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Review paper

Feminization of HIV/AIDS epidemiology in Cameroon and Chad: A desk research

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Abstract

HIV/AIDS epidemiology is a social and public health problem which carried a heavy burden and is a leading factor to high morbidity and mortality in the world. This paper aimed at investigating the feminization of HIV/AIDS in Chad and Cameroon and exploring factors behind it in those two countries. This present study used a desk kind of literature review and involved 42 articles and national surveys. The results revealed that in Cameroon and Chad, women were at higher risk of being infected with the HIV/AIDS and various factors ranging from individual level to socioeconomic as well as cultural and institutional level explained this vulnerability. The article concludes by calling upon the stakeholders to take measures and commitments in order to decrease the trend of the HIV/AIDS epidemic among women in Cameroon and Chad.

Keywords: HIV/AIDS, feminization, factors, Cameroon, Chad.

Introduction

Human Immunodeficiency Virus (HIV)/Acquired Immune Deficiency Syndrome (AIDS) infection is a global social and public health problem. It has spread over the last 30 years by affecting healthcare system and individuals' health, welfare, employment status as well asocial and ethnic or racial groups across countries in the world[1]. Despite numerous political and financial efforts to provide and expand access to HIV treatment, the viral epidemic continues dynamically and dramatically to spread and challenge the global response[2].

Recent epidemiological data indicated that the world carries a heavy burden of HIV/AIDS and it remains a social and public health issue. About 38.4 millions of people around the world lived with HIV/AIDS[3] and 71% of them lived in Subsaharan Africa in 2013[4]. While the viral infection is not intended to a particular gender group and a probability of everyone to be infected with it either way or the other[5], women are being more infected around the world.

The feminization of HIV is now a global phenomenon[6]. Around the world, 21.8 millions (54%) girls and women lived with HIV[3]. In Subsaharan Africa, women and girls are more infected than men[7,8], they accounted for 63% of all new HIV infection in 2021[3]. This is an offensive reality regarding the fact that males are more engaging in higher risky behavior than females[5] in terms of sexual behaviors. Women are more vulnerable due to some conditions that act against them. Factors that place women at higher risk to HIV infection and contribute to a worse life of women living with HIV, can be divided into two broad categories: biological factors which can be considered as being 'universal' to all women and non biological factors which can be specific to societies and cultures[9]. Given the burden of HIV infection on the developing countries in general and particularly in sub-Saharan African countries, specially Cameroon and Chad, it is obvious to affirm that HIV infection can be considered as a disease for low income countries. Therefore it is important to synthesize and carefully analyze the epidemic's dynamic nature. The objective of this review study is to investigate the feminization of HIV/AIDS in Chad and Cameroon and explore factors behind it in those two countries. Furthermore, it seeks also to identify gaps in the literature.

Theoretical framework: Radical feminism theory: In general, feminist theory challenges oppression and works toward justice[10]. It offers a perspective for understanding human behavior in the society by focusing on women and issues that women face in contemporary society[11]. Radical feminism considers that the oppression of women is created by the domination of men[11,12] and is based on the central beliefs that women absolute positive values as women[5]. This is based on the fact that women are everywhere marginalized and considered as under-people and voiceless people. This is because most of the societies around the globe are patriarchal societies which violently oppressed women and involve the appropriation of their bodies and sexuality[13]. Women are considered submissive and men dominant. The radical feminism indicates how women are positioned and play role in societies and this is also witnessed by how the epidemic of HIV/AIDS has severely worsened the survival of girl and women[5]. Radical feminism seeks a more egalitarian and gender-free society[13].

Methodology

Since HIV/AIDS is a phenomenon, it was decided upon to use in the present study a desk kind of literature review to gather more information. In order to ensure quality and reliability of our research, it was decided to use the framework proposed by Turoń & Kubik[14] which involves five steps: (1) identifying topic of the research; (2) identifying research sources; (3) collecting existing data; (4) combining and comparing data and (5) analyzing data.

Identification of the research topic: This review is based on the following research topic and research questions:

Research topic: Feminization of HIV/AIDS epidemiology in Cameroon and Chad.

Research questions: i. Are women experienced more HIV/AIDS infection in Cameroon and Chad? ii. What are factors associated with HIV/AIDS infection among women in Cameroon and Chad?

Eligibility criteria: Inclusion criteria: i. Studies with participants aged 15 years olds and above. ii. Studies with evidence about HIV-positive women. iii. Studies with evidence about prevalence of HIV/AIDS infection among both male and female or among only female. iv. Studies published between 2002-2023. v. Studies conducted in Cameroon and Chad. vi. Articles published in English and French. vii. Studies with evidence on factors related to HIV infection among women.

Exclusion criteria: Article published in a language other than English and French and conducted in other countries than the above mentioned. Theses, dissertations and reviews papers were also excluded.

Identification of research sources: The researchers have consulted scientific papers, institutional documents and other electics sources to enrich the discourse on the phenomenon of feminization of HIV/AIDS. The Cameroonian and Chadian Demographic and Health Surveys were equally used in the study. In order to collect those different documents, the researchers have conducted systematically a literature search on different electronic databases such as Centre for Disease Control and prevention website, Google Scholar, Semantic Scholar, PubMed and Google Chrome website from November 2022 to January 2023.

Collection of existing data: We used a combination of the following key terms: HIV/AIDS, Cameroon, Chad, Cameroonian, Chadian, women, socioeconomic status, reproductive health, gender, violence against women and insert them into the different identified research sources. A total number of 200 articles were identified on the topic.

Study selection: The principal author conducted title screening and abstract screening. The purpose of the title screening was to assess the titles for eligibility and to remove duplicates. We removed any duplicates before the screening of the abstract. The principal author created a folder to which all the eligible documents were exported and stored.

We removed any duplicates before the screening of the abstract. Articles that were found to be suitable to the present review study based on the inclusion criteria were selected. Moreover, we undertook the full-text article based on the eligibility criteria (Figure-1).

Charting the data: We used the data charting table (Table-1) to extract the necessary background information of the studies and to extract information from each selected study. We created a table using Word, version 2013 and used the table for data charting. This form highlighted essential ideas regarding the variables from the background. The data charting form was designed and validated in order to decide which variables to extract. We abstracted the data on the article characteristics: author, year of publication, study design, sample size, participants and location/country.

Outcome selection: HIV/AIDS feminization as a phenomenon was considered to be a major topic of this review and limited to two countries (Cameroon and Chad). In this paper, we focused on an analysis of the prevalence of HIV/AIDS among both men and women and among only women and of factors contributing to HIV/AIDS among women identified from empirical studies in Cameroonian and Chadian context.

Combination and comparison of data: We used qualitative data analysis to collate, summarize and report the data. First the researchers read and reread the articles thoroughly, noting down the initial ideas to find codes and in addition they also read institutional surveys by going through the table of contents and focusing they reading on chapter related to HIV prevalence and violence against women.

The notable features of the relevant data extracted from each article and institutional survey were systematically coded and data relevant to each code was collated. We then developed the codes into potential themes and finally defined and named the themes and produced the report.

We extracted and coded data that were related to the prevalence of HIV infection and factors associated with it among women.

Analysis of data: The analysis process used the following steps: (1) coding data from the selected articles and institutional reports; (2) categorizing the codes into themes; (3) displaying the data; (4) identifying key patterns in the data and the subthemes; (5) summarizing and synthesizing.

Table-1: Description of the included studies.

Authors	Year of publication	Methods	Sample	Participants	Location/country
15	2019	Quantitative	50	Men and women	Fako/Cameroon
16	2013	Quantitative	9899	Men and women	Cameroon
17	2014	Quantitative	114	Men and women	Litoral region/Cameroon
18	2017	Quantitative	3990	Men and women	Yaoundé/Cameroon
19	2011	Quantitative	329	Men and women	Douala/Cameroon
20	2016	Quantitative	833	Men and women	Fako/Cameroon
21	2022	Quantitative	45	Men and women	Yaoundé/Cameroon
22	2002	Quantitative	875	Men and women	Yaoundé/Cameroon
23	2013	Quantitative	150	Men and women	Yaoundé/Cameroon
24	2020	Quantitative	779	Men and women	Cameroon
25	2010	Quantitative	2270	Men and women	North West region/Cameroon
26	2022	Quantitative	288	Men and women	North West region/Cameroon
27	2019	Quantitative	6859	Pregnant women	Cameroon
28	2008	Quantitative	4493	Women	Cameroon
29	2008	Quantitative	4486	Women	Cameroon
30	2009	Quantitative	2130	Women	Yaoundé/Cameroon
31	2008	Quantitative	2008	Women	Yaoundé/Cameroon
32	2019	Quantitative	400	Young pregnant and mother women	Kumbo/Cameroon
37	2023	Quantitative	N/A	Men and women	Cameroon
39	2023	Quantitative	6080	Pregnant women	N'Djamena/Chad
40	2007	Quantitative	1481	Women	Cameroon
41	2016	Quantitative	7739	Women	Cameroon
42	2014	Quantitative	415	Women	Yaoundé/Cameroon
43	2011	Quantitative	282	Women	Bamenda-Limbe-Nylon/Cameroon
44	2019	Quantitative	8396	Women	Cameroon
45	2014	Quantitative	4916	Women	Cameroon
46	2008	Quantitative	1481	Women	Cameroon

47	2004	Qualitative	N/A	Men and women	Fako/Cameroon
48	2021	Quantitative	2138	Men and women	Cameroon
49	2019	Quantitative	894	Women	Cameroon
50	2021	Quantitative	230	Pregnant women	Yaoundé/Cameroon
51	2016	Quantitative	1817	Women	Cameroon
52	2017	Qualitative	22	Women	Douala/Cameroon
53	2022	Mixed-method	122	Breast feeding women and health providers	Adamawa region/Cameroon
54	2017	Quantitative	5966	Pregnant women	South West region/Cameroon
55	2016	Quantitative	61	Pregnant women	Yaoundé/Cameroon
56	2018	Qualitative	132	Men and women	Far North region/Cameroon

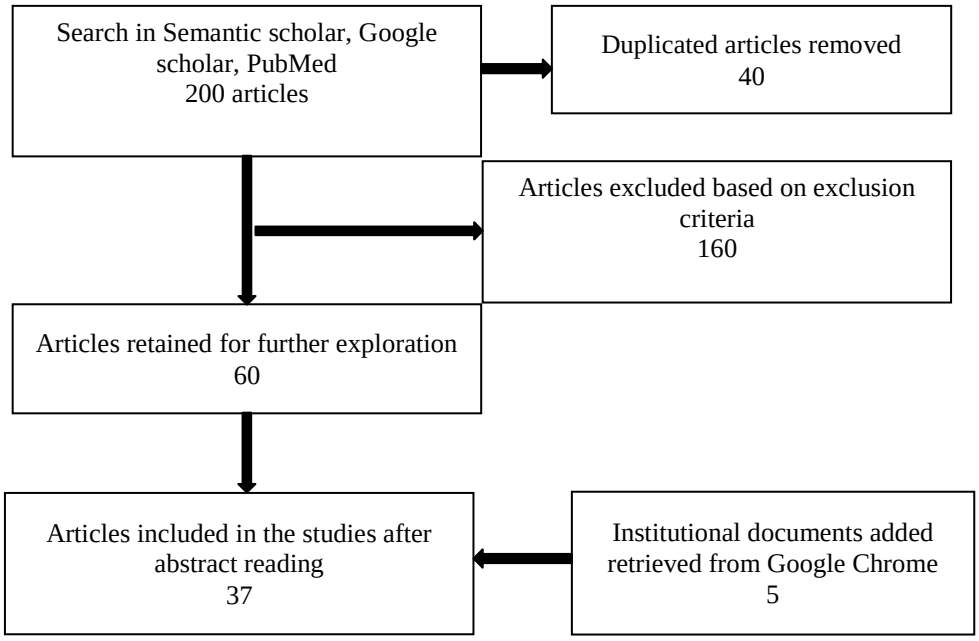

Figure-1: Search results and studies selection.

Results and discussion

A total of 37 articles were selected. Among these articles, study carried out in Chad accounted for only 2.70% of the total articles included and those carried out in Cameroon accounted for 97.30%. Table-1 showed the method, study population and location/country of these studies. In addition, institutional publications such the Demographic Health Surveys (DHS) and CAMPHIA were also used.

Gender dynamic informing feminization of HIV/AIDS: Studies have showed that statistically, women are disproportionately affected by HIV and AIDS epidemic and they are more likely to be infected than men in Cameroon[15,16]. The prevalence ranged from 56.3% to 78.9% among Cameroonian women compared to 21.1% to 64% among Cameroonian men[15,17-26,15]. Other studies conducted only on Cameroonian women reported that the prevalence ranged from 4.9% to 10.1%[27-32]. For example in Cameroon, according to the Demographic and Health Survey (DHS), HIV infection detected in 6.6% females compared to 4.1% males in 2004[33].

According to CAMPHIA 2017-2018 survey 5% females compared to 2.3% males are living with HIV[34]. According to DHS, in both urban and rural areas, 8.4% and 4.8 of women, as compared to 4.7% and 2.8% of men[33], 6.4% and 4.6% of women, as compared to 3% and 2.7% of men in 2011[35] and 3.9% and 2.9% of women as compared to 1.9 of men[36] were HIV/AIDS positive. According to the same surveys, women with no education, primary, secondary and higher education has prevalence of 3.4%, 4.2% and 8.2% in 2004[33], respectively 2.6%, 6.6% and 5.2% in 2011[35] and 1.9%, 4.8%, 3.8%, 3.1% and 2% in 2018[36]. For men, the prevalence rate is 2.1%, 4.1% and 4.2 in 2004, 1.7%, 3.1%, 2.5% and 3.5% in 2011 and 1.7%, 2%, 2.4% and 0.6% in 2018 with the educational status categorized as those of women. While the prevalence in Cameroon decreased to reach 5.6% females compared to 2.9% males in 2011 and 3.4% females versus 1.9% males in 2018[37], there are still gender disparities in HIV/AIDS prevalence. In Chad, the DHS reported that the prevalence of HIV/AIDS infection was 1.8% among women compared to 1.3% among men[38]. Another study conducted among Chadian pregnant women showed that 2.6% of them are infected with the HIV/AIDS[39].

Risk factors for HIV/AIDS transmission among women: Urbanization*:* Studies have also showed that women in urban area are more likely to be infected by the HIV/AIDS than those living in rural areas[28-30,40-43]. According to the DHS surveys in Cameroon and Chad, the prevalence of HIV/AIDS infection is high among women living in Urban area compared to those living in rural. 8.4% of urban women compared to 4.8 of rural women in 2004[33], 6.4% compared in 2011[35] and 3.9% compared to 2.9% in 2018[36] in Cameroon and 5.8% of urban women compared to 0.6% of those in rural in 2015 in Chad[38] were tested positive to HIV/AIDS. This means that urbanization contributes greatly to the spread of the viral epidemic among women in Cameroon and Chad. Urbanization replaces the traditional norms with the advent of western culture and liberalization of social norms with fewer restrictions on sexual behaviors. This can be explain by the fact that many women living in the urban are more likely to engage in high risk sexual behaviors such as transactional sex, multiple sexual partners to survive.

Who are more at risk, wealthier women or poorer women? *Wealthy predisposes to HIV/AIDS infection:* Wealthier or employed women are at risk of HIV infection[28,29,44,45]. Studies conducted by Adair[40], Adair[46], Kongnyuy & Wiysonge[28] and Mumah & Jackson-Smith[45] revealed that women in the middle and highest wealth quintiles are more likely to be affected by the HIV/AIDS infection than those in the lowest quintile. For instance, Budhwari et al.[44] reported that among HIV positive women, 87.1% of them are employed and working than 7.8% of unemployed women.

Poverty predisposes to HIV/AIDS infection: Poverty is related also to unemployment and can be regarded as one of the determinant or leading factor of HIV/AIDS pervasiveness. Poor people are definitely more at high risk to acquire HIV/AIDS and develop the disease more quickly. Many studies revealed that poverty among women was a window for HIV/AIDS spread among them in Cameroon[15,41,42,47] and even in Chad. In order to make money and satisfy their needs, married women are constraint to engage in extra-marital sex[26] and other women engage also themselves in dangerous sexual activities in order to survive which greatly exposes them to infection[15]. Feminization of poverty contributes to the feminization of HIV/AIDS because women and their families usually depend on men to survive economically and men take advantage on this economic dependence to exploit women and control the state of their sexuality. The economic dependence of women reduces their power to negociate a protected sexual activity[41] or to refuse sex when the situation seems risky.

Sexual behaviors: *Multiple sexual partnership:* Risky sexual practices such the multiplication of sexual partners and concurrent sexual partnerships among women are an important element in understanding the dynamism of HIV and AIDS epidemic among them. Studies showed that practice of multiple sexual partnership among women was highly associated with HIV/AIDS infection among them in Cameroon[15,29,32,40,41,45,46] even in Chad though there is no studies about the relationship between multiple sexual partner and HIV/AIDS among women in this context. According to DHS survey in Chad, women who had more than one sexual partner during the life are more likely to report being tested positive to HIV/AIDS (4.7% of women who had 2 sexual partners and 4.5% of those who had 3-4 sexual partners compared to 1.2% of those who had only one sexual partner[38]. The DHS surveys in Cameroon reported that women multiple sexual partnership contributes to the high prevalence o HIV among them, the prevalence was about 15.8% among those who had 10 or more sexual partners, 12% among those who had 5-9 sexual partners, 8.4% among those who 3-4 and 4.6% among those who had 2 compared to 2.1% of those who had only 1 in 2011[35]. In 2018, the prevalence was respectively 12.2%, 8.1%, 4.5% and 2.6% compared to 1.5%[36].

Unprotected/protected sexual intercourse: There is limited information on the relationship between unprotected sexual intercourse and women HIV status in Cameroon and Chad and the few evidence on it is mixed in the literature. On one hand, only two studies carried out in Cameroon reported that women who had not used the condoms during sexual intercourse are more susceptible of contracting HIV/AIDS[32,41]. On the other hand, other studies conducted in Cameroon revealed that protective behaviors such the utilization of condom is associated with HIV positive status among women. Mumah & Jackson-Smith[45] reported that women with higher rates of condoms use are more likely to be tested positive for HIV virus. The possible explanation of this relationship is that the positive HIV status of women pushes them to use more condoms during sexual intercourse in order to protect their partner[45].

Contraceptive use: Two studies conducted in Cameroon found a relationship between contraception usage and HIV status among women. The studies reported that HIV prevalence was observed to be higher among women who report using modern contraception methods[39,44]. Kongnyuy et al.[29] argued that the potential for modern contraception methods to increase the HIV acquisition among women remains unclear.

Earlypremarital sexual intercourse: There is also limited information on the relationship between earlypremarital sexual intercourse and women HIV status in Cameroon and Chad. Only two studies conducted in Cameroon reported that the risky behaviors associated with the HIV/AIDS acquisition among women was the early start of or premarital sexual activities[32,45].

Alcohol consumption: Alcohol consumption during sexual intercourse increases the risk of HIV/AIDS infection in women. Only one study reported this factor and indicated that there is a high increase in rates of HIV infection among women when alcohol was consumed by only the partner of woman and when alcohol is consumed by both the woman and her sexual partner[45].

Educational level: Education is an important factor to women health status. Evidences on the relationship between education and women HIV status is also mixed in the literature. On the one hand, most of studies have showed that educated women or women with high level of education were more likely to be infected than those who were not educated[16,24,27,28-32,43-45]. Results from a study carried out by Mbu et al.[31] revealed that among HIV positive pregnant women, 34.8% of them had primary level of education and 50.5% had secondary or higher level of education compared to only 14.6% of women with no level of education.

Results from the DHS in Chad suggested that women who were educated were more infected that those with no level of education[38]. The same results were observed in Cameroon showing that women with high level of education were HIV positive (more 5% of women with primary, secondary and higher) than those with no education level (2.8%) in 2011[35] and more than 2% compared to 1.9% in 2018[36]. On the other hand, only one study reported that the absence of education and the low level of education especially primary education reinforced the probability of being HIV positive among women[41].

Violence against women: Violence against women was a major concern in the life of women and also identified as one of the leading factors that place women in Cameroon (and in Chad) at a high risk of contracting HIV/AIDS[41]. Results from the national surveys in Chad suggested that 29% of women experienced physical violence and 11.6% experienced sexual violence in the year 2014-2015[38] and in Cameroon, the prevalence was about 54.6% and 20.1% in 2011[35] and 39% and 13.1% in 2018[36]. The most frequent perpetrators reported by those national surveys were the husband.

A study conducted by Fiorentina et al.[48] showed that men living with HIV who perpetrated intimate partner violence against their sexual partners are more likely to have high HIV-risky sexual behaviors and had a higher risk of transmitting HIV to their female partners. Violence against women was an important concern in HIV-positive women[49,50] and contributed to antiretroviral therapy interruption[49] and common mental disorders[50] among women living with HIV. It also contributed to inconsistent use of condom, being offered more money for condom less sex, having a condom slip or break and difficulty suggesting condoms to the partners[51] which placed women at a high risk of infection of HIV/AIDS. Violence against women in Cameroon (and Chad) mostly occurs at three levels: state level (absence of any law criminalizing domestic violence or marital rape), community and personal levels (traditions, cultural values and poverty). Also, women who had negative attitude towards domestic violence were more likely to be infected by the virus[45].

Women age : Age was identified as another factor associated with women's vulnerability to HIV/AIDS[16,27,29,41,44].A study conducted by Budhwari et al.[44] involving 8 995 women in which 1 362 of them were tested positive to HIV and 7 633 were tested negative. Among HIV positive women, it was showed that 46.1% of them were aged between 25-34 years old and 49.1% were aged between 35 years old and more compared to only 4.8% of those ages between 16-24 years old. Women aged 20 years and above are more at risk of being infected with the transmission of HIV/AIDS infection compared to younger women[27]. Another study carried out by Mbu et al.[31] revealed that among HIV positive pregnant women, 60.6% were those aged between 20-29 years old and 26.8% were those aged between 30 years old and more compared to only 12.6% of younger women aged less than 20 years old.

Results from DHS suggested that women aged 20 to 49 years are more infected that adolescent's women aged between 15-19 years old in Chad[38] and also in Cameroon[35]. Another study conducted in Chad revealed that older women were more HIV positive than young women under 19 year's old[39]. As the age increased, the probability of being infected increased too.

Marital status: Marital status was also identified as a leading factor to women's vulnerability to HIV/AIDS acquisition and transmission[16,27-29,41]. Single and widowed women were more likely to be infected by HIV/AIDS than those were married or cohabiting[27]. Results from DHS suggested that divorced and widowed women were more infected (respectively 4.3% and 6.9%) than married or in union women (1.6%)[38] and in Cameroon, respectively 15.7% and 17.9% of divorced and widowed women were infected[35]. A study conducted in Chad by Yandaï et al.[39] showed that widowed and divorced women were the most infected people compared to married women. This indicates that HIV/AIDS is affecting many more married couples and could be the cause of death in married couple[39] or a divorced among married people.

Furthermore, Yandaï et al.[39] explained that HIV/AIDS prevalence among widowed or divorced women can be explained by practices about marriage and other such as infidelity, polygamy, divorce and the inheritance of the spouse or wife of his dead or living brother. The high rate HIV infection among widowed or divorced women could also be explained by the high risk sexual behavior of their husbands[41].

Partner' characteristics: The characteristics of women's partner are associated with HIV status among them. According to studies conducted in Cameroon, women whose partners were more educated were more at risk of HIV/AIDS infection compared to those whose partners had no education attainment. Also women whose partners were wealthier were more at risk to acquire HIV than those whose partners are poor or unemployed[45].

Age mixing: There is limited information on the relationship between age mixing and women HIV status in Cameroon and Chad. Only one study conducted in Cameroon reported that age mixing was another factor explaining the transmission of HIV/AIDS among women. An elderly male sex partner increased significantly the probability of HIV/AIDS infection among women[41].

Age at first marriage: There is also limited information on the relationship between age at first marriage and women HIV status in Cameroon and Chad. Only three studies conducted in Cameroon reported that the age at first marriage was one determinant of HIV status among women[40,45,46]. Studies conducted by Adair[40] and Adair[46] revealed that women marrying at the age of 20 years and above were more than two-and-a-half times to live with HIV infection or to be tested positive to HIV/AIDS than those who married at younger age (16 years old or less). This indicates that the longer the age at first marriage, the more increase risk to acquire HIV/AIDS. The authors also found that the number of years between first sexual intercourse and first marriage was positively associated with HIV positive showing that for each additional year between age at first sexual and age at first marriage, a woman increases her risk to acquire HIV/AIDS. This could be explained by the fact that young women or adolescents who had early sexual intercourse engage themselves in risky sexual practices such multiple sexual partnerships, non-use of condom during sexual activities, sexual activities under alcohol or drugs.

Knowledge on HIV/AIDS: There is limited information on the relationship between knowledge about HIV/AIDS and women HIV status in Cameroon and Chad and the little evidence on it is mixed in the literature. On the one hand, one study conducted in Cameroon reported that women who had insufficient or did not have knowledge on the prevention and transmission of HIV/AIDS were more susceptible of contracting HIV/AIDS[41]. On the other hand, one study conducted in the same context showed that women with high level of knowledge on the prevention and transmission of HIV/AIDS were more likely to live with HIV infection[45], indicating that having good or sufficient knowledge on HIV/AIDS is not a protective factor against the infection of HIV. The authors argued that relation between higher knowledge of HIV and HIV status can be due to the fact that women who had already contracted HIV may be more likely to develop better knowledge of the disease as well as methods to prevent its transmission[45].

Decision-making power: The level of involvement of women in decisions relating to health treatment, use of contraceptives, sexual activities is important and has an effect on their daily lives and health status. The relationship between women's decision-making power and HIV status was reported in only one study which revealed that women with high participation level in household decision making were significantly more likely to be tested positive to HIV/AIDS[45].

Religion: Religion also is one of the leading factors to HIV infection among women. According to the results of studies carried out by Kongnyuy & Wiysonge[28] and Vescio et al.[16], women belonging to Christian religion were more likely to be tested positive to HIV than women belonging to Muslim or others religion group.

Health care seeking: While there is limited information about the utilization of health care services and the serology among people, only one study conducted in Cameroon revealed that women with greater access to and use of health care facilities have higher rates of HIV infection[45]. The authors argued that this result is due to the fact that HIV positive women are more likely to go to health care services or providers because they suffer from symptoms of the disease.

Inadequate infrastructure to support HIV positive women: Prevention and voluntary testing and counseling center is inadequate and have limited space and suffered from lack of respect of privacy and confidentiality[52]. Accessibility of antiretroviral drugs for people living with HIV/AIDS is posing a great challenge[47]. The majority of HIV positive women do not have adequate information on mother to child transmission of HIV and the prevention thereof as well as majority of health workers does not receive adequate training on the prevention of mother to child transmission of HIV[53] to support and respond to the need of HIV positive women. The inadequacy in patients' follow-up increases numbers of lost to follow-up with consequential increased risk of mother to child transmission of HIV[53].

People reported some barriers to antiretroviral therapy uptake such as stigma, religious reasons and lack of transport fare[54], stigmatization from health workers, fear of confidentiality, insufficient counseling and ARV stock-outs and viral loading testing such as viral loading reagent stock-out and viral loading breakdown[24]. This indicates that HIV positive individuals especially women are being discriminated against by both health workers and the community[55,56].

Discussion: The objective of this review was to investigate the feminization of HIV/AIDS in Cameroon and Chad and explore factors behind it. This review found that women carried the burden of HIV/AIDS infection in Cameroon and Chad leading to the feminization of this viral epidemic. These results are in line with other previous literature review studies which showed that the HIV/AIDS epidemic took a more feminine face[1,5,57-60]. Othermeta-analysis studies in Subsaharan Africa confirms our results indicating that women were more infected than men leading to gender inequality in HIV transmission[8,61]. Kang'ethe & Chikono[5] and Ramjee & Daniels[60] argued that the vulnerability of women to HIV/AIDS can be explained by the physiological and anatomical differences between male's and female's sexual genitalia.

This review found a range of risk factors for HIV/AIDS transmission among women in Chad and Cameroon. Those identified factors are at individual, behavioral and socio cultural level. The review found that wealth index factors related to HIV infection among Cameroonian and Chadian women are mixed. On the one hand, some studies reported that women in middle and higher level of income are more likely to be positive to HIV infection; on the other hand, studies reported that poverty/ unemployment among women renders them more vulnerable to HIV/AIDS infection. Our results are similar to the results from a review conducted by Rodrigo & Rajapakse[9] which revealed that some studies reported that low income wealth is a great factor to HIV infection among women and other studies reported that high income wealth is a risk factor to HIV infection among them. The authors argued that the plausible explanation of the fact that wealth increased the risk of women is that household wealth does not equate with a better quality of life for women due to gender inequality.

The review found also those risky sexual behaviors such multiple sexual partnership, early sexual intercourse, non-use or use of condoms, sex under the influence of alcohol lead to an increased risk in HIV/AIDS acquisition. These results confirm the results of previous studies which revealed women who engaged in unsafe sexual practices were more vulnerable to HIV/AIDS infection[60,62].

This review found that violence against women was identified as a risk factor for HIV infection among women. These result are similar to results from previous studies which revealed that violence against women increased the vulnerability of women to HIV infection[60,63,64]. Hlongwa et al.[65] argued that women who are exposed to intimate violence may find difficult to negociate condom usage during sexual activities, which can probably expose women to HIV infection.

Urbanization was also identified in this review as a leading factor to women vulnerability for HIV acquisition. Previous studies confirm our result indicating that the urbanization has fuelled the rapid spread of HIV among women[60,66].

The results of this review found that women with high level of education, high level of decision making power and belonging to Christian religion are more likely to acquire HIV/AIDS infection. The results are in line with earlier studies which found that more educated people are more at risk of HIV/AIDS infection than those with lower education[67]. The authors argued that more educated individuals change partners more rapidly because they are more mobile and have greater control over their own sexual behavior and are sexually active for a long period of time because of delayed marriage and on this ground most likely to be at risk of contracting HIV[67]. Our results corroborate with a previous review study which showed that people belonging to Muslim religion are less vulnerable to HIV infection[68] and are contrary to the results of earlier studies which showed that women with high decision-making power are more likely to prevent themselves from HIV infection[69].This difference could be attributed to different contexts.

The results of this review found also that women who were more younger than the partner are more likely to acquire HIV/AIDS. These results corroborate the earlier results of Elly et al.[70] which found that age difference between couples increased the risk of HIV infection among women. The authors argued that this may be probably due to the power relationship inequality between the younger women and the older spouses where the younger women may be having less to say or no words on the use of contraceptives like condoms for protection[70].

The results of this review found that women who entered late in marriage were more vulnerable to HIV infection. The same results are obtained in another study which revealed that late marriage was associated with increased risk in HIV infection and transmission[71]. This is due the fact that they engaged more in sexual activities during the year before the first marriage[71].

The results of this review found that women's age and marital status place women at high risk of acquiring HIV infection indicating that older women and widowed or separated women were more likely to acquire HIV infection. These results are in line with previous studies which reported that women aged between 20 to 34 years old were more to have HIV infection[66] and also corroborate with other studies which showed that widowed or separated women are more at risk of acquiring HIV infection than married women[72]. The authors argued that these groups constitute high HIV risk groups as they are often exploited sexually by men through deception, offering financial support and are unable to negotiate safer sex[72].

The results of this review found also that there was inadequate infrastructure to support HIV positive women. These results are also in line with other studies which found that there is inadequate infrastructure to support HIV positive women[5]. They argued that the discrepancies in health service delivery have provided a way to the spread of HIV/AIDS epidemic.

Limitations: The significant constraint faced in this review was the paucity of scientific studies in Cameroon and Chad on gender and HIV/AIDS as well as factors related to women HIV infection. In addition there were very few materials addressing the subject of the feminization of HIV/AIDS in sub-Saharan African countries in general and particularly in the two contexts under study.

Conclusion

This desk review investigated the feminization of HIV/AIDS in Chad and Cameroon and explored factors behind it. Results showed that Cameroonian and Chadian women were at increased risk of being infected with HIV/AIDS indicating that feminization of HIV/AIDS in Cameroon and Chad is a serious social and public health problem and a burden that needs more attention. Several factors occurring at individual, socio cultural and structural level continue to place women at high risk of vulnerability to the acquisition of HIV/AIDS. This situation hinders the fully implementation and realization of the Millennium Development Goal number three and the Sustainable Development Goal number three and ten.

Recommendation for practice: The government of Chad and Cameroon need to take a sustainable commitment in addressing gender related discrimination that fuels the HIV/AIDS epidemic in Chad and Cameroon. It is only with a strong political will that legislative reforms could be translated into proactive actions that could reverse the trends of the epidemic among women. There is also a need for more comprehensive sexuality education in order to fight against gender-based violence, gender norms and to promote more responsible sexual behaviors and a need to ensure that all the genders understand all aspects of HIV/AIDS prevention and everyone's responsibility to respond to the disease generally could possibly reduce aspects of feminization of HIV/ AIDS. Activities aimed at promoting health and disease prevention can even prepare women to be sources of educational information in their homes, with their children and other family members and to look at their own health needs is broadened and starts to transform the community.

Recommendation for future research: For future research we suggest the need for in-depth studies. More qualitative studies in Cameroon and Chad are needed in order to better understand factors regarding HIV/AIDS among women. Other studies should look also to investigate other factors such as genital mutilation, sexual abuse in childhood and adulthood, drug consumption, exposure to internet use, media, sexual health literacy, health literacy and its relation to HIV status among women. Since the literature on some factors identified in this review is mixed and unclear, the is a need to undertake more studies on those factors in order to clear its contribution to HIV infection. Studies could also be the type intervention research in order to contribute to the reflection and education of women and people who are at their surroundings with respect to the control of HIV/AIDS.

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