



## Review

## HIV, poverty and women

Chaturaka Rodrigo<sup>a</sup>, Senaka Rajapakse<sup>b,\*</sup><sup>a</sup> University Medical Unit, National Hospital of Sri Lanka, Colombo, Sri Lanka<sup>b</sup> Department of Clinical Medicine, Faculty of Medicine, University of Colombo, 25 Kynsey Road, Colombo 8, Sri Lanka

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## ABSTRACT

This review examines the interactions of financial status and HIV and its implications for women. MEDLINE and Google scholar were searched using the keywords 'women', 'poverty' and 'HIV' in any field of the article. The search was limited to articles published in English over the last 10 years. The first section of the article tries to establish whether poverty or wealth is a risk factor for HIV. There is credible evidence for both arguments. While wealth shows an increased risk for both sexes, poverty places women at a special disadvantage. The second section explains how the financial status interacts with other 'non biological' factors to put women at increased risk. While discrimination based on these factors disadvantage women, there are some paradoxical observations that do not fit with the traditional line of explanation (e.g. paradoxical impact of wealth and education on HIV). The final section assesses the impact of HIV in driving poverty and the role of women in interventional programmes. The specific impact of poverty on females in families living with HIV is less explored. Though microfinance initiatives to empower women are a good idea in theory, the actual outcome of such a programme is less convincing.

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## 1. Introduction

Of the 33 million people currently living with HIV/AIDS (Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome), 50% are estimated to be women.<sup>1</sup> However in 1985, only 35% of the infected were women.<sup>2</sup> More women being infected via heterosexual intercourse have changed the face of the epidemic resulting in a 'feminization of HIV/AIDS'. The percentages of infected women vary in different regions but the numbers are increasing (60% in sub-Saharan Africa, 45–50% in the Caribbean, 30–40% in Asia and Latin America, 30% in Eastern Europe and Central Asia).<sup>1</sup> This changing face of the epidemic calls for a careful review of gender related differences of HIV.

Factors that can influence a woman's vulnerability to HIV and contribute to a worse outcome when living with

HIV, can be broadly categorized as biological and non biological. On the biological side, it is observed that HIV transmission from a man to a woman is easier than vice versa. Exposure of a larger area of vaginal epithelium during sex, transmission of a larger volume of genital fluids from male to female and a higher viral load in semen are cited as possible reasons for this discrepancy.<sup>3</sup> Female specific clinical manifestations such as gynaecological infections and precancerous lesions in the vagina and cervix place women at a biological disadvantage.<sup>4,5</sup> Pregnancy is another such disadvantage with several studies showing higher maternal mortality rates for HIV positive women due to direct and indirect obstetric causes.<sup>6–8</sup> Gender differences in efficacy, side effects, safety and metabolism of antiretroviral therapy is another area of interest. While there are no gender based guidelines on starting and continuing highly active antiretroviral therapy (HAART), there is increasing evidence that the side effect profile is different in females and males. Females are more vulnerable to lactic acidosis, lipodystrophy and disturbances in glucose metabolism.<sup>9–12</sup>

\* Corresponding author. Tel.: +94 777 579776; fax: +94 112 689188.  
E-mail address: [senaka.ucfm@gmail.com](mailto:senaka.ucfm@gmail.com) (S. Rajapakse).

The impact of biological factors can be considered as being 'universal' to all women, which is not the case with the non biological factors. Women in some societies are at a greater disadvantage compared to others due to extreme poverty, subservient gender norms limiting freedom, higher prevalence of violence and having fewer privileges regarding employment and education. Exploration of these non biological factors is a pressing need as these issues may be 'correctable' and 'preventable'. Quantifying the problem and focused interventions will help to control the spread of the disease and improve the quality of life of those affected. Due to the vast subject matter on the area, this review is restricted to exploring the links between poverty, women and HIV.

In four countries of the sub-Saharan region, adult HIV prevalence exceeds 20% (Zimbabwe, Botswana, Lesotho, Swaziland) and in several others it is over 10% (South Africa, Namibia, Zambia, Mozambique, Malawi).<sup>13</sup> Given the burden of disease on the developing world, it is reasonable to state that HIV is a disease of the poorer countries. However it is important to review and carefully dissect the dynamics of the relationship between poverty and HIV. With the feminization of the epidemic, the focus shifts to establish the inter-relations between women, HIV and poverty. The main topics or arguments explored in this review are:

1. Who are more at risk, wealthier women or poorer women?
2. How does poverty or wealth interact with other non biological factors to increase the risk for women?
3. The impact of HIV on poverty and the benefit of interventional programmes; the role of female empowerment

## 2. Methods

The electronic database, MEDLINE was searched using the software Endnote X1.01 (Thomson Reuters, Carlsbad, CA 92011, USA) to filter articles. The search was repeated in Google Scholar excluding the journals listed in MEDLINE. The key words 'women', 'poverty' and 'HIV' were used (in any field of the article) for the MEDLINE search and 'poverty' and 'HIV' in the title of the article in Google Scholar. The search was limited to articles published in English over the last 10 years (1999–2009) and retrieved 734 records in the initial search. Bibliographies of cited literature were also searched and relevant publications and epidemiological data were downloaded from websites of international agencies such as World Bank, United Nations Joint Programme on HIV/AIDS (UNAIDS) and World Health Organization (WHO). All abstracts were read independently by the two authors, and relevant papers were identified for review of the full papers.

Papers were included in the review based on originality, relevance, methodology, statistical analysis and availability of the full paper. Attempts were made to contact authors and get the papers when they were not available by standard means. Ninety-eight sources from a selected 115 (85.2%) were included in the final synthesis. Coding was done by two reviewers independently blinded to each other. Data sources included reviews published in core clinical journals, cohort studies, qualitative

studies, interventional studies, case control studies, cross sectional analysis and epidemiological data. The inter-reviewer agreement for data included in the final synthesis was 100%.

## 3. Who are more at risk, wealthier women or poorer women?

It is an undeniable fact that the majority of people living with HIV/AIDS (PLWHA) are in developing countries. Still, even in poorer countries, not everyone is poor. Two schools of thought are explored here regarding the link between financial status and HIV.<sup>14</sup>

### 3.1. Wealth predisposes to HIV

It is hypothesized that more money equates with more opportunities for paid sex, drug use, extramarital relationships, less rigid sexual norms and deviation from traditional values. At national level, a higher income and development may result in urban congestion, more migrant workers and more room for transactional sex

### 3.2. Poverty predisposes to HIV

Poverty increases risk behaviours to HIV such as transactional sex and substance abuse. Fewer opportunities for employment and education prevent empowerment of women. On a broader, national scale, lack of finances can restrict development, educational opportunities, access to health care and employment creating a favourable setting for HIV spread

Few studies favour the view that wealth rather than poverty is a risk factor for HIV.<sup>15–20</sup> Mishra et al.<sup>17</sup> reporting on national surveys of eight sub-Saharan countries show that HIV positivity rates increase as wealth increases. Johnson and Way,<sup>18</sup> analyzing demographic survey data for Kenya in 2003 show that HIV has a positive correlation with wealth for both men and women (with the wealthiest women being 2.6 times more likely than the poorest women to be HIV positive). In another large scale longitudinal data series in South Africa, Barnighausen et al.<sup>19</sup> shows that middle level wealth is associated with increased risk of HIV seroconversion. All these studies were based on either the demographic health survey data or on nationally representative samples in the 2000–2005 timeline.

Mishra et al.<sup>17</sup> did not use actual figures of family or individual income to assess wealth. Instead, an index based on household consumer durables was used. The individual households were placed on a continuum based on the index and divided into quintiles for comparison. This raised several issues: household durables and utilities (such as availability of a television, drinking water, electricity) assess relative wealth within a 'poor' population though these amenities may be the basic standards for living in a developed country. Therefore the comparison and universality of inferences is doubtful. Secondly, as the population was divided into quintiles where each class is of the same size, it may be that the upper quintile have a higher income inequality with middle and high income families grouped together. Therefore some significant differences

between the very poor majority and the very rich minority may have been missed. Still, the observed differences may not entirely be due to poverty. Education, occupation, media exposure and risk behaviours may complicate the picture in all wealth classes. In fact when these factors were included in the analysis, the significant association between wealth class and HIV disappeared in all but one country (Tanzania).

Barnighausen et al.<sup>19</sup> assesses wealth, based on an asset index scale and the household expenditure. Interestingly, the household expenditure did not show a significant association with HIV seroconversion. However the middle 40% on the wealth scale had a significantly higher risk ( $P=0.002$ ) while the wealthiest 30% and the poorest 30% showed no difference ( $P=0.928$ ) (after correcting for other confounding factors such as urban residence and migration status). The positive correlation with wealth persisted even after controlling for gender which means that the chain of reactions from wealth status to HIV is independent of gender difference. However, this study had fewer men than women (1:1.5) which may limit the power to accurately establish such a difference.

On the other side of the scale, there are many studies which show an association between poverty and HIV.<sup>21–41</sup> Several contrasts need to be highlighted regarding these studies compared to the previous volume of evidence. While most of these data are from sub-Saharan Africa, evidence also comes from studies conducted outside Africa<sup>21,26,29,33,39</sup> including a few in the developed countries.<sup>21,33</sup> Secondly, the majority of these studies show a significant disadvantage for women due to poverty as opposed to previously mentioned studies that did not show a gender difference (a positive correlation between wealth and HIV was observed for both genders). While the first group, showing a positive correlation for wealth and HIV, consisted of large scale cross sectional studies and analysis of demographic health survey data, the second group, showing a positive correlation between poverty and HIV, contains similar studies,<sup>27</sup> smaller cross sectional and cohort studies<sup>21,25,26,29,30,32,34,35</sup> and qualitative studies.<sup>22,24,28</sup> However a direct head to head comparison of the findings of the first and second groups is impossible due the differences in the methodology and sample size. The only comparable study in the second group, by Tladi et al.,<sup>27</sup> that analyses the data of the South African demographic health survey, considered only females aged 15–49 and the data is from the survey of 1998 (published in 2006). In fact several studies in the second group had only female study populations limiting the ability for a gender comparison.<sup>22,24,26,27,29,30,34,36</sup>

The wealth indices based on household equipment or income may not reflect the true financial status of women in the family who may have limited access to household finances (due to gender inequality). It is our opinion that 'relative' poverty of females and therefore the risk of HIV are not correctly assessed by correlating the household income with HIV prevalence. Either there should be measurements of poverty that captures the 'relative state of poverty' in women or the analysis should adjust for the level of education, employment and similar factors that may indicate a better economic standing for women.

The studies by Oyefara,<sup>38</sup> Dunkle et al.<sup>34</sup> and Weiser et al.<sup>37</sup> need special mention as they have not restricted the measures of poverty to family income. In a population based cross sectional study in Swaziland and Botswana, Weiser et al.<sup>37</sup> reports that food insufficiency was associated with many risk behaviours for HIV. Interestingly, men reported fewer instances of food insufficiency and a lesser correlation between that and risk behaviours. In fact, food insufficiency may be a better marker of poverty as it represents a final common pathway of poverty than income itself. It is important to identify similar markers of poverty in different societies that might correlate with HIV risk (for women) better than the family income or asset based indices.

When comparing the body of data from the two groups supporting either hypothesis, the following conclusions can be drawn.

1. Poor women are disadvantaged with regard to HIV. Studies have shown that poverty increases vulnerability to HIV and this has been demonstrated inside and outside Africa including disadvantaged communities in developed countries.
2. The evidence that wealthier groups (of both men and women) having a higher HIV prevalence cannot be disregarded, however, due to the non comparability of studies (due to differences in methodology). It has to be appreciated that the few studies showing evidence for the first hypothesis have large sample sizes with nationally representative samples.

Still, there is a clear conflict in evidence between the two groups where the former suggests an increase in risk for women with increasing wealth and the latter suggesting a lesser risk. This 'lesser' risk is attributed to financial empowerment, access to education and less gender inequality. Interestingly in the study by Mishra et al.<sup>17</sup> when data was reanalysed (controlled for such factors), the significant association between wealth and HIV was lost in seven of eight countries.

If we are to accept the hypothesis that wealth increases the risk of women to be true, one plausible explanation is that household wealth does not equate with a better quality of life for females due to gender inequality. In fact, a rich husband or a male partner may have more access to transactional sex and other risk behaviours (polygamy) which may increase women's vulnerability to HIV. Another explanation is that wealth is associated with urban residence where the risk of exposure is high. In addition, the wealthier patients may have better access to treatment and survive longer resulting in higher point prevalences in these groups.

#### **4. How does poverty or wealth interact with other non biological factors to increase the risk for women?**

This section briefly explores the possible mechanisms by which financial status increases vulnerability of women to HIV (by influencing other factors like violence against women, gender norms and access to opportunities).

#### 4.1. Are poor women subjected to more violence and therefore at risk of HIV?

It is established that HIV is more likely to be transmitted in an act of forced penetration rather than in voluntary sex due to inability to negotiate on safe sex. The breach of epithelial barriers with trauma makes it easier for the virus to enter the blood stream.<sup>3</sup> Forced sex increases the woman's chances of contracting a sexually transmitted infection (STI) by four.<sup>3</sup>

It has also been shown that violence against women is not a universal phenomenon and is observed in different societies to various extents. The economic status in these populations may have a role to play in such variations.<sup>42</sup> Women in developing countries are subjected to violence in various settings ranging from inter partner violence<sup>31,43–46</sup> to civil wars<sup>47</sup> and there is an association with such experiences and HIV positivity. On the contrary, some studies in the United States have demonstrated an association between exposure to violence and HIV risk behaviour<sup>33,48,49</sup> while others have failed to show such an association.<sup>50–52</sup> However, the former group of studies had concentrated on financially disadvantaged women. Similarly, a much higher rate of violence against women following disclosure of serostatus is observed in studies in sub-Saharan Africa<sup>53,54</sup> than in the United States.<sup>55,56</sup>

There are several ways in which poverty can influence a woman's vulnerability to violence and hence HIV. On a larger scale, war or communal violence can result in mass displacement of populations, loss of spouse and family, loss of income for women and increased vulnerability to transactional sex.<sup>32</sup> Breakdown of civil law and order may facilitate this trend. Two examples from Ethiopia and Nepal highlight this point. In Nepal, at the beginning of the Maoist insurgency (1999), the HIV prevalence in Kathmandu stood at 2.7% and three years later it had shot up to 17%.<sup>57</sup> In Ethiopia, there has been a dramatic rise in HIV positivity amongst female sex workers, from 20% in 1988 to 73% in 1998, that corresponds to a war and conflict related displacement of families.<sup>58</sup>

At a domestic level, low socioeconomic status may predispose to inter partner violence (IPV) against women due to several reasons. Poor women may be forced into marriage early, be subjected to rape by partner and a longer duration of marriage also predisposes to more episodes of violence.<sup>59</sup> Poverty prevents female children from being educated and therefore limits their ability to find employment in future.<sup>60</sup> This results in economic dependence which makes it impossible to leave a violent husband.<sup>61</sup> Inability to find useful employment may push women towards prostitution where the sexual rights of women are violated and exposure to high risk sexual acts, unprotected intercourse, sexually transmitted diseases (STD) and rape is high.

#### 4.2. How may gender inequality interact with poverty to disadvantage women?

Gender norms can be defined as appropriate behaviours, beliefs, attitudes and conduct per gender as directed by society. It is a learned behaviour. In assigning gender roles,

the phenotypical differences of genders are redefined as feminine and masculine with different capabilities in societal functioning (e.g. division of labour, power sharing, economic responsibility, dominance and submission).<sup>62</sup> Such gender norms are different in various societies and subject to change with time.<sup>63</sup> Still, in many countries, especially in the developing world where HIV is spreading fast, females serve a subservient role to men as dictated by gender norms and culture.<sup>64,65</sup> These traditional gender norms place women at increased risk as they have less freedom in choosing their partners, initiating and pacing sexual activity and negotiating on safer sex.<sup>66</sup> In addition, some customs and beliefs also place women at increased risk of HIV, such as wife inheritance,<sup>67</sup> and having sex with a virgin as a cure for HIV.<sup>68</sup>

Again, a link can be drawn between gender norms and poverty via education. Education, employment and opportunities for women can prevent gender norm based inequality to some extent. However in poor families, it is unlikely that education of female children is a priority. Prevalent social norms such as the 'dowry' system can propagate risk behaviours. It enables rich men to have multiple wives and the more economically deprived women to be given away as such. This risk is especially high in communities where polygamy and younger marriage age of females are favoured by tradition (Bostwana, Uganda).<sup>23</sup> Still, a counterargument to this theory is why is HIV prevalence low in Middle Eastern countries where all these risk factors created by the vicious cycle of poverty, gender inequality and traditional values also exist? One explanation is that the HIV prevalence in this setting is under-reported. However, if an epidemic in proportion to that in sub-Saharan Africa existed in Middle East Asia, it is unlikely to go unnoticed. Another plausible explanation is that Africa was on the slippery slope with high HIV positive rates to begin with and the prevalent norms catapulted the rise of the epidemic whereas in the Middle East, such a threshold of an 'infective reservoir' is yet unseen. Much is yet unknown about the epidemiology of HIV and the role of societal factors and biological factors in determining its cause. In fact, there is still no firm theory to explain why the AIDS epidemic has disproportionately affected sub-Saharan Africa.<sup>13</sup> This is an area for further research.

#### 4.3. Do more opportunities mean less vulnerability for women?

The term 'opportunities' is defined as access to education and employment with financial empowerment of women. Here, employment refers to means of earning an income without engaging in risk behaviours. The positive impact of education in reducing HIV risk behaviour has been demonstrated in many parts of the world and especially in Africa.<sup>36,69–73</sup> Many such interventions have shown that females benefit more than males (where both groups were educated) in reducing risk behaviours and gaining knowledge.<sup>36,74–79</sup>

While education may be a way of countering the epidemic, lack of finances would retard the government's efforts to execute such comprehensive programmes on a national scale. The female literacy rates in sub-Saharan

Africa vary widely, but surprisingly in many countries with a high prevalence of HIV, (Lesotho, Botswana, South Africa) it is above 80%.<sup>80</sup> This may be a result of the input of aid by international agencies to uplift the level of education of vulnerable populations.<sup>78,79</sup> Unfortunately, the literacy rates are only a proxy indicator of the 'real' target of an ideal educational programme which should include a comprehensive sex education module. Even then, a better awareness on HIV does not necessarily mean accurate risk perception and avoidance of risk behaviour.<sup>69,70,81</sup> Financial dependence on husband and gender inequality can restrict a woman's capacity to put the knowledge into practice.<sup>64,82</sup>

Considering all observations, it is proposed that a successful education programme must concentrate on both genders equally, be sensitive to prevalent gender norms in the society and have a comprehensive sex education module. However, improving household income and promoting economic independence of women is of paramount importance to see the full effect of these interventions.

Several studies have consistently shown that employment, education, urban residence and therefore access to more 'opportunities' is associated with a better knowledge of HIV.<sup>36,69–72,81,83</sup> However, as discussed earlier, large scale data analysis has shown HIV rates to increase with wealth and one postulation for this observation was urban segregation and availability of money facilitating access to paid sex. In fact, a positive correlation of HIV for the level of education was observed in the early 1990s in Africa before the trend reversed later.<sup>79</sup> Some argue that more money encourages concurrent partnerships in both men and women increasing the risk of infection.<sup>84</sup> This is another instance where sex education at community and school level should be highlighted, as availability of money *without knowledge* can be as harmful as the lack of it.

##### **5. Impact of HIV on poverty and the benefit of interventional programmes; the role of female empowerment**

HIV itself is a cause of poverty for those affected. The evidence in this regard is plentiful. In a cross sectional case control study in Uganda, the HIV affected households had an expenditure four times greater than the non affected households. A considerable proportion had missed work in the previous month due to illness compared to those in non affected households (77.2% vs 32.2%). The impact of poverty extended to interfere with school attendance of children, withdrawing savings and selling household items.<sup>85</sup> Another cohort study in South Africa showed that affected households were poorer than their non affected neighbours at baseline and that income continued to decrease rapidly over the six months of follow up.<sup>40,86,87</sup> In Chad, one of the poorest countries of the world with a GDP (per capita) of US\$200, a significant economic burden of disease was demonstrated by Wyss et al.<sup>88</sup> for families living with HIV. In their sample ( $n = 193$ , 65% women) the monthly costs for a patient with AIDS was US\$46.2 while for a control it was a mere US\$2.5.

HIV can affect household economy in two ways, direct costs (attributable to drugs, illness related issues, funerals) and indirect costs (due to loss of work, loss of productivity of both caregivers and patients, loss of productivity due to untimely death etc). Several studies have shown direct costs due to drug related expenditure to be more than the indirect costs.<sup>88,89</sup>

It is also pertinent to mention several studies that tried to address the poverty factor of HIV with an interventional model. Pronyk et al.<sup>90,91</sup> assessed the potential of female empowerment with HIV awareness via a microfinance programme to reduce the risk behaviours. Empowerment of women improved their participation in social events, savings groups, and collective efforts in the community with a marked reduction of IPV by 55% at end of a two year follow up. The HIV risk behaviours and HIV prevalence did not show any significant difference between cases and controls. Still, IPV is shown to be directly<sup>31,43,44</sup> and indirectly<sup>30,45,46,90</sup> associated with HIV risk. Therefore, though an obvious benefit from the intervention on HIV rates was not manifested at two years, more subtle positive impacts may be observed long term. Several other studies have also explored the place of microfinance initiatives in Africa and Asia and have shown a positive impact on reducing risk behaviours.<sup>92,93</sup> In San Francisco, USA, cash benefits have reduced the risk behaviours amongst homeless adults<sup>94</sup> and some authors advocate microfinance programmes to women in disadvantaged communities in USA to reduce risk of exposure to HIV.<sup>95</sup>

One major shortcoming regarding the volume of data on HIV and household poverty is that they do not address the impact on women specifically. The concept of a 'relative poverty' adversely affecting women and female children of the households hit by the epidemic needs to be explored further. It is noteworthy that despite the microfinance initiative in the South African study, there was no significant increase in school enrollment of children, expenditure on consumables or increase in food security in the target group.<sup>91</sup> It is also not clear whether the actual amount of savings or earnings increased. This again highlights the importance of understanding the household dynamics of money and power sharing. This fact may have a bearing on the failure to show a reduction in risk behaviour.

On the subject of drugs and health related expenditure, many international aid programmes such as Global Fund<sup>96</sup> and the US president's emergency plan for AIDS relief (PEPFAR)<sup>97</sup> have made considerable attempts to maintain a constant supply of HAART in areas of need. In addition to the free or subsidized supply of drugs by aid agencies, World Trade Organization (WTO) Agreement on Trade-Related Aspects of Intellectual Property Rights has been modified by consensus allowing countries to produce generic drugs of HAART.<sup>98</sup> In almost all sub-Saharan countries women have a better coverage for HAART than men. Still, for many developing nations the overall coverage with HAART is less than 40% for both men and women. Only 35% of pregnant women had access to therapy in 2008<sup>1</sup> These are the issues to be addressed in future.

## 6. Recommendations for further research

The following issues were not adequately explained by available evidence and they are recommended as areas for further research:

1. Reanalysis of demographic health survey data or designing of studies with nationally representative samples that specifically identifies wealth related indicators for females.
2. Search for community specific markers of poverty other than income itself.
3. Assessment of impact of HIV driven poverty on women and female children. Are they marginalized in access to food, treatment?
4. Quantifying the impact of international aid programmes in resource limited settings and their impact on women.
5. Future research needs to focus on Asia and especially India where large numbers of PLWHA are present and where the socioeconomic dynamics are quite different from Africa (though not at the expense of Africa).

## 7. Limitations

This review was limited to articles published in English within the last decade. While attempts were made to search related literature as well, it is possible that important studies published in other languages and outside the search limits were missed. Most of the available data was from sub-Saharan Africa; data from Latin American and Eastern European countries was minimal.

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