



(REVIEW ARTICLE)



Sexual Education- Reassessing HIV prevention policies on an international level: Review

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Abstract

Objective: To reassess the social and behavioural interventions alongside the medical ones in sexual education, the prevention of HIV/AIDS in countries with low, middle and high socioeconomic status.

Design: Systematic review.

Data sources: 25 electronic references without geographical limitations to December 2013 gathered from International organizations including US CDC and ECDC as well as high impact journals.

Review methods: A reviewer applied inclusion criteria and extracted data from the latest reports of ECDC, CDC, and UNAIDS. The data came from countries with low and middle socioeconomic status. Statistical rates for condom use, sterile syringes, and testing and counseling were employed. Randomized and quasirandomised controlled trials of abstinence only and plus programmes, medical male circumcision, pre-exposure prophylaxis, antiretroviral treatment, and sexually transmitted infections were included.

Results: The search identified 13 trials pertaining to abstinence programmes, approximately 2 regarding medical male circumcision and 1 regarding sexually transmitted infections. All outcomes were self reported. It was found that most of the intervention programmes are not deployed together. This approach bears fruits in sexual education, in HIV prevention. Yet, if interventions were used in compilation then results would have been even better.

Conclusion: Future sexual education intervention programmes must adopt the eclectic approach. HIV prevention programmes must combine all of the social and behavioural as well as medical interventions and not focus on solely one separated out intervention.

Keywords: Sexual Education; HIV/AIDS Prevention; Socioeconomic Status; Systematic Review; Intervention Programs; Eclectic Approach

1. Introduction

In the dawn of the 21st century, societies across the world encounter the challenge of the quick expansion of the sexual education, specifically Human Immunodeficiency Virus (HIV) epidemic. In the peak of its morbidity, in the mid-nineties every year more than 3 million people were infected¹. In our era, despite the fact that, prevention attempts seem to be fruitful, the rate of HIV infections among adults in countries with low and middle socioeconomic status (SES) remains high and endeavours need to be made to decelerate it.

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HIV is defined as a retrovirus that causes the acquired immunodeficiency syndrome (AIDS). AIDS is characterized as the gradual weakening of the immune system that renders the human organism sensitive to lethal infections plus neoplastic tumours².

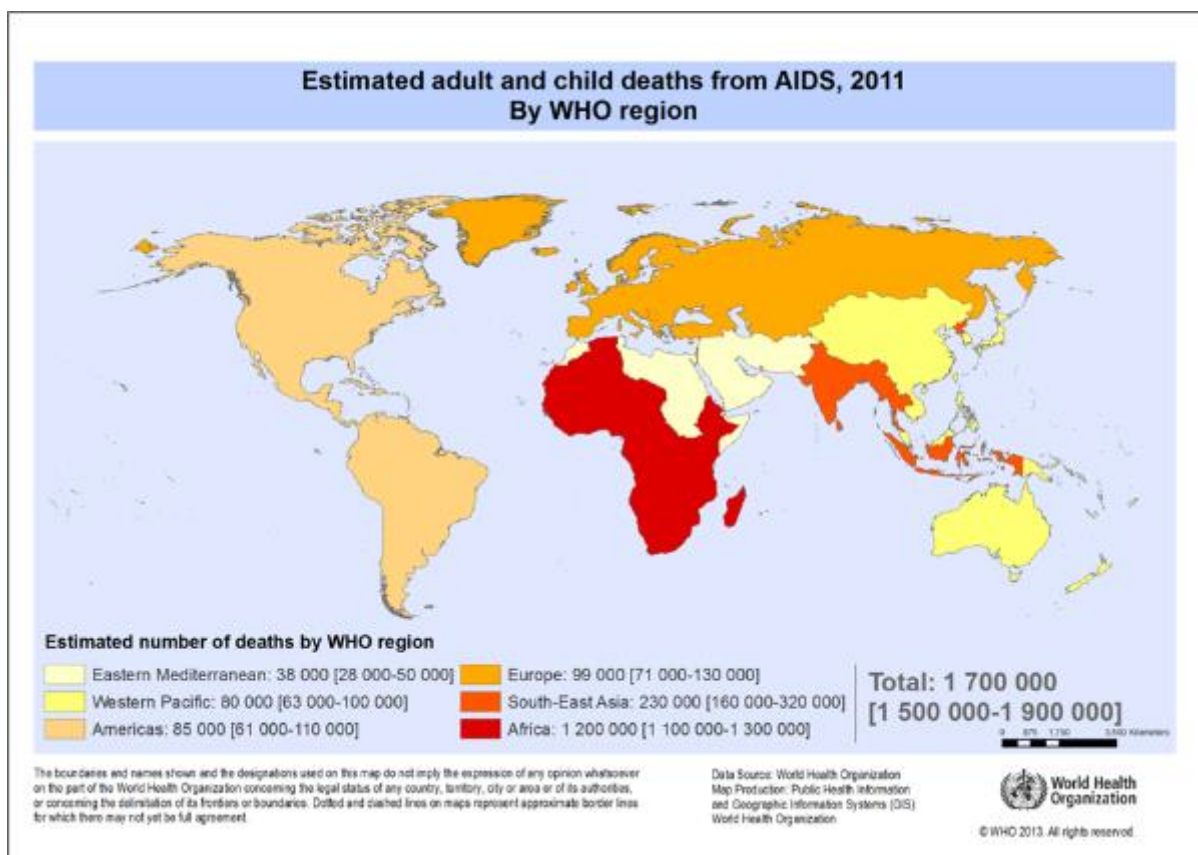
For an individual to acquire the HIV infection, certain risk factors have to be satisfied. Namely, unprotected sexual intercourse, exchange of a variety of sex partners accompanied by random condom use, and drug injection with contaminated needles and syringes. Subsequently, sex workers, convicts, immigrants, drug addicts, men who have sex with men (MSM) and transgender individuals possess a higher risk of becoming seropositive ².

People become susceptible to sexual education due to inadequacy of health services (low quality and coverage, high cost, and inaccessibility) as well as other social factors like dearth of information, poverty, gender inequality, and human rights breach. The afford-mentioned factors, alone or in combination, redound to HIV expansion ³.

The aim of this article is to review sexual education, specifically HIV prevention interventions and to reassess the available strategies for preventing the transmission of HIV. References have been selected in order to provide a comprehensive review of the literature on Sexual education. Conclusions are reached on the basis of the latest facts.

2. Statistics

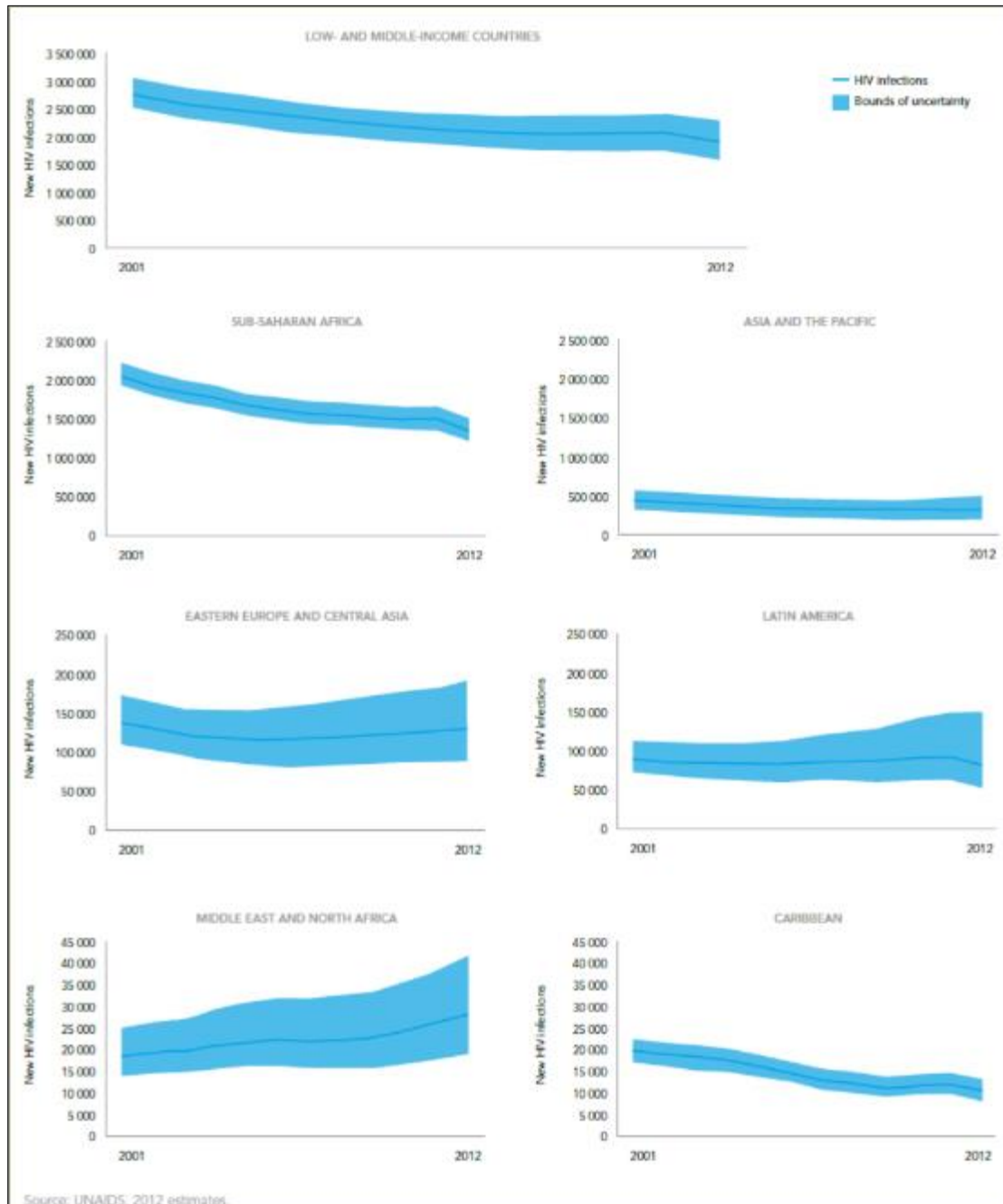
Globally, the annual number of new infections continues to decline. Yet, worldwide statistics show that since the onset of the HIV/AIDS epidemic more than 75 million people have been infected with the virus and almost 36 million have died of the virus-related illnesses. Astonishing is that 262 persons contract HIV per hour and 3.600 people contract HIV per day. Up to October 2013, there were more than 35 million new seropositives, while in 2012 around 2.3 millions were newly infected. Crucially, under the age of 15 the number was 3.3 million for 2013 and 260.000 for 2012. Finally, in 2012, 1.6 millions died from AIDS, while 210.000 of them were under 15 years of age ⁴. In Table 1, it is depicted the number of HIV-related deaths in 2011 globally.



(source : World Health Organization. Global Health Observatory Map Gallery. Estimated adult and child deaths from AIDS, 2011 By WHO region [Internet]. 2013 [updated 2013; cited 2014 Apr 4]. Available from: http://gamapserver.who.int/mapLibrary/Files/Maps/HIV_deaths_2011.png)

Table 1 Estimated number of HIV-related deaths in 2011⁵

Not all regions and countries fit the overall trends in new infections as it is depicted in Table 2, below. AIDS-related deaths also differ. The regional picture from the UNAIDS report on the global AIDS epidemic and UNAIDS Fact Sheet 2013 (2012 data) show that in sub-Saharan Africa lives the 70% (25 millions) of all the people living with HIV as well as the 88% of the world’s seropositive children. In Asia and the Pacific, live almost 5 million seropositives, which is translated in 351.000 new infections per day. In Central and South America, there are 1.5 million seropositives. Circa 86,000 people were infected with HIV/AIDS and 52.000 died from AIDS-related illnesses. In Eastern Europe and Central Asia, 1.3 millions are infected with the virus. Lastly, in Western and Central Europe 860.000 people live with the virus while 7.600 died owing to it ⁴.



(source : Joint United Nations Programme on HIV/AIDS (UNAIDS). Global report: UNAIDS report on the global AIDS epidemic 2013. Geneva: UNAIDS; 2013 November. 198 p. Figure 1.1, New HIV infections among adults in low- and middle-income countries, by region, 2001-2012; p.13.)

Table 2 New HIV infections in countries with low and middle SES, by region, 2001-2012⁶

3. International policy

By 2005, G8 (Canada, France, Germany, Italy, Japan, Russia, United Kingdom, United States) leaders and United Nations (UN) Member States adopted the policy in terms of providing universal access to HIV prevention packages, care, treatment, and support interventions for all the victims of the virus. By 2010, behavioural interventions like testing and counselling, preventing mother-to-child transmission, and medical ones like antiretroviral therapy and medical male circumcision were published¹. Sumartojo et al argue that nowadays, holistic interventions focus apart from on the medical side to the social, cultural, psychological, developmental and behavioral characteristics of the high risk cohorts, as well⁷.

HIV approaches target towards universal access to prevention, treatment, care, and support for the needy ones. Novel first-line interventions are henceforth characterized by the triple A, i.e. Availability, Accessibility, Acceptability⁷. The AAA strategy includes combinations of behavioral, biomedical and structural approaches.

State-of-the-art HIV prevention measures are promising. Evidence show that antiretroviral treatment reduces the risk of HIV transmission almost 96%, male circumcision by circa 60%, pre-exposure antiretroviral prophylaxis by more than 40% and 49% among MSM and drug addicts, respectively. Despite the fact that prevention efforts seem to be effective as the rate of new infections declines, the UN Political Declaration affirms that avoidance of new infections should remain the golden standard⁸.

4. Social interventions

Behavioral interventions diminish sexually risky demeanour and avert HIV infections. Changes in sexual behaviour, for instance, universal condom use plus decrease in multiple partners, produce significant declines in high-occurrence countries. Yet, there are concerning indications that in some countries of Africa like Nigeria social and behavioral projects currently probably does not consist a priority. Consequently, recent evidence suggest reduction in condom use and rise in the number of sexual partners⁸.

4.1. Condom Use

Across the borders, sex without protection remains the primary cause of HIV infection. Since an effective vaccine does not exist, consistent and correct condom deployment remains the most effective strategy in diminishing HIV transmission amid-st heterosexual (youths, adults, commercial sex workers (CSWs)) and homosexual (MSM) cohorts. Wide distribution of condoms along the lines of the AAA strategy is integral to successful HIV prevention. In this sense, condoms must be readily *available* in places such as pharmacies, condom dispensing machines and clinics - placed in bowls where populations at greater risk can see them -, readily *accessible* in terms of unlimited access to condoms, located in multiple places and locations, and *acceptable* as communities should support condom use, not considering it a taboo; crucially this endeavour should be endorsed by opinion makers and public personae⁹.

Charania et al report in this article that condoms have helped to reduce HIV infection rates as they have also encouraged broader safer sexual conduct in many countries. A comprehensive literature review in 21 studies published from January 1988 through September 2007 that investigated the efficacy of condom use and its distribution. It showed that condom use is efficacious in reducing various HIV sex risk-behaviors for various groups such as adults, males, and CSWs¹⁰. As a matter of the fact, in sub-Saharan Africa since 2001 the annual rate of new HIV infections in adults has been reduced by 34%⁸.

UNAIDS indicates that in Uganda recent data affirm that the decrease of HIV prevalence in the 1990s had been a combination of factors, i.e.: increased condom use, delay in the age of first sexual intercourse, and reduction of sexual partners, and not an outcome of a single approach itself¹¹. Unfortunately, in its latest annual report UNAIDS acknowledges the fact that risky sexual behaviors like an augmentation in the number of sexual partners and a reduction in condom use in Rwanda and as well as Nigeria and Uganda, respectively, have returned⁸.

On the other hand, in South Africa an increase in distribution in male condoms and condom use had positive results in reducing new HIV infections during 2000-2008. Needless to say that condom distribution programmes have also been proven to be effective in many countries such as Kenya and Zambia. Disappointing remains the fact that in Namibia fiscal austerity led to a decline in condom distribution in 2011-2012. Furthermore, Uganda announced a stock-out of free condoms⁸.

HIV transmission still remains a major issue among CSWs. As UNAIDS reports Thailand had been successful in de-stigmatising condom use by promoting their use in CSWs. As a result, a dramatic decline in HIV infections was observed in their clients. Subsequently, this decline assisted in reducing the spread of the epidemic to the general population ¹¹.

The education condom program in Thailand was bidirectional. It required CSW to use condoms with each and every single client of them while at the same time it warned men to wear condom if they were clients of the former. According to Sumartojo et al, the program was followed by a dramatic condom use by CSW and decrease in sexually transmitted diseases (STD) among the male population of Thailand ⁷. Likewise, in Cambodia a similar policy implemented to CSW resulted in fewer HIV infections among CSW ¹¹. By UNAIDS, condom use rates in CSW has raised and keeps raising from 78% in 2009 to 85% in 2012 ⁸. Yet, a review of sex-workers experiences in four countries in Eastern and Southern Africa reported that CSW's access to condoms is not sufficient ⁸. Gay, bisexual and other MSM of all races and ethnicities remain the primary candidates for acquiring the HIV epidemic. Dawn Smith of the United States (US) Centers for Disease Control and Prevention (CDC) run an analysis and a first estimate on the efficacy of condoms use in preventing HIV transmission during anal sex since 1989. She found that condoms stop 7 out of 10 anal infections. Moreover, she found that among all men engaging in anal sex, those who said that they used condoms 100% of the time those were 70% less likely to acquire HIV than men who never used condoms, and 68% less likely than men who said they occasionally used them ¹².

In spite of these facts, according to the national global aids response progress reporting (GARPR) 2012 report, HIV prevalence among MSM finds Western and Central Africa (19%) first in victims, followed by Eastern and Southern Africa (15%), Latin America (12%), Asia and Pacific (11%), Western and Central Europe and North America (8%), and the Caribbean (7%) ⁸.

The number of seropositives among MSM in European Countries reached the number of 8.018 cases in 2011 (increased by 33%) accounting for the majority of new HIV diagnoses, unlike 8.768 new cases in 2010 and 6.589 in 2004 ².

Finally, in the US, in 2008 there were 26.700 new HIV infections among MSM while in 2010 a 12% increase was noted reaching the number of 29.800 new cases. MSM cases account for 78% of new infections among males and 63% of all new infections ¹³.

4.2. Sterile Syringes Programmes

HIV prevention in cohorts that inject drugs remains low. Only some countries including the Former Yugoslav Republic of Macedonia (31%), Pakistan (18%), Georgia (18%) and Bangladesh (16%) dedicate a worthwhile percentage of the national HIV spending in programmes for people who inject drugs ⁸. For this reason, HIV existence among drug addicts remains in high percentages reaching in Iran 68% of new infections, in Eastern European countries 40%, and in the Philippines 36% comprising of almost 5-10% of all seropositives worldwide ⁸. In Greece and Romania, seropositives due to drug use were increased more than ten times in 2011 than in 2010. At the same time, the total number of infections in EU/EEA countries declined from 1.572 cases in 2004 to 1.091 cases in 2010 ².

Only Bangladesh and Malaysia amidst 32 countries reporting provided the recommended minimum, at least 200 sterile syringes, per year per person who injects drugs in 2011 and 2012 ⁸. In Asia, where HIV dominance is high, the coverage of programmes for sterile needles has not meaningfully increased; it has only reached 28%. Countries in the Middle East and in North Africa have noted some increase in sterile syringe distribution ⁸.

4.3. Testing and Counselling

HIV testing and counselling helps since late 1990s millions of people to find out whether they are seropositives. Should they are seropositives the World Health Organization (WHO) informs them on their alternatives regarding therapy and treatment. Some countries also use the 'couples testing and counselling' technique. Additionally, in countries with HIV pandemic such as Uganda, Kenya, and Zambia the 'door to door' testing is implemented ¹⁴.

It is widely acknowledged that awareness of HIV-positive status reduces the bearer's perilous sexual behaviour. As a result, HIV prevalence declines, as well. An early diagnosis from the HIV testing service offers the opportunity to seropositives to intervene medically and even prevent further HIV transmission. Despite that fact, in 2006 nearly 60% of adults in the US had never been tested. Not to mention of course that in the US by the end of 2006, out of the estimated 1.1 million seropositives, an estimated 21% had not been aware of their infection ¹⁵.

For this reason, many of the campaigns CDC runs in America target the general public and focus on HIV testing ¹⁶. Namely, *Reasons* is a campaign that encourages Latino gay and bisexual men to be tested for HIV. *Testing Makes Us Stronger* is campaign that encourages African American gay and bisexual men to be tested for HIV. *Take Charge. Take*

the Test is a campaign designed to increase HIV testing among African American women. *HIV Screening. Standard Care* is a campaign that encourages primary care providers, gynecologists and other health care providers to promote routine HIV testing during patient visits. Last but not least, *One test. Two Lives* is a campaign that encourages health care providers to test pregnant women for HIV infection and assist in the reduction of the number of infants born with HIV.

Reports show that access to HIV testing and counselling is globally improving ¹. More specifically, tests increased to 72 million in 2010 from 64 million in 2009. In effect, the median number of tests per 1.000 persons rose from 47 to 55, a gain of 17%. Amongst pregnant woman testing rose from 8% in 2005 to 35% in 2010. The matter of the fact is that HIV testing and counselling facilities rose too. In particular, in 2007 there were 30.300 testing services in 78 countries, in 2008 78.000 in 111 countries, in 2009 107.000 in 118 countries, and in 2010 131.000 in 119 countries. Interestingly, the median number of facilities per 100.000 citizens increased 44% from 5.2 in 2009 to 8.2 in 2010 ¹.

In 2010, the WHO evaluated that 95 million people in countries with low and middle SES, not only, received HIV testing and counselling in the past 12 months, but also, learned their test results ¹⁴.

4.4. Abstinence

Preventing HIV infection is promoted by abstinence programmes that use the method of sexual abstinence. Abstinence programmes aim to communicate the social, health related, and psychological benefits of abstaining from sexual activity. The majority of them focuses on the damage of extra-marital sexual activity.

There are two types of such programmes. Abstinence *only* and *plus*. The abstinence only programmes are in practice different from the abstinence plus ones. Both programmes approach abstinence from sex as the most effective alternative for HIV prevention. The major difference is that abstinence plus programmes support safer sex methods like condom use. On the contrary, abstinence only programmes consider abstinence to be the sole alternative for preventing HIV infection. Abstinence only programmes do not support safer sex methods.

Underhill et al on one hand, systematically reviewed 13 randomised controlled trials (RCTs) of sexual abstinence programmes totalling in more than 15.900 participants. They found that sexual abstinence only programmes for prevention of HIV infection had neutral results. In other words, they neither decreased nor exacerbated sexual risk among youths in high income countries. The findings suggest that abstinence only programmes targeting to prevent HIV infection are ineffective. Moreover, the results can only be generalist to US youths ¹⁷.

On the other hand, RCTs were analyzed with reference to abstinence plus programmes in countries with high SES. These analyses found that a significant number of abstinence plus programmes appears to reduce short-term and long-term HIV risk behaviour in youths of countries with high SES ¹⁸.

5. Medical interventions

5.1. Voluntary Medical Male Circumcision

Male circumcision is a controversial issue although world-widely, males are circumcised for various medical, social, and/or religious reasons. Rennie et al argue that RCTs in South Africa, Kenya, and Uganda showed that male circumcision could offer important clinical and public health benefits in countries with high HIV rates. Results indicated that circumcised men in South Africa were 60% less likely to acquire HIV than their uncircumcised counterparts. Moreover, two RCTs in Kisumu, Kenya, Rakai, and Uganda showed 53% and 48% reductions in HIV transmission among circumcised men than uncircumcised men ¹⁹. In sub-Saharan Africa, in 2008 21.310 males were circumcised, in 2009 circumcisions climbed to 122.988 and in 2010 increased to 410.904, reaching the total number of more than 550.000 by the end of 2010 ²⁰. In December 2011, 1.5 millions of men had been circumcised and as of December 2012, 3.2 million Africans had been circumcised ⁸.

Global HIV/AIDS response progress report 2011 reports that the Kenyan authorities set the target in circumcising by 2013 men aged between 15 and 49 and, indeed, there was exhibited an increase from 84% to 94%. Yet, the current rate of male circumcision aged 15-49 to 80% is still rather limited in most countries ²⁰. UNAIDS claims that if the 80% of all uncircumcised males are circumcised by the year 2015 voluntary, then medical male circumcision would be capable of averting one in five new infections by 2025 in high HIV-dominance countries and low prevalence circumcision ⁸.

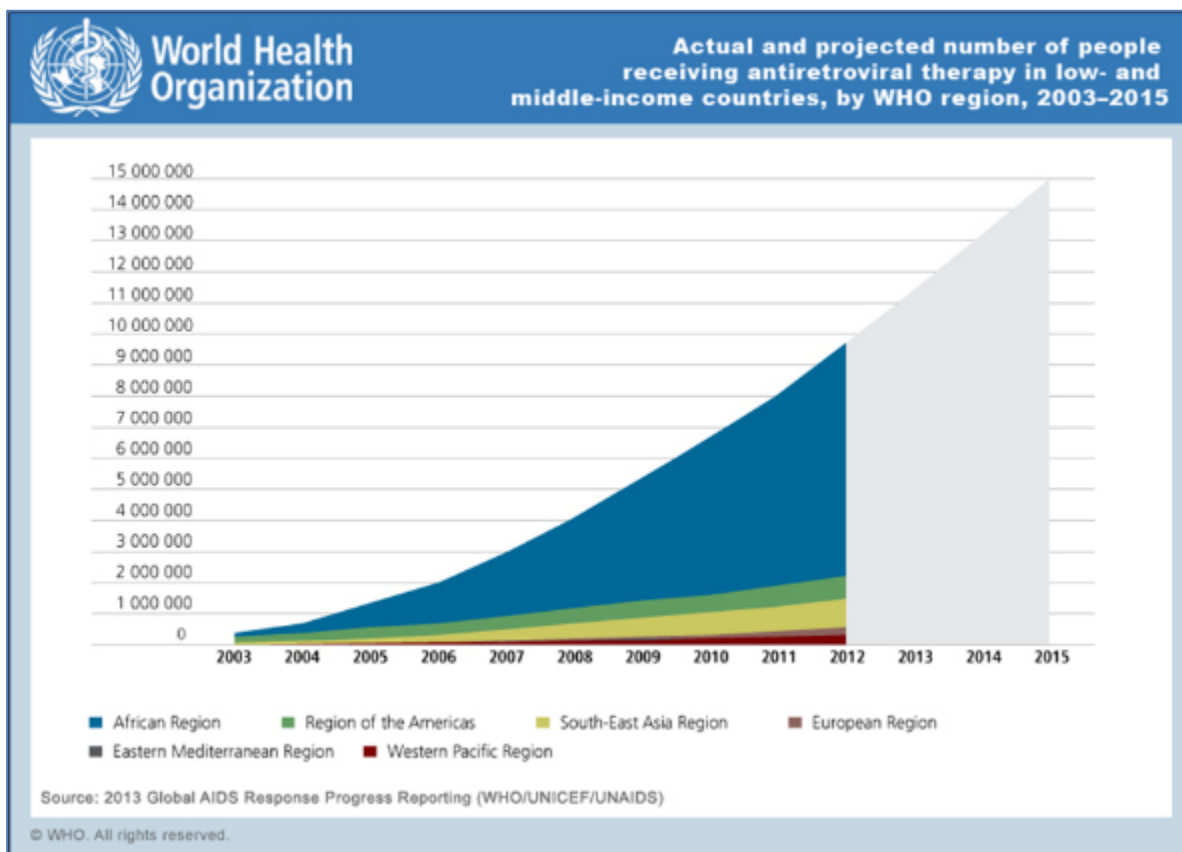
5.2. Pre-Exposure Prophylaxis

Pre-exposure prophylaxis (PrEP) is a new tool in HIV prevention, which protects seronegatives from being infected with HIV. PrEP is a pill which when it is consistently taken impedes the virus from copying itself and, thus, establishing a permanent infection to the human organism. In 2012, the medication was approved by the U.S. Food and Drug Administration (FDA). Its use has only recently been studied, yet, there are encouraging evidence that a novel era in HIV prevention for gay and bisexual men, heterosexuals population and injection drug users emerges. The results revealed that PrEP reduces the risk of HIV infection in MSM by 44%²⁰. This percentage was a result of the above mentioned eclectic approach, that is a combination of condoms, HIV testing and counselling, persistence in adherence to daily take of the pill, and training on managing other STD²¹. Last but not least, it was found that PrEP prohibited HIV transmission among men who have sex with women and among MSM by 75% overall²⁰.

In either case, it was found that people who were not infected with HIV and who took the medication consistently plus the level of the drug in their blood was detectable, their protection level reached almost 90%. The risk can be reduced up to 86% when the medication is taken daily²¹⁻²³. In Bangkok of Thailand, in the first ever study regarding whether PrEP reduces the risk of infection among injection drug users, 2,413 men and women who inject drugs participated. The results showed that the risk of being transmitted HIV was reduced by 49% in the sample tested²³.

5.3. Antiretroviral Treatment

Antiretroviral treatment (ART) is undoubtedly the first line therapy in HIV. In 2010 and 2011, studies provided evidence that people infected with HIV who receive ART bear a reduced risk to transmit the virus to those who are not infected with HIV¹. Since 1995, ART has prevented circa 6.6 million deaths globally; specifically, 5.5 million deaths in countries with low and middle SES⁸ and about 1.8 million in Sub-Saharan Africa¹. A decrease in AIDS-related deaths was noted in 2012 as they fell to 1.6 million from 2.3 million in 2005⁸.



(source : World Health Organization. Global Health Observatory. Trends. Actual and projected number of people receiving antiretroviral therapy in low- and middle-income countries, by WHO region, 2003-2015 [Internet]. 2014 [updated 2014; cited 2014 Apr 4]. Available from: http://www.who.int/gho/hiv/epidemic_response/ART/en/ and http://www.who.int/gho/hiv/epidemic_response/hiv_012.jpg?ua=1)

Table 3 Estimated number of people receiving ART, by WHO region, 2003-2015²⁴

Fortunately, great progress in countries with low and middle SES has been noted as 6.65 millions in 2010 had access to ART as opposed to only 400.000 seropositives in 2003 ¹. By the end of 2012, 9.7 million seropositives were receiving ART; an increase of 1.6 million over 2011 ⁸. Furthermore, the expansion of health facilities providing ART from 7.700 in 2007 to 22.400 at the end of 2010 is notable ¹. Advances in HIV therapy help life expectancy to grow. In KwaZulu-Natal, South Africa, for instance, life expectancy climbed 11.3 years from 2003 in 2011 ⁸.

In spite of the fact that children who receive ART are still quite few, reports show the following. At the end of 2005, only 71.500 children received ART, whereas in 2010 456.00 ⁸. Regarding AIDS-related fatalities, the former decreased from 320.000 in 2005 to 210.000 in 2012 ⁸. UNAIDS reports that children under the age of 15 who received an ART in 2012 were 647.000 which is interpreted as an increase of 14% from 2011 ⁸. Last but not least, in priority countries only the 1/3 of children receive ART ⁸. In Table 3 below, there is the estimated number of people receiving ART for the years 2003-2015.

Up to August 2013, out of 109 countries that reported results, all of them identified HIV treatment as their priority. Prevention measures for HIV treatment should target not only the general population. Moreover, ART successfully targets mother-to-child transmissions as since 2009 650.000 children have not acquired the virus. In fact, eliminating mother-to-child transmissions appear to be the new weapon against HIV expansion in children ⁸.

Data show that 900.000 seropositive pregnant women were receiving antiretroviral prophylaxis or treatment by the end of 2012. Crucially, there was a 5% increase in the mother-to-child transmission prevention programmes from 2011 (57%) to 2012 (62%). Additionally, from 2001 to 2012 a 52% decrease in new HIV cases was noted. Notably, in countries with low and middle SES in 2012 there were infected with HIV 35% (260.000) less children than in 2009. Vitaly, ART covered in 2012 62% of mother-to-child infection cases from 57% in 2011. In Botswana, Ghana, Namibia and Zambia 90% of seropositive pregnant women receive antiretroviral therapy. Importantly, in Ghana there is ART coverage of more than 90% in 2012 from 32% in 2009. As a result, HIV transmission from a seropositive mother to her child declined to 9% in 2012 from 31% in 2009 ⁸. Finally, in Europe in 2004 there were recorded 295 novel cases of mother-to-child HIV transmission, while in 2011 only 188 ².

There is significant differentiation in the coverage of prevention services for pregnant seropositive women, world widely. More specifically, in Eastern and Central Europe and the Caribbean the coverage is higher, while it remains lower in Asia, the Pacific, as well as in the Middle East and North Africa. Even though access to ART for seropositive pregnant women is improving in a wide array of countries, 13 countries with a generalised HIV epidemic such as Ethiopia, Angola, Congo, and Nigeria did not provide the ART in pregnant women so as to prevent vertical transmission in nearly 50% of the cases ⁸.

5.4. Sexually Transmitted Infections

Hayes et al argue that the most controversial strategy for HIV prevention has not been other than the control of sexually transmitted infections (STIs) other than HIV/AIDS. Empirical data have provided sound and robust evidence with reference to the significance of STI measures in restricting the spread of HIV. In fact, the results of RCTs have been mixed. More particularly, trials have yielded seemingly contradictory findings and as such there are no crystal clear conclusive findings on how important is the control of STI in HIV prevention ²⁵.

Essentially, Hayes et al claim that abundant empirical data on the biological correlation of HIV infection and other STIs had already been available for two decades time. These data if correctly analyzed they can substantially add to contemporary epidemiological research trials by showing potential mutual spirals of infection between the former and the latter. Indeed, later empirical research trials were in line with the former ones as they both affirmed and expanded the above mentioned findings. In other words, cooperative research trials focused on the epidemiological implications of HIV and other STIs found susceptibility and infectiousness between HIV and STIs. The fact of the matter is that subsequent research trials found a wide range of biological mechanisms that possibly support these spiral interactions of HIV and other STIs such as mucosal disruption ²⁵.

The afore-mentioned findings provided a solid basis on which a strategy for employing STI control as an HIV prevention could be implemented. STIs are more common amidst individuals with riskier sexual behaviour and, thus, have the tendency to group in the the cohorts of the general population that are at risk of HIV infection. What is more, STI dominance was high in a variety of countries during the great expansion of the HIV epidemic. This was partly a corollary of the poor quality of treatment services. Inductively, this correlation led to the hypothesis that improved STI therapy could potentially reduce the dominance of STIs in serodiscordant (one of the partners is seronegative and bears a high risk of acquiring HIV) couples and thence decrease the possibility of HIV transmission ²⁵.

Following, nine RCTs were conducted in order to evaluate the improved STI therapy approach to HIV prevention. These RCTs investigated three different management approaches to a wide range of curable and incurable STIs in a wide array of cohorts. Crucially, the cohorts did not bear the same level of risk behaviour and STI dominance, in the context of HIV epidemics which ranged from concentrated to generalized. Contra to the robust empirical data, only one of these RCTs with high variation exhibited the efficacy of STI therapy in HIV prevention, whereas the rest eight showed no significant effect ²⁵.

6. Discussion

Plenteous exertion is still needed to be carried out. The scientific and academic community along with political authorities, and societies should adopt the eclectic approach so that prevention measures can drastically tackle the confrontations of a growing and mutating HIV epidemic ⁷. The *sole measure* - condoms only, circumcision only, HIV testing and counselling, or treatment only - approach does not protect population from HIV/AIDS. In fact, a combination of them is indispensable. In other words, what times call for is a holistic approach so that tackling AIDS to be radical. Strategically combined HIV interventions should be designed. They should be medically (sub-types and valents) plus behaviorally and socially tailored for the specificities of every different epidemic taking into consideration the high risk for transmission cohorts.

Prevention programmes should not use single components of treatment schemes rather than a combination of approaches ²⁰. Condom use only, for instance, does not provide the expected decrease in new seropositives, unless it is combined with other interventions like elimination of multiple sexual partners or voluntary male circumcision. In Kenya and Zambia, it has been found that interventions comprising of both condom distribution and HIV testing and counselling are rather effective ⁸. Additionally, prior research trials has affirmed that despite male circumcision prevents HIV transmission, it does not protect high risk cohorts unless it includes safer sex practices like correct and consistent condom use ³.

Furthermore, serodiscordant couples are benefited by antiretroviral therapy along with HIV testing and counselling ⁸. Early diagnosis of seropositives has better results in HIV therapies. The matter of the fact is that the 36% of the population in Sub-Saharan Africa has never been tested for HIV/AIDS ⁸.

It is mandatory that all sexually active adults should consider themselves as being at risk of contracting HIV. A nationwide campaign of stance alteration via public information disclosing and social mobilization should occur promoting condom use, delayed sexual commencement, abstinence and partner restriction. Needless to say that access to HIV counselling and testing has to be expanded. Specifically, relevant parties (governments, civil societies, seropositives, distinguished personae, social media, schools, workplaces) to be fully engaged to communicating the precariousness of being seropositive and encourage populations to be tested for HIV ³.

Future research trials should be conducted on the efficacy of abstinence, male circumcision plus on the correlation between STIs and HIV. The findings should be disseminated to vulnerable populations and youths to educate them on the necessity of HIV prevention and therapy.

It is of vital importance for the health standards of the society, humans to realize the ceaseless need for the termination of the gravest of the contemporary health confrontations, that of Human Immunodeficiency Virus.

7. Conclusion

The spread of the HIV-AIDS epidemic has affected and continues to affect the entire world. The above review article re-evaluates the prevention measures, which, although they have succeeded in slowing down its spread and reducing the number of victims, have not done their best to eliminate the deadly consequences of the virus.

Despite the fact that worldwide the number of new infections has decreased, statistics show that, since the beginning of the appearance of the virus, 75 million have been infected by it and 36 million have died because of it. In 2012, 2.3 million were infected and 1.6 million survived. 70% of all people living with AIDS are in sub-Saharan Africa. This is followed by Asia and the Pacific with 5 million HIV positives, Central and South America with 1.5 million, Eastern Europe and Central Asia with 1.3 million and finally Western and Central Europe with 860,000 HIV positives.

Until now, prevention practices such as voluntary testing and counseling and prevention of vertical transmission from mother to child with the help of medical practices appear to be effective. Research has shown that antiretroviral therapy

reduces the risk of transmission by nearly 96%, male circumcision by about 60%, and pre-exposure prophylaxis by more than 40% in gay men and 49% in intravenous drug users.

Social interventions to reduce the risk of contracting the virus include programs for systematic condom use, programs to provide sterile syringes to intravenous drug users, voluntary testing and counseling, and abstinence. The article analyzes each measure separately.

Unprotected sex remains the main cause of HIV infection. In sub-Saharan Africa since 2001 the annual number of new infections has decreased to 34% due to the promotion of programs for the use of condoms as a preventive measure. An inhibiting factor in the whole effort is risky sexual behavior, such as the non-observant use of condoms and the increase in the number of sexual partners who have returned to Rwanda, Nigeria and Uganda. At the opposite end is South Africa, where condom distribution programs produced positive results in reducing new infections in the period 2000-2008. Other countries such as Kenya and Zambia had the same positive results. The same did not happen in Namibia and Uganda, where distribution proved to be minimal or non-existent, due to the countries' economic difficulties. Condom use in commercial sex, according to UNAIDS, increased from 78% in 2009 to 85% in 2012. Among homosexuals, another category affected by HIV, in West and Central Africa the rate of spread of the virus reaches a rate of 19 %. It is followed by Eastern and Southern Africa with a percentage of 15%, Latin America with 12%, Asia and the Pacific with 11%, Western, Central Europe and North America with 8% and finally the Caribbean with 7%.

Prevention practices among intravenous drug users remain minimal. This is why the rates of spread of the virus remain high, reaching 68% in new infections in Iran, 40% in Eastern European countries and 36% in the Philippines. In Greece and Romania HIV-positive people increased tenfold in 2011 compared to 2010. Only Bangladesh and Malaysia among 32 countries reported providing the recommended minimum of sterile syringes (200 syringes/year/person) in 2011 and 2012. In Asia, where AIDS rates remain high, coverage of such programs has reached only 28%, while in Central, Eastern and Southern African countries the distribution of sterile syringes has shown little improvement.

Since the 90s, voluntary testing and counseling has allowed many HIV-positive people to know that they are infected with the virus. Access to such facilities appears to have improved in recent years. Specifically, there was an increase in examinations from 64 million in 2009 to 72 million in 2010. At the same time, the average number of facilities per 100,000 inhabitants increased by 44%. The World Health Organization reported that in 2010, 95 million were tested for HIV infection and learned their results.

In addition to social interventions, medico-pharmaceutical practices also seem to play an important role in limiting the spread of the pandemic. Among them is male circumcision. As a practice, it seems to be widely applied in Africa as statistics show that by December 2012, 3.2 million Africans had adopted this solution. UNAIDS reports that if the circumcision rate reached 80% by 2015, then male circumcision could prevent one in five new infections by

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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