

**Women's Vulnerability to HIV / AIDS:  
The Papua New Guinea Situation**

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**A postgraduate research project for the degree of Master of  
Nursing (Coursework)**

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**February 2010**

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## **Abstract**

Globally and in PNG, the number of women with HIV / AIDS is increasing rapidly. This research project investigates women's vulnerability to the disease. It focuses on the aspects including poverty, environmental degradation, lack of education, the presence of Sexually Transmitted Infections, and specific sexual activities (anal sex) which have highly contributed to their vulnerability in contracting the HIV / AIDS. In addition, the lack of research and clinical trials highlight the importance of the crucial necessity for women's information, education and access to treatment about HIV / AIDS, the risk factors and safeguards for its prevention.

## **Declaration**

I certify that this thesis does not incorporate without acknowledgement any material previously submitted for a degree or diploma in any university; and that to the best of my knowledge and belief it does not contain any material previously published or written by another person except where due reference is made in the text.

Signed:

(Manasseh O'Kelly)

Date: 19<sup>th</sup> February 2010

## Acknowledgements

I acknowledge with humble gratitude all the people and organisations that have helped in the completion of this research project.

The supervision and expertise of Ms. Jan Thompson has facilitated and guided this project. Jan has always been very supportive and positive in all our discussions, providing me with a purposeful direction while writing up this research study.

I especially want to thank the staff in the School of Medicine, and the staff of Sturt Library, Flinders University.

To my fellow postgraduates at the School of Nursing and Midwifery, Flinders University and dear friends, thank you all for your support and kind words of encouragement during this study.

The academic support for this venture was provided by my AUSAID Tutor Dr. Sheila James. I am grateful to Sheila for her ongoing patience, guidance and editorial support of my project from the initial stages until its successful completion.

My greatest debt is always to my family. My tributes start with my children: Violet, Imorea, Joshua who have always been there for me. Finally, to my husband, Irimo Kelly, thankyou for your love, and encouragement during my studies.

# Terms and Abbreviations

|               |   |
|---------------|---|
| <i>HIV</i>    | Human Immunodeficiency Virus                            |
| <i>AIDS</i>   | Acquired Immune Deficiency Syndrome                     |
| <i>WHO</i>    | World Health Organisation                               |
| <i>CDCP</i>   | Centre for Disease Control and Prevention               |
| <i>CIE</i>    | Centre for International Economics                      |
| <i>PNG</i>    | Papua New Guinea  |
| <i>UNICEF</i> | United Nations Children's Fund                          |
| <i>ESCAP</i>  | Economic and Social commission for Asia and the Pacific |
| <i>UNIFEM</i> | United Nations Development Fund for Women               |
| <i>IPV</i>    | Intimate Partner Violence                               |
| <i>FRT</i>    | Female Reproductive Tract                               |
| <i>STIs</i>   | Sexually Transmitted Infections                         |
| <i>AGOAP</i>  | Australian Government Overseas Program                  |

# **Women's Vulnerability to HIV / AIDS: The Papua New Guinea Situation**

## **1.1 Introduction**

This paper focuses on the Human Immunodeficiency Virus (HIV) and women, with an emphasis on women in developing countries, particularly Papua New Guinea (PNG). Initially, this paper will describe how the HIV works and its impact on the body. Key issues to be addressed in this paper include: the impact of poverty on women's risk of acquiring the virus; the relationship between low education / lack of knowledge of the virus and the risk of infection; the relationship between intimate partner violence and increased risk of viral transmission; the connection between the environmental degradation and how women are at risk of the virus infection; the relationship between sexually transmitted infections and the risk of HIV infection concurrently; the relationship between particular sexual practices (anal sex) and the risk of the HIV virus. Further, the paper will explore how women's biological systems places them at the risk of contracting HIV / AIDS and why they were and are left out in treatment and research. Finally, some recommendations will be outlined in view of combating the issue and to target the reduction in the HIV / AIDS disease.

Evans (2008) explains the Acquired Immune Deficiency Syndrome (AIDS) is caused by HIV. By attacking the immune system the HIV virus makes the human body vulnerable to a number of opportunity infections caused either by, virus, bacteria or yeast that pose no threat to a person with a normal immune system. However, once a person's immune system is weakened these infections become life-threatening. There

are variable levels and concentrations of HIV found in most bodily fluids in the person who is infected but blood, semen, vaginal and cervical secretions are proven to be the only routes of HIV transmission (Evans 2008).

Furthermore, the mechanisms about how HIV affects the immune system are not completely clear. In brief, the primary event occurs when the HIV invades the body's CD4+ cell 'T-Helper lymphocytes' also called T4 cells. These T4 cells and white blood cells are essential to the activities and survival of the immune system in fighting the invading infections. Once the HIV is inside the T-4 cell, the virus duplicates itself and signals other cells that produce antibodies. In addition, it is the normal function of the body to produce antibodies for its immune system to stay alive. When this happens, the immune system is deactivated and some systems like, the endocrine, gastrointestinal and nervous systems fail to function. For a health professional this process must be clearly understood as most patients suffering with HIV and AIDS do come to clinics with "early" health problems and must be accurately diagnosed so these health problems can be effectively managed at the primary level Evans (2008).

Evans (2008) emphasises that there are 2 types of HIV strains that affect people infected with HIV, depending on the genetic similarities, types, groups and sub-types. HIV 1 is the main cause of AIDS. HIV 2 is from the group of viruses found in West African patients. Most West Africans infected with HIV 2 exhibit none of the symptoms of classical AIDS. It is unclear whether HIV 2 is either less infectious or that it has a longer latency period preceding the AIDS onset. Evans (2008) concluded that, both HIV 1 and HIV 2 have known sub-types and that once the virus evolves and matures, these sub-types will be discovered.



Aberg et al. (2005, p. 19) report that the World Health Organization (WHO) figures for 2003 were 19.2 million and approximately 50% of the 40 million adult population living with the HIV / AIDS. They noted that there were 14,000 new infections daily in the world of which, 95% infections are from the developing countries. They also point to statistics 2,000 of these daily infections affect children under the age of 15 years. The remaining 12,000 are adults of which 50% are female and nearly 50% are between 15-24 years.

Voelker (2005, pp. 281-282) draws attention to alarming statistics cited from the Joint United Nations and WHO recorded in 2004 as follows: (1) 39.4% people world-wide were living with HIV / AIDS, including 37.2 million adults of which 17.6 million were women and 2.2 million were children. About two-thirds of individuals were from sub-Saharan Africa. (2) 4.9 million were newly infected in 2004 with the virus, including 4.3 million adults and 640,000 children under the age of 15 years. (3) 3.1 million people died of AIDS globally as recorded in 2004, including 2.6 million adults and 510 000 children younger than 15 years. On the basis of these statistics Voelker (2005, pp. 281-282) concluded that nearly 75% of people who died from AIDS globally were from the sub-Saharan Africa.

These statistics highlight the trend that women are not protected from HIV / AIDS and also that the issue requires urgent attention as statistics indicate an increase rather than a decrease in HIV transmission. Additionally, as this HIV / AIDS trend is on the increase globally, I stress that individuals of all nationalities and countries should take personal precautions in the fight against the deadly virus. According to the process through which HIV is transmitted which has been elaborated by Evans (2008) women and, men are both at risk. Hence, in my opinion both men and women

must be targeted for HIV / AIDS information.

In the USA it appears that especially African-American women are disproportionately affected by the HIV virus. The Centre for Disease Control and Prevention note in 2005 that in the USA people diagnosed with HIV (number of cases per 100,000 population) between the year 2001 and 2005 show that: the Black male population accounts of HIV infection were nearly 7 times higher than the white male population, while the black female population rated more than double their white counterparts. In 2005 in particular, African-American women rated more than 20 times that of their white counterparts. Further, Young African-American people accounted for 51% of all the new HIV diagnosis between 2001-2005 and 61% were between 13-24 years old (CDC 2007, p. 1). PNG is also experiencing the HIV epidemic at an alarming rate as has been experienced by the Africans. Furthermore, PNG is also experiencing the HIV epidemic at the alarming rate. The Centre for International Economics (CIE) (2002, p. 34) prepared a 'low'; (Kenya) 'middle' (Zimbabwe) and 'high' South Africa categories using infection and death rates, to illustrate the likely evolution of HIV / AIDS in PNG. As a result PNG was following the African trend as illustrated by these 3 African countries.

In PNG the majority of HIV infections are acquired through heterosexual contact as reported by the UNICEF (2005). In addition, the World Bank (2004) reported that females are infected at a younger age than males. Twice as many females are infected at the age group 15-29 in comparison to males. Girls between 15-19 years have the highest rate of HIV / AIDS in PNG, 4 times that of boys of the same age. There are many trans-generational infection routes and customary practices that increase the female's vulnerability in acquiring the virus. In the act of sexual

intercourse, women rarely use condoms. There is also a power imbalance and biased gender norms preventing women from accessing information and seeking treatment in relation to HIV / AIDS in PNG (UNICEF 2005, p. 5).

AUSAID (2005) found that in PNG men culturally own their wives and this type of culture had caused women and children to live in danger, insecurity and violence. Furthermore, AUSAID (2005) report that 2 in 3 women aged 15-24 and 2 in 5 older women, accept cash or gifts in exchange for sex. AUSAID (2005) predicted an estimated increase of HIV / AIDS annually, from 15 % to 30% which is a serious concern. In addition, Howe (2002, p. 386) drawing from these figures, states that in the next 20 years 1/3 of the adult population in PNG could be catastrophically affected by HIV / AIDS.

## **1.2 Poverty**

From my experience as a Nursing Sister for 16 years in PNG, I have observed and witnessed that poverty is a fact for most young girls and they engage in sex so that they can put food on the table. I asked one of the sex workers why she was involved in the sex trades, in spite of high increase in HIV / AIDS in PNG in 2008. Her answer was (“are you willing to put money into my pocket and willing to meet my daily needs”) (SN<sup>1</sup>). The World Bank (2003) defines poverty as having many dimensions, which include low income, lack of education, environmental degradation, and gender inequality. Women in PNG are not alone when are exchanging sex for food and goods for their survival.

Catz et al. (2002, p. 53) state that the growing incidence of HIV infection among

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<sup>1</sup> SN has been used here in place of the real name of this woman to maintain her anonymity.

low-income and minority women necessitated them to investigate how these women adjusted and lived with HIV / AIDS. They conducted their study with Southern Eastern United States HIV positive women and found that these women had a very low annual income. This situation led to the possibility that these women would engage a range of activities in order to have enough money. These women also reflected very high levels of depression and anxiety symptoms in comparison to community norms. Sikkema et al. (2000, p. 62 ) reiterated that women in general face many barriers to sexual behavioural change and in particular, poorer women living in inner city communities experience competing life stresses related to their social disadvantages which often led to their involvement with very high risk HIV infected men.

With the terms of women having access to the antiviral drugs, they tend to face some challenges. According to the (WHO Bulletin 2006) the HIV / AIDS pandemic and its responses has exposed direct directions in the area of political intervention, social and economic inequalities between and within countries. In developed countries, antiretroviral treatment is becoming the standard care for AIDS patients and in retrospect, the same treatment is available for only a privileged few in most developing countries. Furthermore, in poorest resourced countries most AIDS patients without sufficient and social capital die every day in large numbers. The two recent AIDS initiative treatment bodies, UNAIDS and WHO “3 by 5” Programme aims to rectify this global injustice. Rapid and massive HIV testing is the key element in making these initiatives work effectively as people must be identified if they are HIV positive for treatment can be administered successfully as soon as possible. Further, UNAIDS (2004) report that on an average, world- wide AIDS care related expenses can amount to 1/3 of a household’s income and is a major

contributor factor to the issue of poverty.

In the developing countries like PNG, many challenges were encountered while initiating this Program and “opt out” activity was put in place following the established 2004 Policy of routine testing. This activity encourages men and women to be HIV tested after information about how HIV is acquired, how it is to be prevented and the importance of HIV treatment. It also encourages people in making their own choices for the testing process. The process also legally covers those who initiate the HIV testing, especially the health workers or counsellors. This activity is highly practised by the Nurses in PNG and there is ongoing regular workshop conducted in this regard. This activity however, is a very expensive exercise as most people in PNG have to travel in from rural areas and cannot afford the transport fees, the expenses of time spent in the city, for example, buying food and even maintaining the related bills.

In terms of poverty and employment, there is a direct link between increased female labour participation and growth. According to the UN Annual Report of 2007 the Economic and Social Commission for Asia and the Pacific (ESCAP), (2007) that there is an estimation that if women’s paid job rates were raised to the same level as men’s, America’s GDP would be 9% higher; the Euro currency would be 13% higher, and Japan’s would increased by 16%. This information is very vital as women play a very important role in building nations in terms of economic growth when they are in the work force, and normally women’s wages are 17% lower than what men earn. UNICEF (2007, pp. 1-2), reported that women performed 66% of the world’s work, they produced 50% of the food, but women earn 10% of the income and also own 1 % of property (UNICEF, 2007, pp.1-2).

Furthermore, in some regions of the world, 70% of agricultural labour is provided by women and more than 90% is produced in food production, in spite of this women are completely excluded in budget allocations as revealed by world Economic Forum (2005, p. 3). For example, in Mexico, women in paid employment devoted an additional 33 hours to domestic duties per week while men only contributes 6 hours weekly UNICEF, (2007, p. 37). UNIFEM (2009, p. 1) reports the UNDP 2006 global report on accessing water and made a comparison that if the average distance to the moon is 394,400km, South African women would together walk the equivalent of a trip to the moon and be back 16 times on a daily basis to supply their households with water supply. Women in the Arab nations on the other hand, contributed to the work force by only 28% as reported in UNIFEM, (2009, p. 1). Since working on the land regarding agriculture and food production, women are the key people in comparison to men and once what they work on is affected either through disaster there are possibilities women can get infected with the HIV virus while in search of new jobs or either in prostitution in order to maintain the family.

In context of the impact of the economic crises on women, 60% to 80% of women are engaged in the export manufacturing workforce in the developing countries. The World Bank has taken note and is investigating this issue in the effort to reduce poverty (World Bank 2009, p. 1). The Report from ILO (2009) estimated that 22 million women during the current global crisis will be forced into unemployment. This would result in a ratio of female unemployment rate of 7.4% (versus 7% of male unemployment). Through my personal observation in PNG, women are predominately in insecure jobs in the informal sector with low incomes and few or no rights; they tend to have less skills and basic education and when encountered with difficulties in work environment, they easily lose their jobs, ILO (2009)

continued with its report that, globally employment rate varies between 50.5-54.7% in women while men ranges between 47.2% - 51.8%. According to the UNIFEM, (United Nations Development Funds for women 2009) 80% of women workers are considered working in vulnerable environments in the sub-Saharan Africa and South Asia. We can now understand why women are very vulnerable to the HIV/AIDS when they are affected in not having enough income or out of employment opportunities.

From a global perspective, in India 700,000 workers were unemployed in Clothing and Textile business in 2008 alone (Clothesource Digest of Sourcing Intelligence 2008). According to Aning and Andrade (2009) in the Philippines, more than half of the 40,000 jobs lost were from the Export Processing zones and 80% of those employed comprised of women. In addition, the World Bank (2009) reported that in Sri Lanka and Cambodia, 30,000 females in the Garment Industry lost their jobs. In the year 2008, Nicaragua's export processing zone, where female labour is prevalent lost 16,000 jobs (Emmett 2009). The collapse in economic growth can have direct effect and impact up-on women and their poverty. For instance in PNG, when there is an economic crisis, many parents take their children especially the girls out of school and send them to work in jobs as waitresses which are related to many illegal activities like prostitution and make them vulnerable to HIV / AIDS. Also, parents might feed their children with less nutritious food or not be able to take them to the Health Care Services when they are sick.

In Sri Lanka, food expenses costed  $\frac{1}{4}$  of migrant women's wages in 2008, forcing women to reduce their meals from 3 to 2 meals a day. There was also a decrease in the quality of diet because they needed to respond to the reduction in their wages and

also the increase in the cost of basic needs. Furthermore, in Bangladesh it was reported that female garment workers on abysmal wages are still suffering from the food crisis and it was predicted that in 2009, the situation would worsen (UNIFEM 2009).

In understanding what women experience in poverty especially, in terms of employment and economic crises, we are more informed about the reasons why women in the developing countries and globally are becoming more vulnerable to HIV / AIDS. The examples of women experiencing poverty around the world are important indicators of the HIV / AIDS debate and necessitate solutions to the local needs in PNG. Furthermore, in some cultures women play a very significant role by taking care of a person who suffers from AIDS especially, in areas where there are limited health facilities. According to the UNAIDS report (2008) in Africa 2/3 of all caregivers for people living with the HIV / AIDS were women. This highlights the additional burden on a woman in addition to her household duties like cooking, cleaning and taking care of the children and the elderly.

In addition, caring for the sick family members like parents, children or husband is an unpaid job and can increase a women's workload by up to a third. Women often struggle to bring in an income whilst providing care and therefore many families affected by AIDS suffer from increasing poverty. According to UNAIDS, UNFPA and UNIFEM reports (2004, p. 31) in some parts of sub-Saharan Africa where a family's only livelihood depends on agricultural crops, the death of farmers can lead to famine. The HIV / AIDS epidemic not only affects young women but also the elderly population. Often in households where both parents suffer from HIV / AIDS, the main carer role is taken on by a daughter, even if it means she has to miss her



lessons at school. If however, both parents die then automatically grandmothers, aunties or cousin sisters look after the AIDS orphan. This scenario is very evident in PNG culture and women are loaded with the burden of care and are most easily vulnerable in the HIV infection.

### **1.3 Lack of education and knowledge of HIV /AIDS**

The lack of education about the knowledge of HIV / AIDS results in the spread of the HIV / AIDS infection among all women on account of their unawareness of the whole HIV / AIDS issue. Zablotsky and Kennedy (2003, pp. 122-130) found that the older female population in the United States of America were not educated in the whole concept of the HIV / AIDS education. With the increasing HIV / AIDS impact in USA behavioural scientists continue to overlook the HIV experience in mature and older women. There is a lack of understanding among older women in their 50s or older about issues regarding HIV awareness, personal risk assessment and in practicing safer sex.

Thus, older women have a limited low knowledge or lack of awareness about HIV / AIDS and the effectiveness of using condoms in comparison to younger women. Zablotsky and Kennedy (2003, pp. 122-130) reiterate that there is a significant portion of women in the post-menopausal stage that remain sexually active. However, they stress that little is known about how mature women in long relationships can negotiate self-protective behaviours if they are confronted with a risk or how those meeting irregular or new sexual partners can be persuaded to use condoms. They also point out that in any investigation regarding safer sex practices, biological issues such as menopause, life course changes, and cohort effects are

important considerations. It is not relevant to generalize findings from studies done about younger women about this issue of HIV / AIDS. It is of vital importance to integrate risk reduction strategies into models of sexual health and well -being that cover women at different stages of their life course In diversity educational information in regard to HIV / AIDS, elderly women must also be included and not to make an assumption that HIV / AIDS will not affect them because of the many studies indicates young women's participation in research. (Zablotsky & Kennedy 2003)

Jejeebhoy and Cook (1997) and Koenig et al. (2003) also highlight less-educated women are twice as likely to experience Intimate Partner Violence (IPV) than the once that are more educated. Gregg and Shale (2002, p. iv) indicate that there is power in knowledge and state that 'It is the duty of each generation to educate and enlighten the previous ones'. In agreement with Gregg & Shale information is targeted at older and younger generations of women need to be informed about HIV / AIDS and what methods to use in its prevention and also how to live with it for those exposed to the disease. There should not be any gap left regarding any female population with the HIV / AIDS information. From my 16 years of experience serving as a Registered Nurse, I argue that health education especially in the area of HIV prevention, knowledge of HIV / AIDS and if patients already exposed to the virus, reassurance on positive living for patients and treatment can be beneficial in the long run. Furthermore, education is one of the most effective tools in preventing HIV transmission. The global Campaign for Education (2004) made estimation that if every child is educated completely at the Primary School level, approximately 700,000 new HIV infections in young adults could be prevented each year.

Education also plays a very unique role particularly in protecting young girls from the HIV infection. Schools are in a powerful position for teaching HIV prevention methods, such as use of condom, emphasis on one faithful sexual partner and the importance of effective communication about the HIV prevention between couples (UNAIDS 2005). In addition, girls who are regular attending school are more likely to be able to make sound decisions about their sexual behaviour, are more independent, and are likely in earning higher income in the future. This in turn affects their capacity to find employment and steer away from high-risk prostitution.

People, who are living with HIV / AIDS also, face severe stigmatization which can be reduced with the provision of increased HIV / AIDS education. Eradicating stigma is very vital in targeting HIV / AIDS because stigma has the potential of contributing to the vulnerability of groups that may already be at a higher risk of HIV infection. For example, women who depend on sex as a means of survival like sex workers in many countries continue to be viewed negatively and frowned on socially. In my observation innocent housewives who contract the virus from their husbands' extra – marital relations, need to be treated as criminals. In the case of sex workers, it can be very difficult in accessing the Health Care service as they need to stay healthy in case they risk arrest or some kind of punishment when what they are involve in is exposed. In addition, the lack of education and training available to women makes them more vulnerable to poverty which can force them to get involved in risky behaviours.

Sen (1999) indicates that if the family income is not enough to cover education and health care of young girls and women, their future will encounter multiple problems such as, high mortality rate, malnutrition, and neglecting of health care among

others. Ngwira et al. (2003) report that the dropout rate in schools is higher in Malawi (Africa) girls aged 10-15years. The reasons for this finding were the high cost of school fees, demand for their labour, puberty related factors, early marriage, pregnancy and that these girls had experienced harassment by male teachers and students.

Hence, in the high rate of dropouts from schools in Malawi is a clear indication that girls between the ages 10-15 need to be provided with the HIV / AIDS information. The example of Malawi's experience must be adapted by PNG population so in turn will educate all the females ages 10-15 years in order to prevent this population from the HIV infection.

#### **1.4 Gender Inequality: violence and substance abuse**

Intimate partner violence (IPV) is violence that occurs between a victim and a perpetrator who are current or former spouses or partners (Kennard 2007). According to (Centre for Disease Control and prevention 2009) CDC fact sheet that there are 4 types of behaviours associated with IPV:

- (1) Physical violence includes a person trying to hurt their partner through hitting, kicking, or any violence that takes up physical injuries.
- (2) Sexual violence includes forcing a partner into sexual activities when the partner does not consent.
- (3) Threats of physical and sexual harm either in words, body language, weapons or other means that may intent to harm or cause harm.
- (4) Emotional abuse includes threatening of a partner's possessions or loved ones, or even harming a partner's sense of self-worth. Such activities like name-calling, stalking, intimidation, or restricting family members and friends in visiting are very much part of emotional abuse. Often, IPV starts with emotional abuse and the behaviour proceeds on to physical or sexual

assault but there are possibilities that the 4 types of behaviour may occur together (CDC 2009).

Furthermore, IPV must be regarded of great importance because it is a global concern, violates the fundamental human rights of women and is also a major public health problem (Kyriacou et al. 1999; Kaye et al. 2006). Furthermore, the WHO (1997) graded IPV as the most common form of violence against women. According to Ellsberg et al. (1999) and WHO (1999) globally, the prevalence of lifetime partner violence has been reported 10% - 71% among women in marriage or current partners. In sub-Saharan Africa, the prevalence reported of intimate partner ranges 20% - 71% Straten et al. (1998, p. 62) and Koenig et al. (2003, p. 53). The results from these studies however, indicate that the prevalence of IPV was believed to be under-estimated and under-reported due to the fact that standardised methods were lacking (WHO 1997). Since IPV is the most major and a global concern as it violates the human rights, there is a link that once a woman is abused by either her current or steady sexual partner, she will at some stage in her life make wrong decisions, either leaving her house to find shelter elsewhere or by involving herself with a high-risk men who has already being infected with the HIV virus. In the process of finding a shelter elsewhere might encounter being raped or kidnapped. In addition, IPV has the potential for a woman to be vulnerable to the HIV infection.

Schuler (1999) and Rao (1997) conclude that demographic, socio-economic, socio-cultural and lifestyle factors display a very strong link to IPV. On the contrary, poverty and low education of male partners appear to be associated with increased risk of violence (Jejeebhoy & Cook 1997; Ellsberg et al. 1999 & Martin et al. 1999). In addition, there was no relationship between the status of women in terms of education, autonomy, control of IPV to enable more clarity & understanding. Koenig

et al. (2003) indicate that there is an increased risk of violence while Schuler et al. (1996) and Rao (1997) link the decreased risk of violence with the high status of women. The above studies indicate the importance of Socio-economic, cultural and lifestyle factors that has a strong link to IPV and so at the clinical level when attending to a client that there must be a thorough examination in order to help the woman holistically as many men's drive to abuse their female partners is because they experience poverty themselves and also have low education.

Jewkes, Levin and Kekana (2002) report that gender inequality, infidelity and polygamies have played a vital role in the increase of violence in South Africa. In PNG however, IPV is viewed as a sign of love because the culture perceives bride price (husband bring cash and goods to the wives family) as a customary obligation and in terms of violence in the marriages. No family can intervene because the practice reward of IPV is regarded normal within the marriage. The giving of the bride price sort of empowers men within the marriage. These researchers also confirm that marital conflict seems to be consistent linked with IPV. Inclusion of alcohol and drugs consumption has a very strong link with IPV (Rao 1997). It is very likely that children who witness parents being violent will become victims and / or perpetral of violence in adulthood (Ellsberg et al. 1999); Jewkes, Levin & Kenana (2002) and Martin et al. (2002).

In terms of contracting HIV infection, IPV has been the cause of one of the ways in which women are eligible in contracting the HIV infection. Furthermore, Watts et al. (1998), Maman et al. (2002) and Fonck et al. (2005, p. 338) suggest that IPV increases the risk of HIV infection because of sexual violence. Apart from sexual violence, the fear of IPV is predicted to have decreased HIV prevention behaviour

and in return increases the risk for HIV infection (Straten et al. 1998; Jewkes, Levin & Kekana 2003). Temmerman et al. (1995) and Koenig et al. (2004) indicates that HIV infection in the case of a woman or her partner increases the risk of IPV for the reason that either of them refuses sexual intercourse or in disclosing of HIV results. For similar reasons, women's perceptions of their male partners' risk of HIV also are link with IPV. In Summary this section has shown that IPV and HIV infection can be associated because women at risk of HIV infection also may be from populations that are at risk for IPV (Watts et al. 1998; Koenig & Moore 2002 and Linchtenstein 2005).

## **1.5 Environmental degradation**

The negative outcomes of the loss and degradation of natural resources often have a greater impact on women, which adds to their multiple responsibilities within the families and community, in which they live (All African women's right 2009). Pepera and Spadacini (2007, p. 1) quote Phil Franks, the poverty environmental advisor for CARE, who comments, 'However, in many situations, women also hold the key to solving these problems and can bring environmental concerns to the attention of society in a powerful way' This statement powerful as it is, ignores the fact that the resources women rely on are scarce or affected by natural disasters. There are situations where women make powerful decisions out of survival and risk themselves to the HIV. Some examples discussed below will illustrate its relationship.

For example, in Kenya many women are resorting to prostitution to earn a living because their forests were destroyed and the weather patterns have adversely changed. The loss of great amounts of sediments through uncontrolled soil erosion

has dramatically reduced food production. 70% of the population of Kenya (Africa) lives in poverty of less than a dollar a day. This very clearly indicates why the women of Kenya (Africa) are engaging in prostitution and why high rates of HIV / AIDS is rampaging Kenya (PHAMA Foundation 2006, 2008).

According to Pimentel et al. (2007) WHO and other organizations have reported that the prevalence of human diseases including HIV / AIDS is increasing. Environmental degradation such as, pollution of water, air and soil are contributing to human diseases globally. At present, an estimated 40 % of world deaths are on account of environmental degradation and estimated of 3.7 billion people suffering with malnutrition (Pimentel et al. 2007). In addition, the growing population especially the increased number of people in urban areas, has coincided with the alarming spread of HIV / AIDS (UNAIDS 2004).

PNG is no exception in relation to the issue of environmental degradation and how it is contributing to the spread of HIV, though the country is rich with many unused forests, mineral resources and has a land mass of 452,860 sq km in the Pacific region (Aorere 2009, p. 1). PNG is however, facing a huge development challenge where 85% of its population relies on subsistence agriculture and fishing. It is to the country's disadvantage that there are little or no commodity exports and as Aorere (2009, p. 2) point out, PNG is graded as one of the least developed nations on earth Aorere 2009, (p. 2) also reports that among the UNDP's 2006 Human Development Index PNG was ranked as one of the lowest nations ranked 139 out of the 177 surveyed, in the Pacific. Life expectancy at birth is only 55.3 years; the infant mortality rate is 69 per 1,000 live births and maternal mortality as 300 to 100,000 live births. 57.3% of adults are literate and only half of all children have access to



primary school education. In addition, the annual GDP per capita is US\$1,027 since 1989 (Aorere 2009, pp. 1-2).

With the growing population in PNG, the current GDP is not keeping the pace. The economic situation remains vulnerable to the world markets and export commodity prices. The crucial concerns arising in this regard are: insufficient health, education, transport, public utilities infrastructures, major law and order problems, difficult land ownership and access issues. In addition, HIV / AIDS epidemic is another serious consequence of PNG in not having enough money, environmental resources in agriculture and fishing. According to Dunken et al. (2004) women can be vulnerable to HIV infection when they consider prostitution in order to sustain their family for survival.

## **1.6 Biological aspects**

Biological factors about women, makes them more vulnerable than men in acquiring the HIV infection. Ludo et al. (2004) reveal that there are increased vulnerable factors, such as use of hormonal contraceptives and the presence of sexual transmitted infections. According to the Population Reference Bureau (2002, pp. 1-10) there are almost 150 million women globally using hormonal forms of contraception, many of whom are at some risk of contracting the HIV infection. Unlike barrier methods of contraception hormonal methods offer no protection against STIs, including the HIV infection (Ludo et al. (2004).

Ludo et al. (2004) further explain that the role of hormonal contraceptive use in increasing HIV- 1 infection in women has been controversial, with one longitudinal study showing a link but another study Kiddugavu et al. (2003) shows no indication

of the usage of hormonal contraceptive increases the risk of contracting STIs or the HIV. Hormonal contraceptive use however, has been linked to the infection of HIV virus with several viral strains from their sexual partners, which in turn is suggested it may have the potential to accelerate the disease process.

Pope and Haase (2003) clearly outline that it can be an individual's inability in understanding how biologically the use of hormonal contraceptives in HIV works. Quinn and Overbaugh (2005) further explain that the process as HIV is transmitted primarily by heterosexual contact, and the HIV virus must therefore penetrate through the mucosal barrier to establish a systematic infection. Furthermore, STIs that have ulcerative symptoms are known to increase the risk of HIV transmission. STIs increase the presence of inflammatory cells and as a result create additional opportunities for the HIV virus to enter.

The vulnerability of a woman contracting the HIV 1 infection really is dependent on her reproductive life. In addition, adolescence girls appear to be the highest risk among the women population affected by HIV infection. Primary, reasons for either because of behavioural high-risk activities or secondary, because of the physiological properties of an immature genital tract with increased cervical ectopic or exposed columnar epithelium (Quinn & Overbaugh 2005).

Gray et al. (2005, p. 183) indicate that there are two-fold increased in the risk of acquiring HIV 1 infection during pregnancy and in the early postpartum stage. During the pregnancy stage, high levels of progesterone are believed to be one of the factors that increase the vulnerability as it helps enhance the susceptibility in non-human primate models of HIV 1 infection and increased ectopy (Marx et al. 1996).

Marx et al. (1994) further elaborate that the mechanisms by which female hormones may affect HIV 1 susceptibility include the increase in the number of target cells and in the suppression of the immune responses. However, if hormonal changes play a significant role in HIV 1 susceptibility of the immune response to infection, then it is critical that vaccine trial design will suspect gender differences as the cause. In justifying this scenario, the only phase-111 HIV vaccine trial (Gilbert 2005) suggests that there may be differences in the humoral immune responses to the vaccine generated in both women and men. In contrast, this difference was not detected in an analysis of smaller phase-111 vaccine trials as argued (Montefiori 2004).

The World Bank (2004) point out that by observing women grow in the HIV 1 pandemic that social and biological aspects were manifested as the greater vulnerable spots in the HIV transmission. Furthermore, gender norms shaped attitudes towards information regarding sex, sexuality, taking risks in sexual activities and fidelity. These concerns since 1994 were very critical in determining the entire course of HIV epidemic faced by women (World Bank 2004). Also, on account of the risk of HIV 1 in women being linked to the regional norms that affect power in interpersonal-relationships, controlling the HIV pandemic must have standards which needs intensive attention to gender-related issues affecting the epidemic. In addition, interventions must be multi-faceted and should include the usage of both male and female condom ensuring that condoms are accessible and used in ways that do not cause stigmatization to individuals that use them. It is also of greatest importance that female methods of protection must be given priority. The use of microbicides explaining the influence of hormonal on disease progression, responses to treatment and educating the both sexes on HIV 1 and other STIs, including how safer sex is negotiated and even to encourage clients to seek early HIV testing and treatment if

tested positive (World Bank 2004).

Wira and Fahey (2008, p. 1909) show that there is a possibility of contracting the HIV virus during menstrual cycle. Although 85% of the new HIV cases are because of sexual transmission from men to women, they stress that there is minimal focus on the immune system in the Female Reproductive Tract (FRT). The way FRT meets the conflicting challenges of protecting from pathogens and in allowing procreation is less understood. Wira and Fahey (2008) found that there is a new approach to discover how HIV evades FRT mucosal immune protection in a normal menstrual cycle, when there is a risk of vulnerability within the 7-10 days following ovulation in which the potential for virus in the FRT is enhanced. During this period, aspects of the innate, humoral, and cell-mediated immune systems are suppressed by sex hormones to optimize conditions for procreation (Wira & Fahey 2008, p. 1909).

Suppression occurs in the upper (fallopian tubes, uterus, endocervix) and lower (ectocervix and vagina) FRT, and coincides with the uptake of potentially infectable cells and in upregulation of coreceptors essential for viral uptake. This information is very vital in the nursing profession, contemporarily many women suffer with cancer in the upper and lower FRT and they can be helped holistically if these symptoms are manifested at the clinical level Peter et al. 2003. In addition, Wira and Fahey (2008, p. 1909) reveal that the entire FRT is a potential target for the HIV infection. Immune cells and antibodies in the blood however, are not surrogated markers for immune protection in the FRT and immune protection against HIV will require the understanding of the hormone induced regulation of humoral, cell mediated, and innate immune systems throughout the FRT.

Women must all be educated of the significant of how menstrual cycle has the

possibility of contracting the HIV infection. They must also be educated on the 7-10 days following ovulation as this is the vulnerable time for HIV transmission so this timing must be avoided by not having sexual intercourse with men.

## **1.7 Sexually transmitted infections (STIs)**

It has been estimated that there are 19 million new Sexually Transmitted Infections (STI) reported each year in the USA, and the most affected are those between the ages 15-24 (Centres for Disease Control & Prevention (CDC), 2007a). After contracting one STI, both men and women are at an increased risk of contracting the non-curable STI like the HIV or the herpes simplex type 11 virus (CDC (2007b).

Studies done by Donders (2000); Hanson et al. (2005); Lee, Tobin & Harindra (2004) and Risbud (2005) indicate that the individuals at greater risk of contracting and transmitting the HIV are those with ulcerative types of STIs like syphilis, genital ulcers and herpes. However, non-ulcerative STIs like gonorrhoea, chlamydia, and nongonococcal urethritis have the ability of promoting the HIV transmission by altering the cells of the genital tract and in turn, enhancing the spread of the HIV virus (Risbud 2005).

In addition to abstinence, the use of condom in sexual intercourse is the most effective way in preventing the HIV transmission and also in contracting the STIs.

Some studies (Davies & Weller 1999; Weller and Davies 2002; Bell, Mosier and Atkinson 2003; Weinhardt et al. 2004; Risbud 2005) conclude that condoms are very definite method in reducing the HIV transmission. Condom use is also effective against Gonorrhoea, Chlamydia, Trichomonas, and Hepatitis B (Thorburn, Harvey, & Ryan 2005 & Weisbord et al. 2001). However, condom use is not effective in STIs

such as genital herpes, human papilloma virus, syphilis, and chancroid (Manhart & Kourtsky 2002; CDC 2007a). In addressing this issue effectively, preventive information is necessary to inform individuals about the difference between ulcerative and nonulcerative STIs and how HIV is acquired from each type.

In 2007, the USA experienced a high incident of reporting new cases of chlamydia 1,108,374 new cases. It was estimated that nearly 2.8 million new cases occur annually, predicting there are over half of these infections going annually undiagnosed. In contracting the chlamydia infection women aged between 15-29 years are 3 times more likely to be infected than men. From 2003 - 2007 however, men had an increase of 42% in chlamydia with the introduction of nucleic acid amplification in screening men. In addition, the rate of chlamydia infections among African-Americans is 8 times that of Caucasians and it is estimated that 50% of women suffering with chlamydia do not show symptoms and have the risk of transmitting it to their sexual partners (Centre of Disease Control and prevention 2007, p. 2). Chlamydia infection is one of the STIs that highly affects women aged between 15-29 and must be avoided by every means as it also has the vulnerability of transmitted the HIV infection.

Gonorrhoea is the most second nonulcerative form of STI reported in the USA, and nearly 350,000 new cases are diagnosed annually. However, a large numbers of cases are never diagnosed, treated or reported. Gonorrhoea, like chlamydia increases in women aged between 15-24 years and men aged 20-29 years displayed the highest rate of infection. In 2007, gonorrhoea rates among the women were slightly higher (123.5 vs. 113.5,) than those among men. Furthermore, in 2007, gonorrhoea rated among African-American were 9.9 times that of Caucasians (STD surveillance 2009,

p. 7). Gonorrhoea however, has the potentiality as one of the STIs in facilitating the HIV transmission as it is often undiagnosed, treated and reported. Since women between the ages of 15-24 years are more infected education of condom usage must be taught to this population while their male counter parts are infected at the ages between 20-29. In preventing both age sexes from HIV infection condom used must be strongly emphasised.

Syphilis is an ulcerative form of STI and is most infectious in its primary and secondary stages. In 2007 there was an increase of the primary and secondary stages; men had increase by 17.9% while women had a 10% increase. Furthermore, the rates in one of the 2 stages of syphilis for men were 6 times higher than for the women. There was a 5.3% increase with syphilis among the white skinned population, in comparison to a 25% increase in the number of cases among African-Americans. The STI of either syphilis or gonorrhoea was 5 times more likely to contract HIV infection than other individuals (CDC 2007a).

The Australian Government Overseas Program (AGOAP) reports that PNG has the highest rates of STIs in the Pacific region while in Australia were 12,000 HIV positive people with 5 times more in population to PNG (The Australian Governments Overseas AID Program). This report highlights the challenge for PNG which has a smaller population in comparison to Australia and having the STIs trend in this way, PNG is really heading to great disaster. The AGOAP also point out that the most affected population range between 15-34 years, which is the most economical productive age-group. Recently, STIs are becoming more important in PNG because the incidence of HIV is becoming more prevalent (Dwyer, Mahathir & Nath 1996 and Dwyer & Lovell 1997).

## **1.8 Particular sexual practices (anal sex)**

During my experience in the Primary Health care section in PNG, nurses would not enquire whether clients with sexual health problems had been engaging in anal sex, it is a taboo to make such enquiries as it is against the culture. Literature elaborates that anal sex is commonly practised among the men aged between 25-44 years in the USA. Furthermore, 3.9% of the participants reported having had anal intercourse with another man, while 40% reported having had anal intercourse with a woman. 35% accounted for heterosexual anal intercourse among women between the ages 25-44 years (Mosher, Chandra & Jones 2005, p. 1).

Kelvin et al. (2009, pp. 985-988) point out that anal intercourse should not be assumed to be existent only among men who have sex with men. In reality, it is estimated to be 4 times among women than among men involved in receptive anal intercourse in the USA. In addition, Leynaert, Downs, & Vincenzi (1998) indicate that unprotected anal intercourse is the sexual activity that account for the highest vulnerable reason of contracting the HIV virus. Kelvin et al. (2009) investigated whether female condom can be useful when having anal sexual intercourse. Since all anti-sodomy laws were lifted in the USA in 2003, Kelvin et al. (2009) had the opportunity to conduct public health research on methods that will protect anal sex activities. No studies have been conducted whether the female condom can be used in anal intercourse and it has not been evaluated as well.

## **1.9 Treatment differences / research differences**

Since HIV was diagnosed or became one of the public health issues in the 1980s, In 190 Levine made some powerful statements about why women were left out and will continue to be affected in the future either in terms of research or treatment.



According to Levine (1990, p. 449) in drug trial recruitment, women who are HIV positive suffer quadruple jeopardy due to various reasons:

- (1) Because they are women and either potentially pregnant or actually pregnant.
- (2) Because they are from the minority groups and lack access to the health care system in general.
- (3) Because women are believed to be drug users and are perceived to be non compliant subjects.
- (4) Because the trials so far are AIDS focused and women who are recently infected do not show symptoms of the virus and are not clinically diagnosed as AIDS clients.

Furthermore, the National Institute of Allergy and Infectious Diseases (NIAID) reports that out of the study population of 7,659 enrolled in NIAID trial, 20.4% were African-American or Latino. By comparison, about 42% of people suffering with AIDS in USA are members of these groups. 11.3% made up the current or former drug users of the subjects, but the 27.5% made up the AIDS cases (Levine 1990, p. 449). This indicates that African-American women from the Latino population in USA are most affected by the HIV epidemic and yet this group of women also have minimum access to research opportunities in drug trial. Every effort was attempted to include women in the HIV / AIDS drug trials but unfortunately had encountered several barriers as elaborated below:

- (1) The regulatory systems considered women of child-bearing age and the actual or potential foetuses as vulnerable subjects in need of special protection against risk.
- (2) The pharmaceutical industries refused women in the drug trials as they wanted to avoid potential liability for the potential teratogenic effects (causing developmental malformations of an embryo or fetus) of experimental compounds.
- (3) The health care system failed to provide access to primary care for those women from the poor and minority environment which were vulnerable to the HIV virus.
- (4) The past experiences of conducting research among the African-American and Latino communities have left a negative image of abuse of their system and have not compensated them for involving them as research subjects. (Levine 1990, p. 449)

Readdressing the imbalance however, is not a simple exercise to implement,

especially when it is institutional or has attitude barriers. Special ethical issues arise in the HIV / AIDS protocol to which need to include women, but there are instances where despite being recommended and argue about they continue to exclude women.

In 1993 Cotton et al. indicated that women have not been recruited to clinical trials at the same rates as men in the African-American community. In this case, many barriers to recruitment may be common to both African-American males and females such as the widespread of mistrust in clinical trials after Tuskegee, which refers to African-Americans' experiences (Scott-Jones 1993; Thomas et al. 1994). Some barriers such as the non-compliance due to incarceration affects African-American male populations, while other barriers to recruitment tend to be more salient for women in such cases as:

- (1) Location: women may encounter more geographical barriers and be more constrained to particular locations. For example, the seven New York City for sites for the ACTG trials enrolled variable percentages of women (Cotton et al. 1993, p. 1326).
- (2) Gender of primary investigator: sites with a female primary investigator enrolled and attracted a larger percentage of women (Cotton et al. 1993, p. 1326)
- (3) Child and family care: women are more often the primary family caretakers and are therefore constrained from participation by lack of assistance in family care (Merton 1993).
- (4) Transportation: community-based studies such as CPCRA have found that non-traditional services such as childcare and transportation have had an impact on the recruitment of women (Morse et al. 1995).

The above barriers in clinical trials among the African-American, female and male populations in USA, reflects the similar types of challenges and cultural norms that PNG is faced with. Furthermore, even though clinical trials in were implemented, such barriers indicate that their significance needs to be considered before the actual trials are conducted.

## **1.10 Recommendations for action**

This section outlines some recommendations about the implications of the research in the area of the vulnerability of women regarding HIV / AIDS. These recommendations will be discussed in the sections below in relation to the personal nursing practice.

### **Increasing the health education of girls and women**

The initiation of the education of girls and women in terms of what HIV / AIDS, how it is contracted and how it can be prevented. Girls and women are more independent and economically equipped when they are educated. Educating them in this manner will empower them in their decision-making in order to avoid being infected with the HIV virus. Below are some points drawn up in implementing this recommendation in PNG:

- (1) Visiting primary schools and high schools near clinics to talk to the teachers about how girls can be vulnerable to the HIV / AIDS and to motivate the teachers when they design their the time tables specifically to speak to girls about this issue.
- (2) Identifying HIV / AIDS sectors to build bridges between education systems so that there will be easy access for HIV / AIDS's information to be implemented in the schools. Encouraging schools to become established centres of services for any health issues and encourage staff to motivate primary school girls to continue onto secondary education. For example, if girls attending secondary schools have a reproductive health problem they can easily go to the centre and confidentially discuss their concerns with staff that are already trained to attend to these issues. Also, promoting the use of condoms in schools, through demonstrations of condoms by nurses or health care workers claims students' attention and understanding. Thus,

students need to be able to freely get the condoms they need from somewhere so they can use them effectively.

(3) Conducting an in-house course / programme at the clinical level to teach all nurses about the vulnerability of women between the ages 15-29 years. Hence, when nurses are serving clients suspected of having the HIV infection, they will accurately treat or refer these patients to specialized health personnel for effective management.

(4) Starting from village level, it is important to identify girls with some level of education in areas where transportation is difficult for training these girls as leaders who in turn will be able to teach their peers and community about HIV / AIDS issues.

The only constraint foreseen in this recommendation is the necessity of funding to establish some of these activities but with strong support from like-minded nurses it can be achieved.

### **Combating poverty**

In PNG, the micro-finance bank lends out small loans to groups of approximately 15 individuals. These groups need to register themselves in order that they use this opportunity to obtain loans and work with the borrowed money. This bank motivates people to start up small businesses and also enables people to improve their quality of life.

Since some girls and women come from poor backgrounds, there need to be initiation of the organization of programmes where they can learn skills like, sewing and crafts. These skills will help them to sell their products and earn money which

can pay for their children's school fees. Hence this bank, can also become instrumental in funding peer group training program.

### **Promoting behavioural changes in sexual activities**

Through personal observation there are many dangerous sexual activities which take place in PNG communities such as: having sex with high-risk partners (sex workers) without the use of condoms; having multiple sex partners in polygamous marriages and other relationships; practising of anal sex; girls being raped; people become addicted to alcohol / drugs which divert behaviours into rape and forced sex even in marriages; and illegal sexual activities.

Since behavioural change is challenging for people, multiple approaches are required for this matter. In implementing this recommendation the following activities will be considered:

(1) Liaison with mental health workers for clients that have alcohol and drug problems and conducting some basic counselling with the theoretical knowledge of mental health experience.

(2) Initiating programmes to teach sex workers about accurately using condoms with emphasis on how unprotected sex can lead to contracting the virus and they can be reach through going to where they are or when they reach at the clinical activities. Thus, my experience of talking with sex workers is that they already know how to keep safe- but their clients pay more for sex without a condom.

(3) Ensuring that the STIs are accurately diagnosed and treated. Also, that nurses in clinical settings are taught how to communicate well with their clients in addition to

their treatment of clients' complaints which will accurately initiate the right type of treatment. Boys in schools would be the ideal age to target in this respect as they will become responsible in this area. In addition, promotion of acceptance of the idea of notion male circumcision as it reduces the risk of STIs and needs to be addressed and encouraged.

### **Developing policies that protect sex workers**

It is important for there to be some lobbying and initiating the establishment of policies to protect sex workers against health risks during the performance of their work-related sexual activities. The general public will also know the status of sex workers, and it can reduce any discrimination and stigmatization. Unfortunately, history shows this does not happen.

For this recommendation to be put applied there is the necessity for some initial talks with my superiors before it is taken up at the higher levels. The emphasis must be on the implementation of preventative methods through adequate information and education outlined in these policies.

Thus, teaching all females about the importance of their own personal security and measures they can apply in their daily activities especially while travelling alone, working in professional environments during late hours, and the dangers of entrusting their children with male carers or male relatives. This will avoid the incidence of sexual harassment and sexual violence against female girls and women.

### **Women's self-management of HIV / AIDS activities and funds**

It is important that women engage in their own activities in dealing with HIV / AIDS

issues as it empowers them to freely access reproductive information. In addition, they also understand how their biological body works and are in better positions to advice their peers with the same issues. Also they understand the financial burdens they encounter and hence, they can effectively manage their own funds.

In applying this recommendation in PNG where most activities are run by women in Church groups, communication and exposure of these issues about to these Church groups about the vulnerability to the HIV / AIDS at various planned sessions would be beneficial. They will achieve awareness of how to protect themselves from contracting the HIV infection. Given the opportunity to run their HIV / AIDS campaign, as a result most women will empower their lives through the practical use of the self-management of funding. Thus, they can operate as powerful lobby groups who support the issues.

### **Initiating programs to target gender attitudes and norms.**

Gender and sexual norms related to masculinity and femininity play a central role in contributing to violence against women. In many societies, manhood is linked with providing honour, respect, and being sexually controlling. Women on the other hand, are stereotypically defined to submit be disciplined, respectful and sexually passive. In addition, men use violence against women as a way of disciplining women for transgressions of traditional female roles or when they perceive challenges to their muscularity, such as women getting “educated”.

In implementing this recommendation adult education can be used to target gender and sexual norms underlying violence against women. Men must be included in family planning programs so they can explore ideas, attitudes, behaviours and values

related to sexuality and gender relations as well as STIs and in relation to reproductive health problems. Since violence is a global issue media, radios, televisions, drama plays in the villages and streets in the cities must be used to reach both male and females at the same time. Churches near clinics will be identified and letters drafted out to the Pastors two weeks in advance for health information sessions about domestic violence and its link to contracting of HIV / AIDS.

In coastal areas in PNG, men have small fellowship groups within the Church establishments. They can be approach with the aim to educate them about their anatomy / physiology in comparison to women. Hence, in sexual intercourse, they will understand what makes the women more vulnerable to the HIV / AIDS infection. Men need be educated about respecting their partners or wives and how domestic violence is a crime against women which can incur a penalty of prison sentence.

This recommendation is easy to outline, but in practice it is a challenge to all women initiating change. In PNG women informing a group of men can portray a lot of misinterpretations from the public, but in order of the misinterpretations, some male supporters need to be present at the exposure sessions.

## **1.11 Conclusions**

In sum, this paper has demonstrated the increased risk women face especially in developing countries in relation to HIV. It has focused on the impact of poverty, lack of education / knowledge of HIV / AIDS and how it is transmitted, environmental degradation, sexually transmitted infections, particular sexual practices (anal sex), biological systems and on why women were and are left out in treatment and research. All the evidence has pointed to the fact that women are vulnerable to the



HIV / AIDS a result the recommendations put forward in this paper are imperative to the education of the younger generation in PNG and the reduction of the number of HIV / AIDS cases. Finally, with PNG's governmental support, schools, church groups, the micro-finance bank and other lobby groups involved in the campaign, the successful management of the issue can transform how vulnerable women are in PNG.

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