OSJ OPEN SCIENCE JOURNAL

RESEARCH ARTICLE

Awareness of Dental Team towards HIV Positive Patients in Sudan

Sally Mohamed Alfatih Abdalrahman[1]*, Nasr Mohamed Ahmed Elsheik[2], Mounkaila Noma[3]

[1]Omdurman Dental Clinic, Sudan
[2]Ribat University Khartoum, Sudan
[3]University of Medical Science and Technology, Sudan

*Corresponding author: Sally Mohamed Alfatih Abdalrahman: sally.m.a@hotmail.com

OPEN ACCESS

Citation: Abdalrahman S.M.A., Elsheik N. M. A., Noma M. (2018) Awareness of Dental Team towards HIV Positive Patients in Sudan. Open Science Journal 3(1)

Received: 28th October 2017

Accepted: 13th December 2017

Published: 4th January 2018

Funding: The author(s) received no specific funding for this work

Competing Interests: The author have declared that no competing interests exists.

Abstract:

Background: The deficit of awareness about the mode of transmission and the use of safety equipment may explain the stigma HIV positive patients faced in health care services worldwide, in particular in Sudan. The paper intends to examine the knowledge and the use of standard precaution measures by oral health professionals.

Methods: A descriptive cross-sectional study was conducted in Ribat University Teaching Hospital, Sudan. A, convenient sample of 105 oral health professionals was interviewed. A self-administrated questionnaire developed in English and translated in Arabic by the author was handled to the participants. The research instrument comprised sociodemographic information, HIV knowledge, awareness towards the mode of transmission and the use of safety equipment and measures. Data were entered in Epi Info™ 7.1.5.0 and analyzed with SPSS 21 for MS Windows (SPSS, Chicago, IL, USA). A reliability analysis of the scale of measurement based on Cronbach's alpha method was performed to assess the quality of the answers of the participants.

Results: Of the 97 participants, 50.5% had poor knowledge of HIV oral signs. Concerning the use of safety equipment (n=105), only 29.5% were "Fully aware". Of the 105 participants, ways of prevention of transmission were reported to be known by 94.3%. The study revealed that 59.6% of the participants (n=105) were "Fully aware" and 40.4% were "Not aware" about the appropriate measures to be taken.

Conclusions: The results of the study suggested that oral health professionals lack knowledge about HIV signs and use of safety standards, these weakened their awareness. These findings had implications for continuing education for all oral health professions to incorporate evidence-based on HIV transmission and prevention.

Keywords: Awareness, HIV Knowledge and Positive HIV patient, Dental.

Introduction

Awareness is the ability to directly know and perceive, to feel, or to be conscious of events, objects, thoughts, emotions, or sensory patterns [1]. Hence, Group-structural awareness is the knowledge of others roles, responsibilities, status in a group. This understanding of group dynamics and the importance of the relationship an individual has to the group is crucial in the context of the human immunodeficiency virus (HIV) infection. If left untreated, HIV infectioncan lead to the disease AIDS (acquired immunodeficiency syndrome). HIV attacks the body immune system, specifically the CD4 cells (T cells), which help the immune system fight off infections. If left untreated, HIV reduces the number of CD4 cells (T cells) in the body, making the person more likely to get infections or infection-related cancers. Over time, HIV can destroy so many cells that the body cannot fight off infections and disease. These opportunistic infections or cancers take advantage of a very weak immune system and signal that the person has AIDS, the last state of HIV infection. Since the advent of highly active anti-retroviral therapy (HAART), the average life expectancy for HIV positive individuals has increased, and patients with HIV are experiencing lower rates of AIDS and AIDS-defining illnesses. Today, a person who is diagnosed with HIV, treated before the disease is far advanced, and stays on treatment can live a nearly as long as someone who does not have HIV [2].

The clinical presentations of HIV infection/AIDS, its diagnosis and epidemiology are already extensively described elsewhere by various authors [2-14]. People with AIDS had their immune system damaged by HIV. They are at high risk of getting infections that are uncommon in people with a healthy immune system. These infections are called opportunistic infections. These can be caused by bacteria, viruses, fungi, or protozoa, and can affect any part of the body. People with AIDS are also at higher risk for certain cancers, especially lymphomas and a skin cancer called Kaposi sarcoma.

Symptoms depend on the particular infection and which part of the body is infected. Lung infections are common in AIDS and usually cause cough, fever, and shortness of breath. Intestinal infections are also common and can cause diarrhea, abdominal pain, vomiting, or swallowing problems. Weight loss, fever, sweats, rashes, and swollen lymph glands are common in people with HIV infection and AIDS. Nonetheless, despite the understanding of HIV infection/AIDS and breakthrough in its therapy, in 2009, the United Nations estimated that 33.2 million People worldwide were living with human

immunodeficiency virus type 1 (HIV-1) infection and that 2.6 million people had been newly infected [15]. To halt, reverse and break the trajectory of the AIDS epidemic, countries should redouble efforts to meet their goals towards universal access to HIV prevention, treatment, care and support. In this global effort, oral health professionals exposed to a variety of microorganisms via blood, oral or respiratory secretions have a key role to play in controlling occupational contagion and cross infection through their attitudes towards treating patients living with HIV/AIDS, infection control and waste disposal practices. The awareness towards HIV and the use of standard precautions by oral health professionals can contribute critically in modifying the trend of HIV infection/AIDS. The stigma, perceptions and judgements of HIV, that continue to persist even in health system, remain one of the biggest challenges in the social response to HIV/AIDS as revealed by a review of 8,622 references of which 55 qualitative studies pointed out HIV-related stigma in the context of health[16]. The foundation of this stigma is due to the fact that health care workers consistently demonstrate misconceptions, negative attitudes, and an overall lack of knowledge regarding universal precautions and HIV patients[17]. In spite, dentists have an ethical responsibility to provide treatment to HIV-infected patients, particularly because oral lesions are common among these patients. Oral care for HIV-positive individuals plays a vital role in improving their nutritional intake, medication tolerance/effectiveness, treatment success rate, and quality of life. Consequently, with improved survival rates, it is expected that more HIV-positive patients, with or without knowledge of their serologic status, will be seeking dental care. For this reason, several studies [18-20] have been conducted to assess the willingness of the oral health professionals to treat HIV-positive individuals either as a main survey or as a part of the knowledge, attitudes, and practice.

The proposed paper would like to contribute to examine the awareness and the use of standard precaution measures by oral health professionals in Khartoum, Sudan.

Methods

A descriptive cross-sectional study was conducted in Ribat University Teaching Hospital located in Khartoum. The researcher used a convenient sample of 105 oral health professionals including consultants, specialists, teaching assistant, house officers and nurses. All the participants, were adults and resided in Khartoum. A self-administrated questionnaire, developed in English by the author and translated in Arabic, was handled to the participants after clearance by Ribat University Institutional Review Board. After being informed about the research study, participants provided both their approval to participate and their informed consent verbally. The researcher remained present aside the participants during the study, available for any question and no time constraints was set. The research instrument comprised sociodemographic information, HIV knowledge, awareness towards the mode of transmission and the use of safety equipment. The sociodemographic data collected were oral health professional position, gender, marital status and number of years of experience in the profession.

Participants were requested about their knowledge of HIV oral clinical manifestations which include flu-like, swelling nodes, recurrent infections due to immunity deficiency, weight loss, necrotizing ulcerative periodontitis, xerostomia, candidiasis, angular cheilitis and herpes simplex. Participants were asked to address a question related to their willingness to treat or not a HIV positive patient. They were also asked about their knowledge of the mode of transmission of HIV and for those who responded yes, they were requested to check among a set of multiple possible answers the appropriate ways of transmission. Data related to the use safe precaution measures were collected through two specific questions. One was related whether or not participants used safety equipment and the second question provided them a multiple choice of safety equipment they were supposed to use. The last part of the questionnaire was related to self-protective measures to be taken to prevent HIV transmission (including accidental occupational hazards).

The data collected were computerized in using software available in the public domain developed by the Center of Disease Control and Prevention, CDC, Epi Info™ 7.1.5.0. For all items in the questionnaire, except the number of years of experience in dentistry (recorded as reported), the answers of the participants were code 1 when reported. The data file generated by Epi Info was converted through MS Excel for easy downloading in the statistical package for social sciences (SPSS version 21 for MS Windows, SPSS, Chicago, IL, USA). A reliability analysis based on Cronbach's alpha method [21] was performed prior scoring the knowledge of HIV oral signs, the mode of transmission, the use of standard precaution measures and the awareness of dental team towards HIV positive patients. Descriptive statistics were used to describe the demographic characteristics, health beliefs of participants, knowledge, use of self-protective measures and awareness towards HIV/AIDS.

Results

Sociodemographic characteristics

One hundred and five oral health professionals participated in the study: general practionners (n=42), teaching assistants (n=29), consultants (n=13), dental assistants (n=13) and nurses (n=8). Females (69.0%) were predominating and males represented 31.0%. The majority were single (n=69, 66.0%) and the remaining 34.0% were married (n=36). Their number of experience in dentistry varied from less than one year to thirty years with a median year of experience in the field of 3 years. Consultants had the highest average number of working years (n=13, mean: 20.5±5.2, range: 13-30) and the lowest was recorded among the general practionners (n=42, mean: 2.0 years±2.1, range:0-12).

Systematic screening of patients for HIV

Nurses (n=8) and dental assistants (n=13) are not authorized in Sudan to investigate systematically HIV suspected patients. 48.0% of the 84 authorized

oral health professionals performed systematic screening of patients for HIV. The practice was better among consultant (n=13,77.0%) followed by teaching assistants (n=29, 59.0%). Only 31.0% of 42 general practionners performed systematic investigation of patients for HIV infection.

Knowledge of HIV oral Signs

Of the 105 participants, 81.0% reported that they had knowledge of HIV oral signs. Their knowledge was evaluated on ten signs (figure 1 and table1). Candidiasis, recurrent infection, and weight loss were the most frequent oral signs reported with respectively 63.8%, 57.7% and 53.9%.

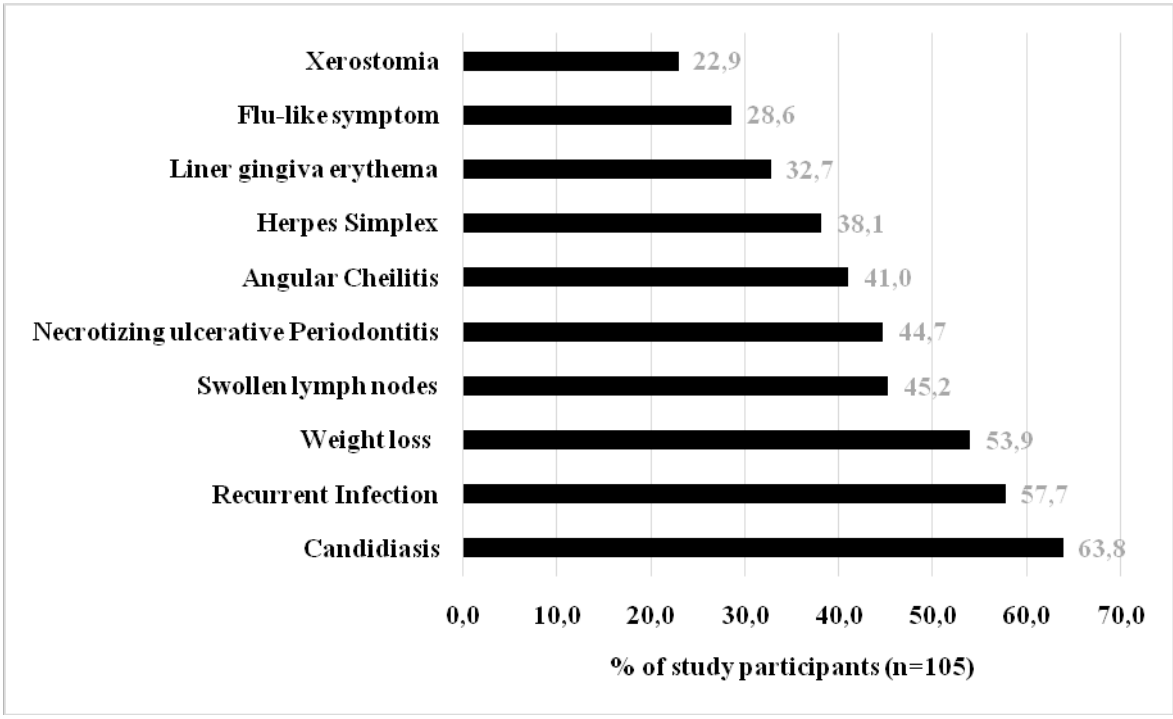

Figure 1: Oral signs of HIV as reported by the study participants

According to the oral signs reported by the participants, their knowledge was scored as "Excellent" when they identified all the ten symptoms, "Very good" when eight to nine signs were reported, "Good" corresponded to an identification of six to seven signs, when five signs were identified the knowledge was scored as "Fair" and "Poor" when less than five signs when reported.

Prior to scoring the knowledge of HIV oral signs, a reliability scale measurement was performed to determine the quality of the data related to the ten signs. Cronbach's alpha was 0.842 after exclusion of eight missing cases.

Based on this scale of measurement, of the 97 participants, 50.5% had poor knowledge of HIV oral signs (table 2). The remaining 49.5% scored fair (13.4%), good (20.6%), very good (12.4%) and excellent (3.1%).

Stigma towards HIV patients and identification of mode of transmission

All the study participants (n=105) were asked if they had ever refused to treat a HIV positive patient. 13.3% (14/105) reported that they had refused to treat HIV patients despite 98.1% (103/105) knew the mode of transmission.

Participants had a multiple choice on six modes of transmission (figure 2), namely blood, sexual contact with an infected person, sharing needles or other injection equipment with someone who is infected, mother-child transmission, through use of shaving equipment (scissor or razor) and saliva. The reliability scale measurement of Cronbach's alpha was 0.712 for all the six items related to transmission. Blood was the mode of transmission identified by most (97.1%) of the participants (n=105). Sexual contact and sharing needles or other injection tools were reported respectively by 89.5% and 81.9% of the participants. Mother-child transmission was reported by 55.2% and shaving equipment and saliva were respectively 48.6% and 29.5%.

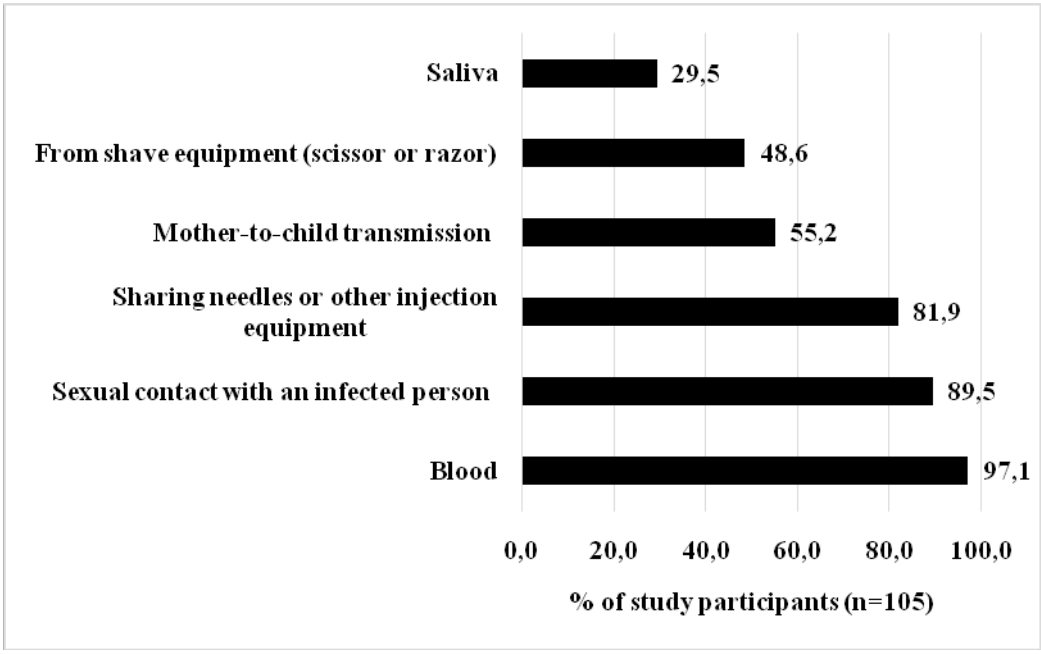

Figure 2: Mode of HIV transmission as reported by the study participants (n=105)

Each of the modes of transmission was mark 1 when reported leading to 6 when all the modes of transmission were identified. According to the number of items identified, participants' knowledge of the mode of transmission was scored "Excellent" when all the items were reported, "Very good" for five items identified, "Good" for four items, "Fair" for three items and "Poor" for less than three items. Participants scored poor (n=18, 17.2%), fair (n=16, 15.2%), good (n=26, 24.8%), very good (n=25, 23.8%) and excellent (n=20, 19.0%).

Use of standard precaution measures and awareness score

Participants (n=105) were asked about the "use of safety equipment"; 95.2%reported to use safety equipment and the remaining five participants did not. Double gloves (n=105) and mask (n=104) were the most frequently safety equipment used with respectively 89.5% and 85.6% of the participants. Eyeglasses and face shield were the less used with respectively 34.3% and 26.7% (figure 3).

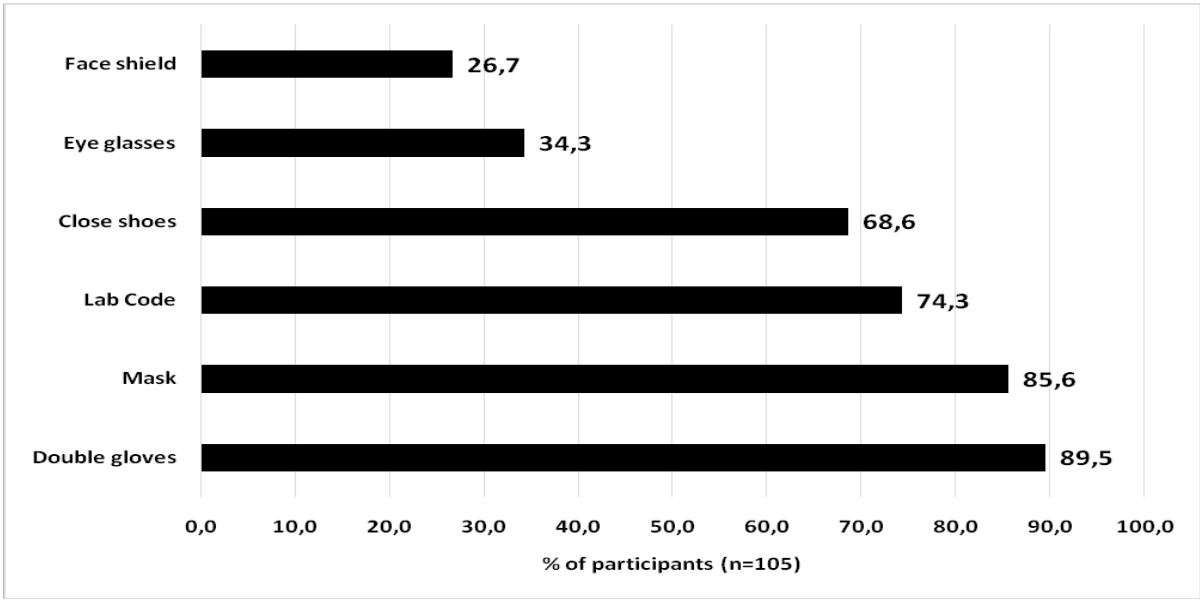

Figure 3: Use of safety equipment as reported by the study participants (n=105)

The reliability of the responses of participants was measured for the six items used for safety protection and Cronbach's alpha was 0.661. Each of the items was mark 1 when reported and zero when not mentioned. This led to a total score of six when all the items were used. An awareness scale was established as "Fully aware" when five to six of the safety equipment were used and "not aware" when ≤ 4 items were used. Unfortunately, only 29.5% of the participants (n=105) were "Fully aware" the remaining 70.5% were classified as "Not aware".

Knowledge of ways of prevention of transmission for self-protection

Of the 105 participants, "ways of prevention of transmission" were reported to be known by 94.3% and were not known by six participants. The two most known ways of transmission were "to be careful with needles during contact" and "the use safety standard equipment during work" with respectively 91.4% and 86.7%. "Taking post exposure prophylaxis" and "having prophylactic vaccination" following exposure were reported respectively by 38.1% and 31.4% of the participants.

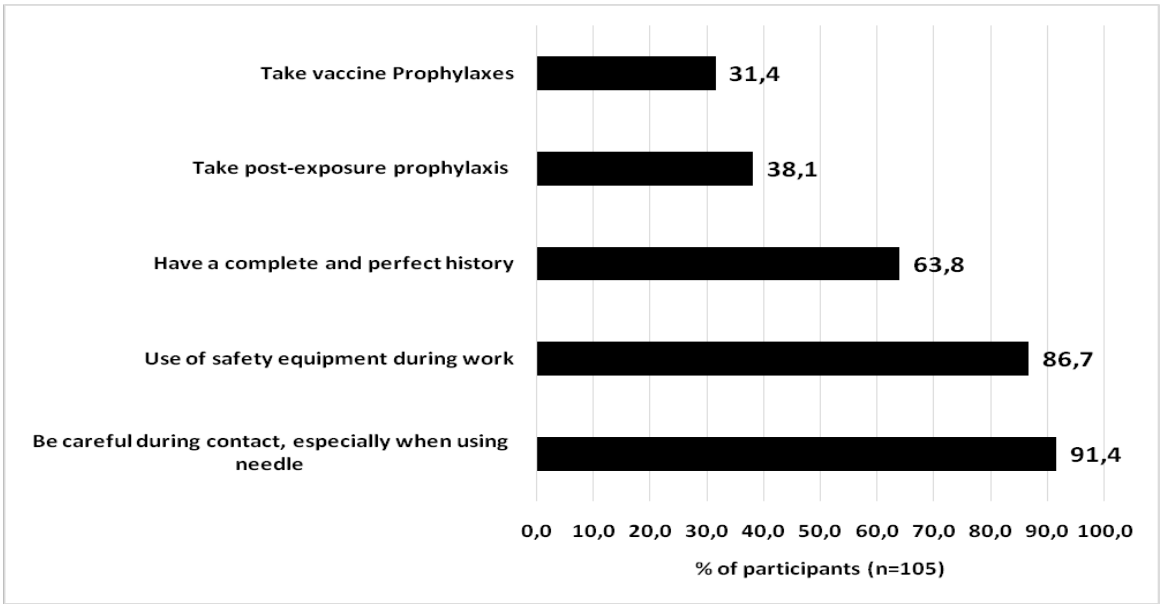

Figure 4: Ways of prevention of transmission for self-protection as reportedby the study participants (n=105)

Five items were proposed as a multiple choice to the participants (figure 4). The reliability of the answers of the participants to the five items was assessed by use of Cronbach's alpha which cut off was 0.62. This low value of Cronbach's alpha could be due to a poor inter-relatedness between the five items addressed by the participants or the opinions of the participants differed. Despite the Cronbach's alpha value was out of the range of reliability (0.70-0.95), each of the item was scored one when reported and zero when not mentioned, this lead to a total of five. On a scale of five, the knowledge of the ways of transmission by the participants was considered as "Excellent" when all the items were reported. "Good" was attributed for respondents reporting four items; knowledge of ways of transmission was considered as "Fair" when three items where reported and when the itemsreported was less than three, the knowledge of participants was "Poor". Only 14 participants scored excellent (13.3%), for the remaining participants the level of score was almost similar with poor (n=30, 28.6%), fair (n=29, 27.6%) and good (n=32, 30.5%).

Early preventive actions to avoid HIV transmission

Participants were asked if they knew what to do in case they injected themselves accidentally with HIV positive needle. 86.7% of the 105 participants reported that they knew what to do and 13.3% did not know. To assess the awareness of the participants towards appropriate actions when they were accidentally injured through HIV positive needles, four types of preventive actions were proposed to them. Washing the site immediately, pressure it forcefully and test HIV immediately and six months later were the main immediate preventive actions reported by the participants with respectively 73.3% and 71.4% and 65.7%. Taking a prophylactic drug was report by 48.1% (table 1 and figure 5).

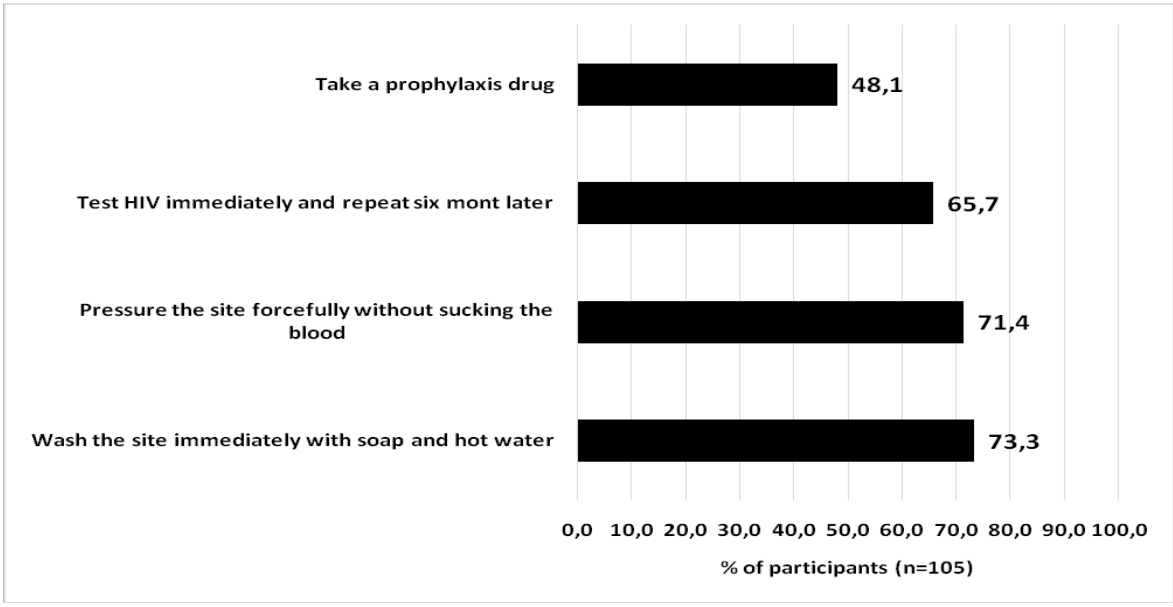

Figure 5: Early preventive actions to HIV transmission (n=105*)*

A low Cronbach's alpha value of 0.639 wasobtained after excluding one case for the four items under consideration. This low value could be related to the low number of questions, the poor inter-relatedness between items or the dissimilarity the items or because respondents have different opinions. The four item were used to score the awareness of participants towards the immediate actions to be taken following an accidental injection with HIV positive test. Participants were classified as "Fully aware" when they reported three to four of the proposed immediate actions to be taken; they were considered as "Not aware" when they mentioned less than three of the four items. Based on this classification, our study revealed that 59.6% of the participants (n=104) were "Fully aware" and 40.4% were "Not aware".

Table 1: Variables used to evaluate awareness towards HIV oral signs, mode of transmission, use of safety equipment and preventive actions.

Variable	Yes	No	Total	% Yes	Variable	Yes	No	Total	% Yes
Investigate all HIV positive patient	40	44	84	47.6	Use Safety Equipment	100	5	105	95.2
Knowledge HIV oral signs	85	20	105	81.0	Safety protection equipment				
HIV Oral Signs					Double gloves	94	11	105	89.5
Candidiasis	67	38	105	63.8	Mask	89	15	104	85.6
Recurrent Infection	60	44	104	57.7	Lab Code	78	27	105	74.3
Weight loss	55	47	102	53.9	Close shoes	72	33	105	68.6
Swollen lymph nodes	47	57	104	45.2	Eyeglasses	36	69	105	34.3
Necrotizing ulcerative Periodontitis	46	57	103	44.7	Face shield	28	77	105	26.7
Angular Chelates	43	62	105	41.0	Knowledge of ways of transmission of HIV	99	6	105	94.3
Herpes Simplex	40	65	105	38.1	Ways of prevention of transmission				
Linear gingival erythema	34	70	104	32.7	Be careful with needles during contact	96	9	105	91.4
Flu-like symptom	30	75	105	28.6	Use of safety equipment during work	91	14	105	86.7
Xerostomia	24	81	105	22.9	Have a complete and perfect history	67	38	105	63.8
Have you ever refuse to treat HIV patient	14	91	105	13.3	Take post-exposure prophylaxis	40	65	105	38.1
Know mode of transmission	103	2	105	98.1	Take vaccine Prophylaxes	33	72	105	31.4
Mode of transmission					Knowledge of what do after accidental injection	91	14	105	86.7
Blood	102	3	105	97.1	Immediate preventive action				
Sexual contact with an infected person	94	11	105	89.5	Wash the site immediately with soap and hot water	77	28	105	73.3
Sharing needles or other injection equipment*	86	19	105	81.9	Pressure the site forcefully without sucking the blood	75	30	105	71.4
Mother-to-child transmission	58	47	105	55.2	Test HIV immediately and repeat six months later	69	36	105	65.7
From shave equipment (scissor or razor)	51	54	105	48.6	Take a prophylaxis drug	50	54	104	48.1
Saliva	31	74	105	29.5					

Table 2: Scores on knowledge of HIV oral signs, mode and ways of transmission, preventive measures and use of safety equipment of the study participants

	Item scored		
Score	**Knowledge of HIV oral signs (n=97)**	**Mode of transmission (n=105)**	**Knowledge of ways of transmission (n=105)**
Poor	50.5	17.0	28.6
Fair	13.4	15.2	27.6
Good	20.6	24.8	30.5
Very Good	12.4	24.0	
Excellent	3.1	19.0	13.3

Score	**Awareness towards the use of six safety equipment (n=105)**	**Awareness towards early preventive measure to prevent transmission (n=104)**
Fully aware	29.5	59.6
Not aware	70.5	40.4

Conclusions

The research findings revealed that systematic screening of patients suspected for HIV infection by oral health professionals was (48.0%). This was worsened by the poor knowledge of the HIV oral signs of 50.5% of the study participants while 98.1% (103/105) reported to know the mode of transmission. Our research pointed that the way to zero discrimination remains long with 13.3% of the participants (n=105) who reported that they had refused to treat HIV patients. 59.6% of the study participants (n=104) reported that they were fully aware towards early preventive measure to prevent transmission and 70.5% of study population (n=105) were not aware towards the use safety equipment. Hence, they could not contribute efficiently in stopping the increase on new HIV infection despite of the global trend of the decline of new HIV infections in manycountries.

Our research findings were limited by the use of a convenience sample and its restriction to a specific setting. Nonetheless it appealed oral health professionals in particular and policy and decision makers to promote willingness of health professionals to care for HIV positive patients by capacitating them through continuing education and training, providing safety equipment and making anti-retroviral therapy available and accessible to both patient and health care providers.

List of abbreviations

AIDS	Acquired immunodeficiency syndrome
CD4 cells	Cluster of differentiation 4
HAART	Highly active anti-retroviral therapy
HIV	Human immunodeficiency virus
HIV-1	human immunodeficiency virus type 1
SPSS	Statistical package for Social Sciences

Acknowledgements

Administration and staff of Ribat University Teaching Hospital, all oral health professionals who approved and voluntary participated in the study.

References:

1. Merriam Webster. Definition of aware. http://www.merriam-webster.com/dictionary/awareness.
2. San Francisco AIDs Foundation. What is the difference between an Anonymous and Confidential HIV Test? http://sfaf.org/hiv-info/basics/what-is-difference-between-hiv-aids.html
3. Hiv.gov. What Are HIV and AIDS? https://www.aids.gov/hiv-aids-basics/hiv-aids-101/what-is-hiv-aids/
4. MedlinePlus. HIV/AIDS. https://www.nlm.nih.gov/medlineplus/ency/article/000594.htm
5. Cohen MS, Pilcher CD. Amplified HIV transmission and new approaches to HIV prevention. J Infect Dis 2005; 191:1391–3.
6. Lodi S, Fisher M, Phillips A, De Luca A, Ghosn J, et al. (2013) Symptomatic Illness and Low CD4 Cell Count at HIV Seroconversion as Markers of Severe Primary HIV Infection. PLoS ONE 8(11): e78642. doi:10.1371/journal.pone.0078642.
7. Rong R, Li B, Lynch RM, et al. Escape from autologous neutralizing antibodies in acute/early subtype C HIV-1 infection requires multiple pathways. PLoS Pathog 2009; 5:e1000594.
8. Volberding P, Demeter L, Bosch RJ, et al. Antiretroviral therapy in acute and recent HIV infection: a prospective multicenter stratified trial of intentionally interrupted treatment. AIDS 2009; 23:1987–95.
9. Fiebig EW, Wright DJ, Rawal BD, et al. Dynamics of HIV viremia and antibody seroconversion in plasma donors: implications for diagnosis and staging of primary HIV infection. AIDS 2003; 17:1871–9.
10. Kassutto S, Maghsoudi K, Johnston MN, et al. Longitudinal analysis of clinical markers following antiretroviral therapy initiated during acute or early HIV type 1 infection. Clin Infect Dis 2006; 42:1024–31.
11. Ribeiro RM, Qin L, Chavez LL, Li D, Self SG, Perelson AS. Estimation of the initial viral growth rate and basic reproductive number during acute HIV-1 infection. J Virol 2010; 84:6096–102.
12. Constantine N, Saville RD, Dax EM. Retroviral testing and quality assurance: essentials for laboratory diagnosis. Ann Arbor, MI: Malloy Printers, 2005.
13. Pilcher CD, Fiscus SA, Nguyen TQ, et al. Detection of acute infections during HIV testing in North Carolina. N Engl J Med 2005; 352:1873–83.
14. Quinn TC, Brookmeyer R, Kline R, et al. Feasibility of pooling sera for HIV-1 viral RNA to diagnose acute primary HIV. Global report 2010. Geneva: UNAIDS; 2010. http://www.unaids.org/globalreport/documents/20101123_GlobalReport_full_en.pdf.
15. Chambers et al. Stigma, HIV and health: a qualitative synthesis. BMC Public Health (2015) 15:848 DOI 10.1186/s12889-015-2197-0.
16. Earl C (2016) Ecuador Health Professionals Perceived Knowledge and Beliefs About HIV and the Use of Standard Precautions A Cross-Sectional Descriptive Research Study. Int J Nurs Clin Pract 3: 169. doi: http://dx.doi.org/10.15344/2394-4978/2016/169.

17. Sukhvinder Singh Oberoi et al. Knowledge and Attitude of Faculty Members Working in Dental Institutions towards the Dental Treatment of Patients with HIV/AIDS. International Scholarly Research Notices Volume 2014, Article ID 429692, 10 pages http://dx.doi.org/10.1155/2014/429692.
18. Nasir et al. Utilization of dental health care services in context of the HIV epidemic- a cross-sectional study of dental patients in the Sudan. BMC Oral Health 2009, 9:30 doi:10.1186/1472-6831-9-30.
19. Nasir et al. HIV/AIDS-related attitudes and oral impacts on daily performances: a cross-sectional study of Sudanese adult dental patients BMC Health Services Research 2013, 13:335 http://www.biomedcentral.com/1472-6963/13/335.
20. Ryalat et al. The knowledge and attitude about HIV/AIDS among Jordanian dental students: (Clinical versus pre-clinical students) at the University of Jordan BMC Research Notes 2011, 4:191 http://www.biomedcentral.com/1756-0500/4/191.
21. Ritter, N. (2010). "Understanding a widely misunderstood statistic: Cronbach's alpha". Paper presented at Southwestern Educational Research Association (SERA) Conference2010: New Orleans, LA (ED526237).