of the initiative. However, there arose a realisation that HIV/AIDS was not only a medical problem but it had far reaching socio-economic consequences (WHO, 1993), and the multi-sectoral concern led to the introduction and implementation of the First

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Medium Term Plan (MTP I) for the period 1989 to 1993. The MTP I placed the response to the epidemic with the health sector in general, with the emphasis on prevention of the spread of HIV/AIDS. The main focus was screening of blood and all blood products and ensuring of the supply and use of disposable needles. A comprehensive National Policy on AIDS was established in 1993. The policy became the instrument through which the government articulated the HIV priorities. It also provided a base for the Second Medium Term Plan (MTP II) for AIDS Control in Botswana, which became more multi-sectoral with the emphasis that HIV/AIDS epidemic has to be a responsibility of all sectors. The implementation, monitoring, and evaluation of HIV/AIDS related programmes at national level is now primarily a responsibility of the National AIDS Coordinating Agency (NACA), which is answerable to the National AIDS Council – the highest advisory body to government chaired by the President of the Republic of Botswana.

As for the Kingdom of Lesotho, the first case was identified in 1986 **(**UNICEF, 1994:204), but due to resource constraints a well defined National Policy on HIV/AIDS Prevention, Control and Management was only put up in the year 2000; and at that time HIV/AIDS had already been declared a national disaster in Lesotho (Kimaryo et alas, 2004:68). The policy formed a basis on which a National AIDS Strategic Plan was developed to cover the period 2002 to 2005, the implementation of which was to be overseen by the then established Lesotho AIDS Programmes Control Authority (LAPCA). According to UN-Lesotho (2004:19) by 2004 the government had already put in place efforts and mechanisms to create an environment that would be conducive to the prevention of the spread of HIV/AIDS and ways to deal with the adverse impact on the infected and affected individuals and their families. However, it was later realised that LAPCA could not fulfil its role of coordinating the national response, and as such in 2003 a multisectoral based National AIDS Commission (NAC) was formed, with LAPDCA initially serving as its executive arm and secretariat. The NAC is now a fully fledged parastatal organisation at the highest policy level, which is inter alia entrusted with initiating and harmonising activities for an effective national response on HIV/AIDS, coordination of research activities, advising on resource allocation, providing information and technical advice, and facilitation of inter-sectoral corroboration. A Chief Executive Officer, reporting to a multisectral-based Board of Directors, heads the organisation; and the Board in turn report to the Prime Minister of the Kingdom of Lesotho.

In relation to the generation of information related to the epidemic, and in collaboration with UNAIDS and other international organisations, both countries have continuously made considerable endeavours through surveys tailored to include data/information on HIV/AIDS. In Botswana the main examples of the efforts are the Family Health Survey II in 1998 - which had a fully-fledged section on HIV/AIDS, the Botswana AIDS Impact Survey I (BAIS I) in 2001 and Botswana AIDS Impact Survey II (BAIS II) in 2004. And, in Lesotho the main examples are the 2004 Demographic and Health Survey (DHS) and the on going 2007 DHS. For both countries there is a well-established data collection system for the Second Generation HIV/AIDS Sentinel Surveillance.

However, although the policies and structures in the two countries are currently gender neutral, the generation of data/information to support the implementation, monitoring and evaluation of the associated programmes in both countries had initially been gender biased towards women. For example, in both countries until recently the sentinel surveillance on HIV/AIDS had been centred on women attending antenatal clinics for the first time with the current pregnancy. The justification for focusing on women arises from the notion - also recognised by WHO and UNAIDS (2000) - that the rate of HIV infection in pregnant woman

has been shown to be a reasonable proxy for the level in the combined male and females. The gender imbalance on HIV/AIDS issues is also echoed by UNAIDS (2002:11) on Guideline 8 on HIV/AIDS and human rights, which single out women as one of the vulnerable groups. In Botswana for instance most surveys incorporating reproductive health such as the Botswana Family Health Surveys and Botswana AIDS Impact Survey series tend to focus on women and their sexual history; an observation emphasised by Doehlie and Maswabi (1998) who hold that while men are often assumed to be responsible for the dramatic spread of HIV/AIDS in Botswana, very little has been done to research male sexuality. Also, Maundeni (2004) noted that the scant literature on males and HIV/AIDS lead to the emphasis that in order for HIV strategies to have greater impact, there is need for both research and programs that target males. Further, although there are a number of studies in the two countries on gender and HIV/AIDS, the main focus by scholars in most of these studies have been on females and on the factors responsible for their vulnerability to HIV infection; and very few of the studies have a focus on males. This scenario of gender-imbalanced data/information could lead in turn to policy decisions tending to be either gender biased towards women or strategically gender neutral.

On the other hand, as indicated from several sources – for example in NACA -Botswana (2003) and UNAIDS (2000:6), the major form or source of transmission of the HIV virus is from unprotected heterosexual behaviour; and as WHO (1994:21) observes in some communities in Africa the transmission mostly arises from men who have sex with casual partners and then pass the virus on to their wives. Further, for the MDG's goals related to HIV/AIDS to be effectively attained the required satisfactory level of knowledge, conducive attitudes, and appropriate behaviour of people in the population in relation to the epidemic has to prevail equally in females as in males. Then, it becomes imperative that the efforts to reduce the infection and spread of HIV/AIDS be gender balanced in terms of both male and female populations being targeted not only in setting related policies and structures, but also and importantly so in the generation of data and information for implementing, monitoring and evaluation of the respective programmes.

The concepts of social dominance and differentials together with the respective measurement frameworks are currently based on the theory in Sidanius and Pratto (1999) which focuses on social hierarchy and dynamics of groups (for example dominance of male population over female population). In this regard, the identity of an individual in a group is mirrored in terms of the characteristics of the group. That is to say, the characteristics and behaviour of a member in a given group are constructed and accepted in terms of and in relation to the characteristics of the group to which he/she belongs; leaving the members of a group individually not holding themselves – and generally not being held – accountable and/or responsible for their actions and behaviour in relation to the characteristics of the group. For example if it is an accepted construct that 'a man has to cheat on his wife on Christmas day', then a man who cheats on his wife on a Christmas day is conforming to what is expected of him as member of the male population; and cannot as an individual be held responsible for his actions.

In relation to HIV/AIDS, it is imperative that the attributes of individuals in the community have a bearing on the fight against the spread of the epidemic. And, as such for effective and time efficient curbing of the spread of HIV/AIDS, it becomes necessary that the focus be on the characteristics of an individual; whereby each member of any social grouping ought to take himself/herself responsible – and generally be individually held responsible - for shaping of his/her characteristics and behaviour. And, the identity of a group should be mirrored as

and in terms of the union of identities of the individual members of the group. Consequently, the concepts of dominance – and specifically gender dominance – and differentials together with the respective measurement frameworks as currently constructed do not effectively and adequately contribute to the curbing of the spread of HIV/AIDS; and they need a re-visit.

In this paper, we introduce a re-construct of the concept of gender dominance, whereby the concept is centred on the characteristics of an individual rather than the characteristics of the female or male population. As such it is taken that the identity of each group in relation to the characteristics becomes a mirror of the totality of the identities of the individuals in that group. We aim in the paper to contribute to information on the existence or non-existence of gender dominance, in terms of the new definition and in relation to prevalence of HIV/AIDS and related knowledge, attitudes, and behaviour across population groups and areas for various characteristics in the Republic of Botswana and the Kingdom of Lesotho.

2. GENDER DOMINANCE AND GENDER DOMINANCE RATIOS

The gender dominance and its measurement through our newly introduced dominance ratios are defined in terms of the likelihood of an individual in a group having a given characteristics. That is to say:

(1) For a given point in time or space: The dominance of the male population over the female population in relation to a given characteristic is defined as the property that at the point in time or space a male with given attributes is more likely to have the given characteristic than a female with the same attributes.

(2) For a given set of points in time or space: The dominance of the male population over the female population in relation to a given characteristic is defined as the property that consistently across the points in time or space a male with given attributes is more likely to have the given characteristic than a female with the same attributes.

The point in time could be either a moment in time or a period of time; and, the consistence across points in time or space is arrived at through considering existence of the gender dominance at the respective individual points.

The gender dominance ratio concept is fundamentally an application of statistical odds ratios to the dominance concept as defined above. That is to say, for a given characteristic being measured, let M_h be the number of males in the population having the characteristic and M_n be the number of males in the population not having the characteristic, and let F_h be the number of females in the population having the characteristic and F_n be the number of females in the population not having the characteristic. Then, the *gender dominance ratio of males over females* in relation to the characteristic at either a point in space or a point time is defined as:

$$\text{GDR(m/f)} = \frac{F_n M_h}{F_h M_n}$$

And, we observe the following: when GDR(m/f)>1, then a male with given attributes is more likely to have the characteristic than a female with the same attributes – by the new definition there is dominance of males over females; when GDR(m/f)<1, then a male with given attributes is less likely to have the characteristic than a female with the same attributes – in this respect there is dominance of females over males; and when GDR(m/f)=1, then there is neither dominance of males over females nor dominance of females over males – as from the new definition of gender dominance.

When data is obtained on a sample of a given size, let m_h be the number of males in the sample having the characteristic and m_n be the number of males in the sample not having the characteristic; and, let f_h be the number of females in the sample having the characteristic and f_n be the number of females in the population not having the characteristic. Then, as shown by Edwards (1963), the best estimator for GDR(m/f) is obtained as follows:

$$\text{gdr(m/f)} = \frac{f_n m_h}{f_h m_n}$$

We note that gdr(m/f) is not an unbiased estimator of GDR(m/f). However, let L and σ_L^2 be given as below:

$$L=\log_e \text{gdr(m/f)}=\log_e m_h-\log_e m_n-\log_e f_h+\log_e f_n$$

$$\sigma_L^2 = \frac{1}{m_h}+\frac{1}{m_n}+\frac{1}{f_h}+\frac{1}{f_n}$$

As from Agresti (2002:71), we have L following asymptotically $Norm(0, \sigma_L^2)$, and as such we have the following:

$$E(L)=E(\log_e \text{gdr(m/f)})=0 \Rightarrow \log_e E(\text{gdr(m/f)})=0 \Rightarrow E(\text{gdr(m/f)})=1$$

In other words, when there is neither dominance of males over females nor dominance of females over males– that is to say GDR(m/f)=1, E(gdr(m/f)) in relation to the sample size is asymptotically equal to the value of the population dominance ratio, GDR(m/f).

We have L following $Norm(0, \sigma_L^2)$ implies $Z=\frac{L}{\sigma_L}$ *follows* $Norm(0,1)$. And, let $z_\gamma > 0$ be such that $P(-z_\gamma \le Z \le z_\gamma) = \gamma$. Then, we have the following:

$$P(-z_\gamma \le \frac{\log_e gdr(m/f)}{\sigma_L} \le z_\gamma) = \gamma \Rightarrow P(-z_\gamma \sigma_L \le \log_e gdr(m/f) \le z_\gamma \sigma_L) = \gamma$$

As such, we can say with a $(\gamma x 100)\%$ likelihood of being right that the limits in which the sample dominance ratio gdr(m/f) is bound to fall are given as below:

$$e^{-z_\gamma \sigma_L} \le gdr(m/f) \le e^{z_\gamma \sigma_L}$$

Therefore, when the point estimate for the population dominance ratio GDR(m/f) is obtained as a value of gdr(m/f) from the sample results, we would reject the hypothesis that GDR(m/f)=1 at $((1-\gamma)x100)\%$ level of significance when the value of gdr(m/f) falls outside the interval $[e^{-z_\gamma \sigma_L}, e^{z_\gamma \sigma_L}]$; and as such conclude that either dominance of males over females exit in case the value of gdr(m/f) is greater than 1 or dominance of females over males exit in case the value of gdr(m/f) is less than 1.

3. METHODOLOGY

The study is based on secondary data from the Botswana AIDS Impact Survey II (BAIS II) as contained in CSO[Botswana] (2005) for the data in Botswana, and from Lesotho Demographic and Health Survey (DHS) as contained in MHOSW[Lesotho] et alas (2005) for the data in Lesotho. However, although for Botswana attempt is made to follow the DHS format, in some cases data/information are not disaggregated enough to allow the gender dominance to be established; in which instances the analysis was considered only for Lesotho.

The analysis is divided into four discussion domains, namely**:** HIV/AIDS prevalence (prevalence domain), HIV/AIDS related knowledge (knowledge domain), HIV/AIDS related attitudes (attitudes domain), and HIV/AIDS related behaviour (behaviour domain). The analysis in all the four domains is based on the information as arrived at and presented in the report in each of the two surveys. The analysis itself is through the gender dominance ratios as defined above. We note that for all the four discussion domains in both surveys the sample size was large enough, and as such the asymptotic property requirement for inference is taken to hold; otherwise, for small samples more complex techniques like in Agresti and Min (2001) would have been used in the inferences.

The secondary data in this case was available with either prevalence rates or ratios - for other discussion domains - already determined in terms of percentages. As such, calculations for determination of dominance ratios were adjusted for use of the percentages. That is to say, let A_f be the percentage of females in the population having the given characteristics and A_m be the percentage of males in the population having the given characteristics. Then, from the definition we have the population gender dominance ratio of males over females obtained as follows:

$$\text{GDR(m/f)} = \frac{(100 - A_f)A_m}{(100 - A_m)A_f}$$

And, let α_f be the percentage of females in the sample having the given characteristic and α_m be the percentage of males in the sample having the given characteristic. Then, we have the sample gender dominance ratio of males over females obtained as follows:

$$\text{gdr(m/f)} = \frac{(100 - \alpha_f)\alpha_m}{(100 - \alpha_m)\alpha_f}$$

Also, let N_m be the number of males and N_f be the number of females in the sample. Then, since $m_h = \frac{N_m \alpha_m}{100}$, $m_n = \frac{N_m(100 - \alpha_m)}{100}$, $f_h = \frac{N_f \alpha_f}{100}$ and $f_n = \frac{N_f(100 - \alpha_f)}{100}$, we have the variance of gdr(m/f) obtained as follows:

$$\sigma_L^2 = \frac{10000}{N_m \alpha_m (100 - \alpha_m)} + \frac{10000}{N_f \alpha_f (100 - \alpha_f)}$$

Further, let n_m be the number of males in the sample with the given characteristic and n_f be the number of females in the sample with the given characteristic. Then, since $N_h = \frac{100 n_m}{\alpha_m}$ and $N_f = \frac{100 n_f}{\alpha_f}$, we have the variance of gdr(m/f) also give by the following:

$$\sigma_L^2 = \frac{100}{n_m (100 - \alpha_m)} + \frac{100}{n_f (100 - \alpha_f)}$$

4. RESULTS ON HIV PREVALANCE

The gender dominance in the prevalence domain was first looked into in relation to the country as a whole and an individual being either rural-area based or urban-area based. The results are as in Table 4.1 below. The results from both countries indicate that there exists statistically significant dominance of females over males; irrespective of whether the whole population is considered or the population is categorised into rural and urban populations. That is to say, in general a female individual is more likely to be found HIV positive than a male counterpart; irrespective of whether the individual in question resides in the rural area or urban area, and irrespective of whether the individual resides in Lesotho or Botswana.

Table 4.1: HIV Prevalence and Gender Dominance in Botswana and Lesotho by Rural/Urban Categorisation

Country	Area	Prevalence Rate (Female)	Prevalence Rate (Male)	gdr(m/f)	Dominance	Significance (at 5% level)
BOTSWANA	Overall	19.8	13.9	0.6003	Female	Significant
	Rural	18.5	12.3	0.6179	Female	Significant
	Urban	21.0	15.4	0.6848	Female	Significant
LESOTHO	Overall	26.4	19.3	0.6667	Female	Significant
	Rural	24.3	18.6	0.7118	Female	Significant
	Urban	33.0	22.0	0.5726	Female	Significant

The second consideration of the gender dominance in the prevalence domain was in both countries by age groups for the ages between 15 to 45 years; the age groups we consider most social-economically active for both countries. The results, given in Table 4.2 below, indicate that in Botswana for the age groups in the ages between 15 to 39 years, there is a significant dominance of the female population over the male population; while for the age groups in the ages between 40 and 49 years there is a significant dominance of the male population over the female population. In other words, for all the age groups in the ages between 15 and 39 years a female resident of Botswana is more likely to be HIV positive than a counterpart male resident of Botswana; while in the age groups in the ages between 40 and 49 years a male resident of Botswana is more likely to be HIV positive than a counterpart female resident of Botswana.

In Lesotho the situation looks slightly different. There is a significant dominance of the female population over the male population for the age groups in the ages between 15 to 29 years; same as in Botswana. However, for the 30-34 years age group, there is dominance of the male population over the female population, but the dominance is not statistically significant; for the 35-39 years age group, there is dominance of the female population over the male population, but again not statistically significant; and for the 40-45 years age group, there is dominance of the male population over the female population, but also not statistically significant. And, for the 45-49 years age group, there is dominance of the male population over the female population, which in this case is statistically significant. This implies in Lesotho, for all the age groups in the ages between 15 and 29 years a female resident is more likely to be HIV positive than a counterpart male resident; while in the age group 45-49 years, a male resident is more likely to

be HIV positive than a counterpart female resident. And, for the age groups in ages between 30 to 44 years, a female resident of Lesotho is equally likely to be found HIV positive as a counterpart male resident of Lesotho.

Table 4.2: HIV Prevalence and Gender Dominance in Botswana and Lesotho by Age Group

BOTSWANA					
Age Group	Prevalence Rate		gdr(m/f)	Dominance	Significance (at 5% level)
	Female	Male			
15-19	9.8	3.1	0.2945	Female	Significant
20-24	26.2	9.1	0.2820	Female	Significant
25-29	41.0	22.9	0.4274	Female	Significant
30-34	43.7	36.2	0.7310	Female	Significant
35-39	37.8	33.3	0.8215	Female	Significant
40-44	28.1	33.6	1.2948	Male	Significant
45-49	27.9	31.7	1.1994	Male	Significant
LESOTHO					
Age Group	Prevalence Rate		gdr(m/f)	Dominance	Significance (at 5% level)
	Female	Male			
15-19	7.9	2.3	0.2745	Female	Significant
20-24	24.5	11.4	0.3965	Female	Significant
25-29	39.2	24.3	0.4979	Female	Significant
30-34	40.3	41.3	1.0423	Male	Not Significant
35-39	43.3	38.7	0.8267	Female	Not Significant
40-44	28.5	33.9	1.2866	Male	Not Significant
45-49	16.8	27.8	1.9069	Male	Significant

The other considerations in the prevalence discussion domain were marital status, level of education, relative wealth status, work status, and first-sex-encounter age. The data from the survey in Botswana in this regard was gender insensitive in the sense that they were not classified by gender. Thus no analysis was carried out for Botswana in this regard. The results for Lesotho, given in Table 4.3 below, indicate that irrespective of the level of education there is dominance of the female population over the male population. However, for those without education, the dominance is not statistically significant. In other words, a female resident of Lesotho with no education is equally likely to be found HIV positive as a counterpart male resident. And, a female resident of Lesotho with some education is more likely to be found HIV positive than a male resident with education.

In relation to marital status the results indicate that there is statistically significant dominance of male population over female population for individuals either in marriage or in some union,

while there is statistically significant dominance of female population over male population for unmarried individuals. That is to say, a male resident of Lesotho who is either married or in some union is more likely to be HIV positive than a counterpart female resident; while, a female resident of Lesotho who is either not married or never in union is more likely to be HIV positive than a counterpart male resident.

Table 4.3: HIV Prevalence and Gender Dominance in Lesotho by Social-economic Status and First-sex-encounter Age

Consideration	Prevalence Rate		gdr(m/f)	Dominance	Significance (at 5%)
	Female	Male			
Education level					
No Education	30.4	26.8	0.8382	Female	Not Significant
Primary (uncompleted)	26.0	16.7	0.5706	Female	Significant
Primary (completed)	27.1	18.3	0.6025	Female	Significant
Secondary and above	26.0	19.5	0.6894	Female	Significant
Marital Status					
Married/ In union	26.9	32.9	1.3324	Male	Significant
Widowed	47.3	38.3	0.6916	Female	Significant
Divorced/ Separated	55.6	36.1	0.4457	Female	Significant
Never in union	14.9	8.7	0.5442	Female	Significant
Wealth quintile					
Lowest	19.6	18.3	0.9188	Female	Not Significant
Second	27.9	16.8	0.5218	Female	Significant
Middle	25.5	23.7	0.9075	Female	Not Significant
Fourth	27.3	21.6	0.7337	Female	Significant
Highest	28.9	14.8	0.4274	Female	Significant
Work Status					
Working	32.8	25.6	0.7050	Female	Significant
Not Working	22.5	16.5	0.6708	Female	Significant
Age at first sex					
Below 15	25.4	8.1	0.2589	Female	Significant
15-17	29.6	18.7	0.5471	Female	Significant
18-19	30.8	30.5	0.9860	Female	Not Significant
20 and above	32.2	27.5	0.7632	Female	Significant

In relation to length of time of sexual experience – reflected through age at first-sex-encounter of an individual - the results indicate that dominance of female population over the male population

in HIV prevalence, although for the 18-19 years group the dominance is not statistically significant. In other words, a female resident of Lesotho who had first sex encounter at an age between 18 to 19 years of age is equally likely to be HIV positive as a male resident with the same sexual experience. And, a female resident of Lesotho who had first sex encounter at an age either below 18 or above 20 years is more likely to be HIV positive than a male resident with the same sexual experience.

5. RESULTS ON KNOWLEDGE, ATTITUDES AND BEHAVIOUR

The knowledge discussion domain was looked into in both countries in terms of the considerations below; which involved ages 10 to 64 for both the males and females populations in Botswana, and ages 15 to 49 for the female population and ages 15 to 59 for male population in Lesotho:

(a) General Awareness, which involved asking whether an individual had heard of HIV/AIDS – abbreviated KGENAWARE

(b) Knowledge of Main Prevention Methods, which entails knowledge of reducing the risk of getting HIV through the following: using a condom every time one has sexual intercourse – KPREVMET1; having sex with only one partner who is not infected and who has no other partners – KPREVMET2; abstaining from sexual intercourse – KPREVMET3.

(c) Knowledge on the main misconception on HIV/AIDS, which entails knowledge of the following: a healthy looking person can have HIV – KMAINMIS1; HIV/AIDS cannot be transmitted through mosquito bites – KMAINMIS2; HIV/AIDS cannot be transmitted by supernatural means – KMAINMIS3; one cannot be infected with HIV/AIDS by sharing food or utensils with a person with HIV/AIDS – KMAINMIS4; HIV/AIDS cannot be transmitted by kissing someone – KMAINMIS5.

(d) Knowledge on Mother-to-Child (MTC) Transmission, which entails knowledge of the following: HIV can be transmitted from mother to child through breastfeeding – KMTCTRAN1; risk of MTC transmission can be reduced by mother taking special drugs during pregnancy – KMTCTRAN2.

(e) Comprehensive Knowledge, abbreviated as KCOMPREHE. This is defined only for Lesotho and entails one having KPREVMET1, KPREVMET2 and KMAINMIS1, and rejecting the two main misconceptions on HIV/AINDS in Lesotho – 'HIV/AIDS can be transmitted through mosquito bites' and 'one can be infected with HIV/AIDS by sharing food or utensils with a person with HIV/AIDS'.

The results on the knowledge discussion domain for Botswana are given in Table 4.4 below and for Lesotho in Table 4.5. The result indicates that in both countries a female resident of the respective country is equally likely to have heard about HIV/AIDS as a respective counterpart male resident. Also, a female resident of Botswana is equally likely to know that abstaining from sex reduces the risk of infection as a male resident of Botswana. Otherwise, in both countries a female resident of each of the country is more likely to be knowledgeable about HIV/AIDS issues than a counterpart male resident of the country.

The attitudes discussion domain was looked into in both countries in terms of the considerations below; which again involved ages 10 to 64 for both the males and females populations in Botswana, and ages 15 to 49 for the female population and ages 15 to 59 for male population in Lesotho:

Table 4.4: Knowledge on HIV/AIDS and Gender Dominance in Botswana

Consideration	Percentage (Female)	Percentage (Male)	gdr(m/f)	Dominance	Significance (at 5% level)
KGENWARE	92.7	92.6	0.9854	Female	Not Significant
KPREVMET1	73.2	72.0	0.9415	Female	Significant
KPREVMET2	20.9	21.1	1.0121	Male	Not Significant
KPREVMET3	52.1	49.0	0.8833	Female	Significant
KMAINMIS1	76.1	74.6	0.9224	Female	Significant
KMAINMIS2	49.6	49.4	0.9920	Female	Significant
KMAINMIS3	69.5	69.0	0.9768	Female	Significant
KMTCTRAN1	58.6	46.2	0.6067	Female	Significant
KMTCTRAN2	65.0	50.4	0.5471	Female	Significant

Table 4.5: Knowledge on HIV/AIDS and Gender Dominance in Lesotho

Consideration	Percentage (Female)	Percentage (Male)	gdr(m/f)	Dominance	Significance (at 5% level)
KGENWARE	93.6	93.1	0.9226	Female	Not Significant
KPREVMET1	77.5	69.4	0.6584	Female	Significant
KPREVMET2	82.4	75.2	0.6477	Female	Significant
KPREVMET3	78.0	75.0	0.8462	Female	Significant
KMAINMIS1	75.3	69.3	0.7405	Female	Significant
KMAINMIS2	43.5	41.2	0.9101	Female	Significant
KMAINMIS3	79.6	74.2	0.7371	Female	Significant
KMAINMIS4	58.0	46.8	0.6370	Female	Significant
KMAINMIS5	58.6	51.5	0.7502	Female	Significant
KMTCTRAN1	74.3	66.8	0.6960	Female	Significant
KMTCTRAN2	49.9	38.7	0.6339	Female	Significant
KCOMPREHE	24.4	17.7	0.664	Female	Significant

(a) Attitudes related to stigma towards HIV/AIDS-infected people, which entails the following: willingness to care for a family member with HIV/AIDS – abbreviated as ATSTIGMA1; acceptance to buy food from a shopkeeper who has HIV/AIDS – ATSTIGMA2; acceptance of a teacher infected with HIV/AIDS to be allowed to teach – ATSTIGMA3; not wanting to keep secret the HIV/AIDS status of a family member – ATSTIGMA4; having all the four given attitude attributes (as an indication of positive attitude towards HIV/AIDS infected people) - ATPOSITIV.

(b) Attitudes towards safe sex, which entails believing that if a husband has sexually transmitted diseases the wife is justified in doing the following: refusing to have sexual relations – ATSAFESE1; asking that they use a condom – ATSAFESE2.

The data for Botswana on ATSAFESE1 and ATSAFESE2 were not available.

The results on the attitudes discussion domain are given in Table 4.6 below for Botswana and in Table 4.7 below for Lesotho. The results indicate that in both countries a female resident of the country is more likely to either be willing to care for a family member with HIV/AIDS or accept to buy food from a shopkeeper who has HIV/AIDS or accept a teacher infected with HIV/AIDS to be allowed to teach, than a counterpart male resident of the respective country. In Botswana, a male resident is more likely to keep secret the HIV/AIDS status of a family member than a counterpart female resident; while in Lesotho a female resident is equally likely to do the same as a counterpart male resident. In Botswana, although the absolute percentages is very low, a male resident is more likely to have generally a positive attitude towards HIV/AIDS infected people than a counterpart female resident; while in Lesotho a female resident is more likely to have the same than a male resident, although the absolute percentages are also relatively low. The results further indicate that in Lesotho a female resident is more likely to believe that if a husband has sexually transmitted diseases, the wife is justified in either refusing to have sexual relations or asking that they use a condom, than a counterpart male resident.

Table 4.6: HIV/AIDS-related Attitudes and Gender Dominance in Botswana

Consideration	Percentage (Female)	Percentage (Male)	gdr(m/f)	Dominance	Significance (at 5% level)
ATSTIGMA1	93.5	90.5	0.6623	Female	Significant
ATSTIGMA2	55.4	51.0	0.8379	Female	Significant
ATSTIGMA3	73.4	66.3	0.7130	Female	Significant
ATSTIGMA4	63.8	68.9	1.2570	Male	Significant
ATPOSITIV	3.9	5.9	1.5450	Male	Significant

The behaviour discussion domain attributes for Botswana were either not available or gender insensitive in the sense that no classification by gender was available, and as such in this regard only Lesotho was considered. The discussion domain itself was looked into again for ages 15 to 49 for the female population and ages 15 to 59 for male population, and it was in terms of the following considerations:

Table 4.7: HIV/AIDS-related Attitudes and Gender Dominance in Lesotho

Consideration	Percentage (Female)	Percentage (Male)	gdr(m/f)	Dominance	Significance (at 5% level)
ATSTIGMA1	87.3	80.0	0.5819	Female	Significant
ATSTIGMA2	48.0	44.6	0.8721	Female	Significant
ATSTIGMA3	55.3	46.0	0.6886	Female	Significant
ATSTIGMA4	63.7	65.3	1.0724	Male	Not Significant
ATPOSITIV	24.0	19.0	0.7428	Female	Significant
ATSAFESE1	81.9	71.6	0.5572	Female	Significant
ATSAFESE2	90.7	80.3	0.4180	Female	Significant

(a) Multiple Sexual Partners; whereby, for those who ever had sexual intercourse, the arithmetic mean representing the average number of sexual partners in one's life up to the time of the survey was 1.1 for women and 6.5 for men. The consideration itself was in terms of having two or more partners in the year period preceding the time of the survey. In this paper it entails the following classification: overall population - abbreviated BMPOVERAL; urban population – BMPURBANP; rural population – BMPRURALP; and by marital status as 'never married' – BMPNEVMAR, 'married/living together' – BMPMARRIE, 'divorced/widowed/separated' – BMPNLMARR.

(b) High-risk Intercourse, which is defined as a sexual intercourse with a partner who is neither a spouse nor a partner one lives with. The consideration itself was in terms of having a high-risk intercourse in the year period preceding the time of the survey. In this paper it entails the following classification: overall population - abbreviated BHROVERAL; urban population – BHRURBANP; rural population – BHRURALP; and by marital status as 'never married' – BHRNEVMAR, 'married/living together' – BHRPMARRIE, 'divorced/widowed/separated' – BHRNLMARR.

(c) Use of Condoms at High-risk Intercourse, which was in terms of having used a condom at the last high-risk intercourse prior the time of the survey. Also, in this paper it entails the following classification: overall population - abbreviated BCDOVERAL; urban population – BCDURBANP; rural population – BCDURALP; and by marital status as 'never married' – BCDNEVMAR, 'married/living together' – BCDMARRIE, 'divorced/widowed/separated' – BCDNLMARR.

As indicated earlier the results on the behaviour discussion domain are available for Lesotho only and they are given in Table 4.8 below. As from the results, a male resident of Lesotho, who had never married or never been in any union, is equally likely to engage in high-risk sexual intercourse as a counterpart female resident of Lesotho. Also, a male resident of Lesotho, irrespective of marital status, is equally likely to have used a condom in a high-risk sexual intercourse as a counterpart female resident. In relation to urban/rural classification, a male resident of Lesotho from the rural population is equally likely to have a condom used in a high-risk sexual intercourse as a counterpart female resident from the rural population. Apart from that the results indicate that irrespective of the classification, a male resident of

Lesotho is more likely to have multiple sexual partners and/or engage in high-risk sexual intercourse than a counterpart female resident.

Table 4.8: HIV/AIDS-related Behaviour and Gender Dominance in Lesotho

Consideration	Percentage (Female)	Percentage (Male)	gdr(m/f)	Dominance	Significance (at 5% level)
BMPOVERAL	11.0	28.6	3.2409	Male	Significant
BMPURBANP	9.9	35.6	5.0310	Male	Significant
BMPRURALP	11.4	26.4	2.7878	Male	Significant
BMPNEVMAR	11.6	37.5	4.5724	Male	Significant
BMPMARRIE	10.2	23.2	2.6595	Male	Significant
BMPNLMARR	14.8	24.8	1.8985	Male	Significant
BHROVERAL	35.6	63.1	3.0934	Male	Significant
BHRURBANP	43.9	58.5	1.8014	Male	Significant
BHRRURALP	33.1	60.0	3.0317	Male	Significant
BHRNEVMAR	96.6	97.9	1.6408	Male	Not Significant
BHRMARRIE	12.3	30.3	3.0996	Male	Significant
BHRNLMARR	83.6	94.9	3.6503	Male	Significant
BCDOVERAL	41.9	48.6	1.3111	Male	Significant
BCDURBANP	64.0	70.1	1.3188	Male	Significant
BCDRURALP	32.8	38.0	1.2557	Male	Not Significant
BCDNEVMAR	57.5	54.1	0.8712	Female	Not Significant
BCDMARRIE	34.4	35.4	1.0450	Male	Not Significant
BCDNLMARR	25.9	26.0	1.0052	Male	Not Significant

It is recognised in various studies and forums that the Voluntary Counselling and Testing (VCT) has become an important medium for prevention of the spread of HIV/AIDS. As such, it is considered independently as a discussion sub-domain; noting that it actually intersects the three knowledge, attitudes and behaviour discussion domains. However, again the data for Botswana on the considerations selected in this regard are either not available or gender insensitive. As such, the discussion sub-domain is considered for Lesotho only in terms of the following in relation to the respondents in the survey:

(a) General acceptance or refusal to test, which involved a respondent generally either accepting to take the HIV test – abbreviated VCTAGENER or refusing to take the test - abbreviated VCTRGENER.

(b) Willingness to take the test, which involved a respondent, who had not taken the HIV test in the year period preceding the time of the survey, either accepting to take the HIV test – abbreviated VCTWILLIN or refusing to take the test - abbreviated VCTNOWILL.

(c) Acceptance or refusal to test with involvement in high-risk intercourse, which involved a respondent, after having a high-risk intercourse in the year period preceding the time of the survey, either accepting to take the HIV test – abbreviated VCTAAFHRS or refusing to take the test - abbreviated VCTRAFHRS.

(d) Acceptance or refusal to test with no involvement high-risk intercourse, which involved a respondent, after having no any high-risk intercourse in the year period preceding the time of the survey, either accepting to take the HIV test – abbreviated VCTANOHRS or refusing to take the test - abbreviated VCTRNOHRS.

(e) Acceptance or refusal to test with use of condoms, which involved a respondent, after having had used condoms at last high-risk intercourse preceding the time of the survey, either accepting to take the HIV test – abbreviated VCTAUCDHR or refusing to take the test - abbreviated VCTRUCDHR.

(f) Acceptance or refusal to test with no use of condoms, which involved a respondent, after having had used no condoms at last high-risk intercourse preceding the time of the survey, either accepting to take the HIV test – abbreviated VCTANCDHR or refusing to take the test - abbreviated VCTRNCDHR.

As indicated earlier again the results on the VCT discussion sub-domain are available for Lesotho only, and they are as given in Table 4.9 below. It is gratifying that for both the male population and female population, the acceptance rates to take the HIV test are relatively very high while the refusal rates to take the tests are relatively very low. Nonetheless, the results indicate that irrespective of whether a condom was used in the last high-risk sexual intercourse, a male resident of Lesotho is equally likely to accept to take the test – and equally likely to refuse to take the test - as a counterpart female resident. Also, a male resident of Lesotho, who had previously not taken the HIV test, is equally likely to accept taking the test as a counterpart female resident. Apart from that, irrespective of the considerations in the discussion sub-domain, a female resident of Lesotho is more likely to accept to take the HIV test than a counterpart male resident; while, irrespective of the considerations again, a male resident of Lesotho is more likely to refuse to take the HIV test than a counterpart female resident.

6. CONCLUSIONS

The paper generally revisited and redefined gender dominance, and introduced a statistically strong but simple measurement framework for gender dominance based on the new definition. Then, through the framework generated information on gender dominance in relation to HIV/AIDS prevalence and related knowledge, attitudes and behaviour in Botswana and Lesotho. It is important to note that at this juncture the study does not seek to establish the explanatory factors leading to the dominance.

In both countries, irrespective of whether a person resides in an urban or rural area, a female resident is more likely to be found HIV/positive than a counterpart male resident. Also, the dominance of males over females in relation to HIV/AIDS prevalence is irrespective of education level, wealth status and work status. It is of interest to note though that in Lesotho where the relevant data were available, a female resident who is not married is more likely to

be found HIV positive than counterpart male resident; while male resident who is married is more likely to be found HIV positive than counterpart female resident. Further, in both countries, a relatively younger female resident (less than 30 years of age) in social-economically age group is more likely to be found HIV positive than counterpart male resident; while an older male resident (more than 45 years of age) in social-economically age group is more likely to be found HIV positive than counterpart female resident.

Table 4.9: VCT and Gender Dominance in Lesotho

Consideration	Percentage (Female)	Percentage (Male)	gdr(m/f)	Dominance	Significance (at 5% level)
VCTAGENER	85.4	79.9	0.6796	Female	Significant
VCTRGENER	11.4	15.7	1.4474	Male	Significant
VCTWILLIN	49.2	48.7	0.9802	Female	Not Significant
VCTNOWILL	29.9	33.8	1.1970	Male	Significant
VCTAAFHRS	86.4	80.7	0.6582	Female	Significant
VCTRAFHRS	10.4	14.2	1.4259	Male	Significant
VCTANOHRS	85.6	78.2	0.6034	Female	Significant
VCTRNOHRS	11.3	17.2	1.7114	Male	Significant
VCTAUCDHR	81.8	77.4	0.7620	Female	Not Significant
VCTRUCDR	15.3	17.4	1.1662	Male	Not Significant
VCTANCDHR	89.4	83.3	0.5914	Female	Significant
VCTRNCDHR	7.3	11.7	1.6826	Male	Significant

As such, although in aggregate terms for both countries the female population tend to be a vulnerable group in relation to HIV/AIDS prevalence, when the focus is reverted to emphasise the impact of prevention programmes on individuals, the vulnerability consideration need to be balanced in relation to the female and male populations depending on the attributes of the population being considered. For example in gender terms, the results indicate that married men in Lesotho can be considered to be more vulnerable than unmarried men, while unmarried women can be considered to be more vulnerable than married women. Also, in Lesotho men in ages 30 to 44 years can be considered to be equally vulnerable as females in the age group when the new approach to gender dominance is invoked.

The results in both countries indicate that a female resident is more likely to have a satisfactory level of knowledge about HIV/AIDS than a counterpart male resident. This could be expected given the exposure to information women had been indirectly granted as a proxy group in measuring the HIV/AIDS prevalence. However, it is our opinion that then in relation to HIV infection and spread of the virus the male population ought to be considered as a vulnerable group of the population. This is further strengthened by two findings from the results, namely: first, in both countries there is dominance of females over males in relation

to having conducive attitudes for curbing the spread of the epidemic; second, in Lesotho where relevant data was available, a male resident is more likely to have multiple sexual partners, more likely to engage in high risk sexual intercourse, more likely not to use a condom where it is required, and more likely to refuse to take a HIV test, than counterpart female resident.

In general the findings lead to inter alia the following as HIV/AIDS issues are concerned: first, a change of emphasis from group characteristics to individual characteristics in relation to gender dominance – thus embracing the new dominance theory approach introduced; second, a re-visit on group vulnerability, whereby we propose an emphasis on lack of prescribed attributes to prevent the spread of the endemic rather than exposure to HIV infection; third there should be gender balance in the structures and implementation of programmes in response to the epidemic, and specifically as purposed by ongoing debate there should be more male involvement in sexual and reproductive health. This in turn calls for a change in approach in establishing, implementing, monitoring and evaluation of programmes on HIV/AIDS, to focus on the individual rather than groups of individuals. The change itself does not necessarily have to involve an uneconomic increase in associated resources. This is because the new dispensation would mainly involve change in the mind-set, philosophy, frameworks through which programmes can be set up and implemented, including how data is compiled and analysed and how the resulting information is disseminated.

Last but not least, inevitably time-efficient and effective generation and dissemination of appropriate information on HIV/AIDS issues is vital in curbing the spread of the endemic. Specifically, the data/information should be as gender sensitive as possible. This calls for a necessity to bear in mind the fundamental concepts like measurement, data, and variable as emphasised in Mutabihirwa (2003), which constitute a foundation in surveys, analysis of data, and dissemination of results.

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