

Knowledge of HIV/AIDS Among General Practitioners in Health Facilities in Brazzaville in Republic of Congo

Linguissi LSG^{*1}, Yombi RNO^{2,3}, Missamou GLE^{2,3} and Louvouandou S¹

¹Unit of Epidemiology and Biotechnology, National Institute for Research in Health Sciences (IRSSA), Congo

²Faculty of Technical Sciences, University Marien Ngouabi, Brazzaville, Republic of Congo

³Faculty of Health Sciences, University Marien Ngouabi, PB: 2672, Brazzaville, Republic of Congo

***Corresponding author:** Linguissi LSG, Unit of Epidemiology and Biotechnology, National Institute for Research in Health Sciences Irssa, E-mail : linguissi@gmail.com

Citation: Linguissi LSG, Yombi RNO, Missamou GLE, Louvouandou S (2018) Knowledge of HIV/AIDS among general practitioners in health facilities in Brazzaville in Republic of Congo. *J Aids Hiv Inf* 4(1): 102

Received Date: April 09, 2018 **Accepted Date:** May 09, 2018 **Published Date:** May 10, 2018

Abstract

Background: Despite the growing HIV burden, the disease continues to receive a relatively high public health priority in the Republic of Congo.

Objective: To establish the knowledge, attitude and practice on HIV/AIDS among general practitioners working in Brazzaville and to register their actual behaviour in the prevention of HIV/AIDS.

Methodology: The study was a descriptive cross-sectional study. The sample size was 35 General Practitioners. A self-administered questionnaire was used to collect data in a four-week period in August 2017. Selected at random, were asked to participate. The data collected was analyzed using the Statistical Program for EpiInfo.

Results: The study was conducted on 35 general practitioners, 87.5% of whom had prescribed at least one HIV test in the month preceding the survey. Tuberculosis and pneumonia were among the clinical manifestations observed in AIDS/HIV patients in 27.42% of GPs. Only 71.05% of GPs responded that if an individual with HIV antibodies was defined as HIV-positive. Results revealed that 6.36% of GPs feel concerned about HIV because working with AIDS patients can put their health at risk.

Discussion : Relatively large number of general practitioners do not know how to detect the symptoms associated with HIV/AIDS, which is alarming in public health. Awareness of PEP and its availability for individuals are crucial to ensure that PEP is used to its full potential in any HIV prevention strategy. The low level of knowledge of our general practitioners is quickly to be filled in order to provide quality care to people living with HIV. Most general practitioners showed a negative attitude towards PLWHIV, usually associated with little HIV knowledge.

Conclusion: The survey found some flaws in HIV attitudes and knowledge among general practitioners. Improved knowledge and strategy of targeted continuing medical education programs and special training sessions could be put in place to encourage GPs to apply more to public health.

Keywords: HIV/AIDS; Prevention; General practitioners; Republic of Congo

List of abbreviations: Gps: General Practitioners; STD: Sexually Transmitted Diseases; PNDS: Programme National De Développement Social; CERSSA: Comité D'éthique De La Recherche En Sciences De La Santé; IRSSA: Institut National De Recherche En Sciences De La Santé; PLWH: People Who Living With HIV/AIDS; PEP: Post-Exposure Prophylaxis; NRTI: Nucleoside And Nucleotide Reverse Transcriptase Inhibitors; NNRTI: Non-Nucleoside Reverse Transcriptase Inhibitors; PI: Protease Inhibitors

Background

In 2017, according to UNAIDS: new infections among adults decreased by 11% between 2010 and 2016, about 34.5 million people in the world are living with HIV / AIDS, of which 64% in Africa [1]. In the Republic of Congo, the HIV epidemic is developing due to insufficient knowledge about HIV and its transmission pathways. In 2016, the incidence of HIV per 1000 population was 1.65 [1.17-2.18], there were 3 800 AIDS-related deaths and 91 000 people living with HIV in 2016 [1].

In the Republic of Congo, 75-80% of people go to the integrated health center to see a general practitioner, a state-certified nurse or a health assistant, in case of illness. Integrated health center are a first point of contact for non-emergency and preventative medical care during centers hours and especially the cost of consultation is relatively low ranging from 1.82 to 3.64 USD. The

average cost of drugs, sold in these health centers, at the expense of people for care are also very low. These health professionals are the main educators for the prevention of infections or diseases, including HIV/AIDS. In addition to integrated health centers, non-governmental organizations or associations are working to raise awareness of HIV/AIDS. Brazzaville is the largest city in the Republic of Congo with about 1,800,000 inhabitants [2]. In 2016, the Brazzaville basic hospitals had 17 general practitioners, in the 39 Integrated State Health Centers in the city of Brazzaville, none had general practitioners. In addition to the State Integrated Health Centers, there are 46 Integrated Health Centers run by religious denominations and the private sector, which had more than 80 GPs.

Brazzaville has an insignificant number of general practitioners (GPs), illustrating the poor policy of recruitment and training of health personnel for years. The need for health human resources in terms of ration per population is obvious. GPs play a major role in the primary health care service. A previous study in Pakistan found that general practitioners treated the majority of sexually transmitted diseases (STD) cases [3]. As key players in the health care system, GPs are involved in the prevention of communicable diseases such as HIV, particularly with respect to HIV awareness and testing [4]. Screening is the only effective way to find out if you are infected with a STD or HIV. In addition, early detection of HIV improves the long-term response to treatment and increases the expectation and quality of life of PLWH, and reduces the transmission of the virus through antiretrovirals [3,4].

Providing HIV counseling and testing is a pathway to prevention, antiretroviral treatment, care and psychological support services. Two important points to note in HIV prevention: firstly, early knowledge of HIV-positive status optimizes for people living with HIV (PWLH) the possibilities of accessing treatment and thereby greatly reduces the morbidity and mortality associated with HIV/AIDS [5,6]. And for couples wanting to have a child, to prevent mother-to-child transmission; secondly, people who are HIV-negative are warned and can guard against prevention methods to limit the risk of infection.

Several studies have shown that adherence to the HIV test depends significantly on the attitude of their doctors [7]. A previous study revealed that a national HIV testing policy requires a strong mobilization of general practitioners [4]. Their level of knowledge, attitudes and practices in HIV and testing is important for them to be effective actors in any HIV/AIDS prevention and control program [8,9].

Sanitary Context in Congo

In the Republic of Congo, the *Programme National de Developpement Social* (PNDS) focuses on health care at three levels. The third-level care provided by specialist doctors at the general hospitals; and the University Hospital Center which concentrates almost all specialists and the teachers at the Faculty of Health Sciences [10]. The second-level care provided by general practitioners in referral hospitals. There is the primary-level care for common pathologies, community care and maternal health, these are State Integrated Health Centers, religious denominations and the private sector. The primary-level care is sometimes under the supervision by general practitioners, but very often by paramedical and social workers in integrated health centers. Among the charges charged to integrated health centers and their minimum activity package, there is preventive care, curative consultations and management of sexually transmitted diseases [11].

Purpose of the study

The purpose of this survey was to assess knowledge about HIV/AIDS among Congolese general practitioners in Brazzaville.

Material and Methods

Participants

The study was conducted among Congolese general practitioners. The data was collected between 01 and 31 August 2017. The study was conducted in Brazzaville. The survey was based on a random sample of households in an underserved and understudied general practitioners population. General practitioners who accepted, for almost an hour, to participate in the survey were included in the survey. A questionnaire was self-administered anonymously. This survey included 6 questions about the socio-demographic and occupational characteristics of general practitioners and 15 questions about their experience with HIV.

GPs who agreed to participate in the survey answered all the questions and signed their survey form. At the end of the survey, the investigator retrieved the investigation form. The 35 general practitioners who responded to the questionnaire constitute the material in this article.

Study methods and design

The study to assess GPs knowledge, attitudes, practices on HIV among general practitioners recruited cross sectional study design.

Statistical processing

Data entry researchers were trained in coding, typing and error checking. The collected data were captured and analyzed using the statistical software EPI info 2010. The categorical variables were analyzed using the frequencies and the percentage (IC is 95%).

Ethical considerations

The approval of this study was obtained from the Comité d'Éthique de la Recherche en Science de la Santé (CERSSA) of the Institut National de Recherche en Sciences de la Santé of Brazzaville. Managers at the Institut National de Recherche en Sciences de la Santé (IRSSA) agreed to the survey and if GPs agreed, they should be included in the study and completed the survey.

Results

All GPs had at least one HIV-infected patient in the past 12 months, and of these, 87.5% had prescribed at least one HIV test in the month prior to the survey. Only 62% of general practitioners said that repeated fever, weight loss and persistent diarrhea were common symptoms of HIV/AIDS. Tuberculosis and pneumonia were among the clinical manifestations observed in HIV/AIDS patients in 27.42% of GPs (Table 1).

Common symptoms of HIV/AIDS (%)
a) Repeated fever, weight loss, persistent diarrhea (62%)
b) Enlarged lymphatic nodes, unusual tiredness (5%)
c) Fever, weight loss, chest pain (10%)
d) a and b (20%)
Clinical manifestations in HIV/AIDS patients
Pneumonia (27.42%)
Osteoporosis (1.61%)
Basal cell carcinoma (4.84%)
Mumps (6.45%)
Meningitis (19.35%)
Ulcers (6.45%)
Oral mucosal fibrosis (6.45%)
Tuberculosis (27.42%)

Table 1: Responses (%) of the general practitioners exhibiting their knowledge related to symptoms and manifestations cliniques of HIV/AIDS patients

Health workers reported having the right to know the HIV status of patients (43.14%). Some GPs would warn all medical staff about the HIV status of a patient, even if the patient disagrees (13.73%). Due to confidentiality and anonymity, only 9.8% of doctors said that they would inform a sex partner of an HIV-positive person even if they strongly disagree. The survey revealed that only 33.3% of general practitioners said they should be tested for HIV (Table 2).

Variables	Correct answer (%)
Protocol used for post-exposure prophylaxis	
Wash with soap and water	10%
Wash with antiseptic / bleach	21,25%
Post-exposure treatment should begin as soon as possible (preferably within two hours)	28,75%
Basic diet, duration is 4 weeks Zidovudine + Lamivudine or Lamivudine + Stavudine	20%
Immediate investigations on blood	16,25%
Medical protocol related to HIV/AIDS	
General practitioners should take the HIV test	33,33%
Health workers have the right to know the HIV status of patients	43,14%
I will notify all medical staff about a patient's HIV status, even if the patient does not agree	13,73%
I will inform the sexual partner of an HIV-positive person even if he or she strongly disagrees	9,8%

Table 2 : The respondents' knowledge on protocols post exposure and medical

The correct responses of general practitioners to the most commonly reported HIV-associated oral lesions were 23.48% oral candidiasis and 11.36% oral Kaposi's sarcoma, respectively. In contrast, less than 10% of GPs responded that oral leukoplakia,

oral melanoma hyperpigmentation, shingles, herpes simplex, necrotizing gingivitis, and condyloma were HIV-associated oral lesions in patients. Less than 5% of GPs thought that Crohn’s disease, salivary gland hypertrophy, xerostomia, idiopathic thrombocytopenic purpura (ITP), non-Hodgkin’s lymphoma, non-Hodgkin’s lymphoma, histoplasmosis, and papilloma were oral lesions associated with HIV (Table 3). To the question, if an individual with HIV antibodies was defined as HIV-positive, 71.05% of general practitioners said yes. On the contrary, a percentage of 18.42% of general practitioners said it was immunity to infection. The response on mean time between contraction of HIV and antibody production was 6 to 12 weeks for 51.52% of general practitioners, while 21.21% responded that the average time between contraction of HIV and antibody production was less than 6 weeks.

Variables	Effective (%)
Oral candidiasis	31 (23,48%)
Oral Kaposi sarcoma	15 (11,36%)
Oral hair leukoplakia	13 (9,85%)
Herpes simplex	13 (9,85%)
Necrotizing gingivitis	13 (9,85%)
Oral melanotic hyperpigmentation	9 (6,82%)
Herpes zoster	9 (6,82%)
condyloma	7 (5,3%)
aphthous ulcers	7 (5,3%)
Necrotizing gingivitis	5 (3,79%)
Idiopathic Thrombocytopenic Purpura (ITP)	4 (3,03%)
Papilloma	4 (3,03%)
Histoplasmosis	3 (2,27%)
Non-Hodgkin's lymphoma	3 (2,27%)
Enlargement of the salivary gland	2 (1,52%)
Xerostomia	1 (0,76%)
Non-Hodgkin's lymphoma	1 (0,76%)
Crohn's disease	1 (0,76%)

Table 3 : Responses to Statements About HIV-Related Oral Lesions (Correct answers of beliefs in parentheses) of 35 General Practitioners

Responses showing a negative attitude were recorded: a percentage of 6.36% of general practitioners felt concerned by HIV. For them to work with AIDS patients, could put their health at risk. Only 4.05% of GPs would be ready to perform a mouth-to-mouth resuscitation of an AIDS patient in the event of respiratory arrest, while 2.89% of general practitioners would report to a sexual partner the serology of an HIV-positive patient. Finally, 5.78% of general practitioners were not concerned about being infected with HIV by their patients.

Only 11.56% of general practitioners reported treating patients with HIV/AIDS (Table 4). A total of 25 GPs out of 35 knew that people living with HIV/AIDS were treated at the same time by INRT, INNRT and IP. On the other hand, 4 doctors indicated that the treatment followed by people infected with HIV was only the INRT. TCD4 cells were cited by 34 general practitioners as defective cells affected by HIV/AIDS. GPs (30) responded that host defense cells affected by HIV/AIDS are predominantly T cells (Figures 1,2 and 3).

Variables	Agree (%)
If an individual is carrying anti-HIV antibodies is it	
Certainly suffering from AIDS	3 (7,89%)
Immunity to HIV infection	7 (18,42%)
HIV carrier	27 (71,05%)
I do not know	1 (2,63%)
What is the average time interval between contraction of HIV and antibody production?	
Less than 6 weeks	7 (21,21%)
6 to 12 weeks	17 (51,52%)
13 to 24 weeks	4 (12,12%)
24 weeks-5 years	2 (6,06%)
Do not know	3 (9,09%)

Table 4 : Depicts the results for the questions giving responses by general practitioners exhibiting their knowledge for HIV/AIDS

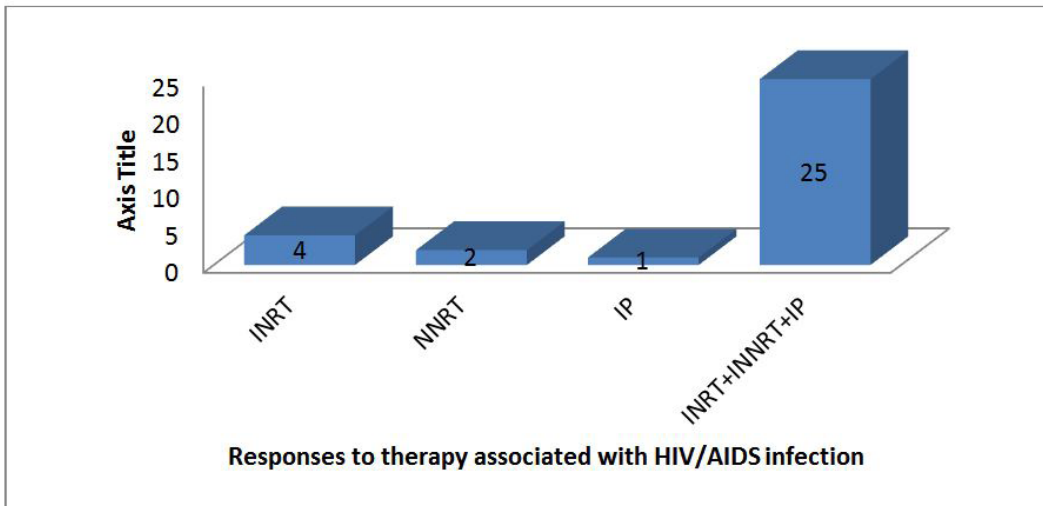


Figure 1 : Distribution of GPs' responses to therapy associated with HIV/AIDS infection

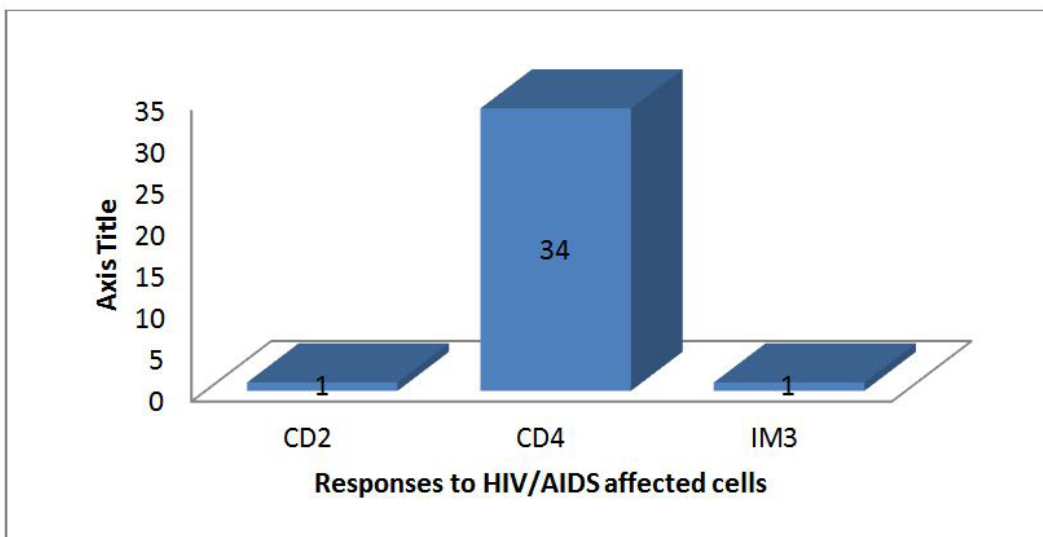


Figure 2 : Distribution of GPs' responses to HIV/AIDS affected cells

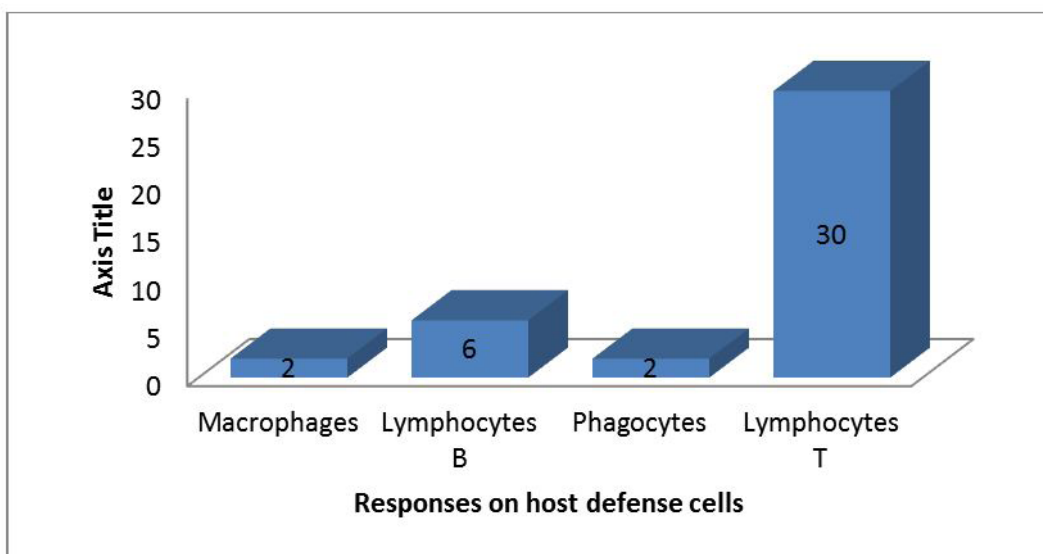


Figure 3 : Distribution of GP responses on host defense cells, which are primarily affected by HIV/AIDS

Positive attitudes can be cited: a small percentage of 15.03% of general practitioners considered, respectively, that people infected with HIV should not be isolated in a specialized center or that people infected with HIV should have the right to whether my patients are infected with HIV or even that people infected with HIV should have the right to refuse to treat a patient with HIV/AIDS (Table 5).

Attitudes of GPs to HIV/AIDS	Responses % (35)	Type of Attitude
Working with AIDS patients can put my health at risk.	6,36%	Negative attitude
I would be willing to perform a mouth-to-mouth resuscitation on a patient with AIDS in case of respiratory arrest	4,05%	Negative attitude
I would inform the sexual partner of a patient AIDS against the wishes of the patient	2,89%	Negative attitude
I have the right to know if my patients are infected with HIV	15,03%	Positive attitude
People infected with HIV should not be isolated in a special center	15,03%	Positive attitude
All dental patients should be considered potentially infectious. They need to be supported, treated and helped to improve community health	7,51%	Positive attitude
I do not think I have the right to refuse to treat an HIV / AIDS patient	15,03%	Positive attitude
I treat patients with HIV / AIDS	11,56%	Positive attitude
I do not worry about being infected with HIV by my patients	5,78%	Negative attitude

Table 5 : GP's responses to statements about their attitudes towards HIV (N=35) (95% confidence intervals in brackets).

Discussion

To our knowledge, this is the first study of HIV beliefs and knowledge among Congolese GPs. Most GPs have not been trained for HIV infection. The training on HIV would have improved their knowledge of HIV, but also good care for people living with HIV. Several studies in developed and developing countries have shown that general practitioners seem to have little or no knowledge about HIV. This poor knowledge leads to poor quality of care for infected patients [12].

In our study, repeated fever, weight loss and persistent diarrhea were cited by 62% of general practitioners as being the common symptoms of HIV/AIDS. A relatively large number of general practitioners do not know how to detect the symptoms associated with HIV/AIDS, which is alarming in public health. In the literature, some common HIV symptoms are cited, these symptoms include dry cough and shortness of breath [13], memory loss, depression and neurological disorders [14], unexplained tiredness, rapid weight loss, profuse night sweats, swollen lymph glands [15], severe headaches. The most common clinical manifestations among HIV/AIDS patients observed by general practitioners were tuberculosis (27.42%) and pneumonia (27.42%). These two pathologies are the most common opportunistic diseases found in Africa among PLWH [16,17]. For blood exposure, 28.75% of general practitioners recommended an early onset, two hours after exposure, and 20% responded that a 4-week treatment would be required based on zidovudine + lamivudine or lamivudine + stavudine, as a protocol to be used for post-exposure prophylaxis (PEP). For a better awareness of PEP, it is imperative to make post-exposure prophylaxis available. This treatment is essential to ensure that PEP is applied in any HIV prevention strategy. In the literature, it is clear that the HIV/AIDS-related medical protocol is related to the anonymity and confidentiality of information about individuals [18,19], to avoid stigma and discrimination. The protection of the rights of people living with HIV can thus be guaranteed [20].

With respect to oral lesions associated with HIV, 23.48% of general practitioners responded to oral candidiasis, 11.36% said it was oral Kaposi's sarcoma; Oral leukoplakia, herpes simplex and necrotizing gingivitis were cited in each case by 9.85% of GPs. Oral lesions have been shown to be early clinical features of HIV infection [21]. Oral lesions contribute to the morbidity of patients, affecting the psychological functioning of the individual [22]. Some of the oral lesions have a fatal outcome, such as Kaposi's sarcoma, the most common intra-oral lesion in people with HIV infection. In a South Africa study, the prevalence of Kaposi's sarcoma ranged from 15% to over 80% in HIV-positive adults [23]. All this information amply demonstrates the importance for general practitioners of knowing the clinical manifestations and oral lesions associated with HIV. The low level of knowledge of our GPs needs to be briskly addressed to provide quality care to people living with HIV.

There were 71.05% of general practitioners who answered that the HIV carrier was an individual with anti-HIV antibodies. In addition, 51.52% thought that the mean time interval between contraction of HIV and antibody production was 6 to 12 weeks. The level of knowledge, while satisfactory, should be strengthened given the extent of HIV infection in our country.

Although there are not enough GPs in Brazzaville, a significant number refused to participate in our survey. In our study, some

physicians treated PLWH, which is of major importance in public health. In key players in the health system, general practitioners are the facilitators in primary health care. Several studies in Africa have confirmed the role of general practitioners in the health of the population and among PLWHs [24-26].

In our study, GPs' responses to symptoms and clinical manifestations of HIV/AIDS patients are not encouraging. There is a significant lack of knowledge about HIV among GPs, which is unacceptable given the role that general practitioners play in the lifestyle of the population. Low knowledge of HIV among general practitioners has also been observed in Pakistan [27].

Our study also found that a small percentage of general practitioners had a positive attitude toward PLWH. This positive attitude would be linked to their training profile. A previous study found that health professionals who had knowledge of the disease had a positive attitude towards patients [28]. In contrast, insufficient knowledge about disease was associated with a negative attitude of practitioners [29]. Training and knowledge about the disease have an important role in changing attitudes towards patients. Kwasnicka *et al.* (2016) explained that behavior change interventions are effective in helping individuals achieve temporary behavioral change [30]. The behavior change interventions in our study are the acquisition of knowledge about HIV and the management of PLWH. GPs should play a central role in HIV prevention. Studies have observed another intervention such as the support of a facilitator to help general practitioners develop the skills needed to prevent HIV infection.

Limitations

The size of the sample makes the results difficult to generalize to all general practitioners in the country. It is also likely that GPs who responded are those who are most interested in HIV/AIDS and, therefore, those who are most likely to take into account any changes in HIV testing policy. The response rate of general practitioners was not optimal; only 35 of the 60 who were contacted answered the questionnaires. The refusal to participate in the investigation was an obstacle to the completion of the investigation. Another limitation to the study was that most health centers do not have general practitioners, these health centers are run by state-approved nurses or health assistants. General practitioners are in private facilities such as clinics, their staff is not listed by the competent authority.

Conclusion

The results of this survey suggest that general practitioners in Brazzaville should improve their knowledge of HIV/AIDS and the care of people living with HIV.

It emerges from our study that doctors are inadequately trained. Counseling-type seminars can enable physicians to perceive the meaning of a screening test without notifying the patient, providing positive results and conveying prevention messages. Public health strategies are crucial to promote health to enable physicians to be more ready to become involved in this condition in order to increase their level of knowledge. Initiatives should be taken to strengthen the role of general practitioners in AIDS prevention, through targeted continuing medical education programs and special training sessions.

Authors' contributions

Conceived, designed, Performed, Analyzed data and wrote the paper: GHOMA LINGUISSI Laure Stella. Participated to investigate, collect and analyze data : Robin Noé ONGAGNA YOMBI, Gérald Launay Evrard MISSAMOU and Suzanne LOUVOUANDOU. All authors read and approved the final manuscript.

Acknowledgements

For the first time, a nationwide KAP study on HIV was conducted among the general practitioners of Brazzaville. Author would like to acknowledge all the study participants. This study was financially supported by the Institut National de Recherche en Sciences de la Santé (IRSSA).

Supplementary

References

1. UNAIDS DATA 2017 Geneva, Switzerland. UNAIDS : 248.
2. Wikipedia (2015) Brazzaville, USA.
3. Hussain MFA, Khanani MR, Siddiqui SE, Manzar N, Raza S, et al. (2011) Knowledge, Attitudes & Practices (KAP) of General Practitioners (GPs) regarding Sexually Transmitted Diseases (STDs) and HIV/ AIDS in Karachi, Pakistan. *J Pak Med Assoc.* 61: 202-5.
4. Joore IK, van Roosmalen SL, van Bergen JE, van Dijk N (2017) General practitioners' barriers and facilitators towards new provider-initiated HIV testing strategies: a qualitative study. *Int J STD AIDS* 28: 459-66.
5. Basavaraj K, Navya M, Rashmi R (2010) Quality of life in HIV/AIDS. *Indian J Sex Transm Dis* 31: 75-80.
6. Vreeman RC, Scanlon ML, McHenry MS, Nyandiko WM (2015) The physical and psychological effects of HIV infection and its treatment on perinatally HIV-infected children. *J Int AIDS Soc* 18.
7. Dapaah JM (2016) Attitudes and Behaviours of Health Workers and the Use of HIV/AIDS Health Care Services. *Nurs Res Pract* 2016: 1-9.

8. Agusti C, Fernandez-Lopez L, Mascort J, Carrillo R, Aguado C, et al. (2013) Attitudes to rapid HIV testing among Spanish General Practitioners. *HIV Med* 14: 53-6.
9. Bares S, Steinbeck J, Bence L, Kordik A, Acree ME, et al. (2016) Knowledge, Attitudes, and Ordering Patterns for Routine HIV Screening among Resident Physicians at an Urban Medical Center. *J Int Assoc Provid AIDS Care* 15: 320-7.
10. Linguissi LSG, Yombi RNO, Nguéfeu CN, Ibara JR (2018) Knowledge on HIV/AIDS among Students of the Faculty of Health Sciences, Brazzaville, Republic of Congo. *Am J Epidemiol Infect Dis* 6: 7-13.
11. Ganga DA (2010) Rapport d'analyse de l'Enquête de Base sur l'Utilisation des Centres de Santé Intégrés (CNSEE) Brazzaville, Congo, Africa 38.
12. Okike O, Jeremiah I, Akani C (2011) Knowledge, Attitude and Practice of General Medical Practitioners In Port Harcourt Towards The Prevention Of Mother-To-Child Transmission of HIV. *Niger Health J* 11: 79-82.
13. Brown J, Roy A, Harris R, Filson S, Johnson M, et al. (2017) Respiratory symptoms in people living with HIV and the effect of antiretroviral therapy: a systematic review and meta-analysis. *Thorax* 72 : 355-66.
14. Egbe CO, Dakum PS, Ekong E, Kohrt BA, Minto JG, et al. (2017) Depression, suicidality, and alcohol use disorder among people living with HIV/AIDS in Nigeria. *BMC Public Health* 17: 542.
15. Josefsson L, Palmer S, Faria NR, Lemey P, Casazza J, et al. (2013) Single Cell Analysis of Lymph Node Tissue from HIV-1 Infected Patients Reveals that the Majority of CD4+ T-cells Contain One HIV-1 DNA Molecule. *PLoS Pathog* 9.
16. Rabie H, Goussard P (2016) Tuberculosis and pneumonia in HIV-infected children: an overview. *Pneumonia (Nathan)* 8.
17. Huang L, Cattamanchi A, Davis JL, Boon S d., Kovacs J, et al. (2011) HIV-Associated Pneumocystis Pneumonia. *Proc Am Thorac Soc* 8: 294-300.
18. Masquillier C, Wouters E, Mortelmans D, van Wyk B, Hausler H, et al. (2016) HIV/AIDS Competent Households: Interaction between a Health-Enabling Environment and Community-Based Treatment Adherence Support for People Living with HIV/AIDS in South Africa. *PLoS One* 11.
19. Blightman K, Griffiths S, Danbury C (2014) Patient confidentiality: when can a breach be justified? *J Crit Care* 14: 52-6.
20. Elliott R, Gold J (2005) Protection against discrimination based on HIV/AIDS status in Canada: the legal framework. *HIVAIDS Policy Law Rev* 10: 20-31.
21. Greenspan JS, Barr CE, Scubba JJ, Winkler JR (1992) Oral manifestations of HIV infection. Definitions, diagnostic criteria, and principles of therapy. The U.S.A. Oral AIDS Collaborative Group. *Oral Surg Oral Med Oral Pathol* 73: 142-4.
22. Kamiru HN, Naidoo S (2002) Oral HIV lesions and oral health behaviour of HIV-positive patients attending the Queen Elizabeth II Hospital, Maseru, Lesotho. *SADJ* 57: 479-82.
23. Bohlius J, Valeri F, Maskew M, Prozesky H, Garone D, et al. (2014) Kaposi's Sarcoma in HIV-infected patients in South Africa: Multicohort study in the antiretroviral therapy era. South Africa. *Int J Cancer* 135: 2644-52.
24. Cheng QJ, M Engelage E, Grogan TR, Currier JS, Hoffman RM (2014) Who Provides Primary Care? An Assessment of HIV Patient and Provider Practices and Preferences. *J AIDS Clin Res* 5: 366
25. McCullough M (2011) Managing HIV in general practice. *Aust Prescr* 34: 67-72.
26. Wong WC, Kidd MR, Tucker JD (2012) Mainstreaming HIV services for men who have sex with men: the role of general practitioners. *Postgrad Med J* 89: 183-4.
27. Hafeez T, Riaz SH, Ali I, Irum N (2017) A study of knowledge and attitude of health care providers working at tertiary care hospitals of Lahore, Pakistan (having HIV/AIDS treatment facility) towards HIV/AIDS. *Acta Med Int* 4: 124-31.
28. Bermingham S, Kippax S (1998) HIV-related discrimination: a survey of New South Wales general practitioners. *Aust N Z J Public Health* 22: 92-7.
29. Shiferaw Y, Alemu A, Girma A, Getahun A, Kassa A, et al. (2011) Assessment of knowledge, attitude and risk behaviors towards HIV/AIDS and other sexual transmitted infection among preparatory students of Gondar town, north west Ethiopia. *BMC Res Notes* 4: 505.
30. Kwasnicka D, Dombrowski SU, White M, Sniehotta F (2016) Theoretical explanations for maintenance of behaviour change: a systematic review of behaviour theories. *Health Psychol Rev* 10: 277-96.

Submit your next manuscript to Annex Publishers and benefit from:

- ▶ Easy online submission process
- ▶ Rapid peer review process
- ▶ Online article availability soon after acceptance for Publication
- ▶ Open access: articles available free online
- ▶ More accessibility of the articles to the readers/researchers within the field
- ▶ Better discount on subsequent article submission

Submit your manuscript at

<http://www.annexpublishers.com/paper-submission.php>