

# Barriers in Utilization of Dental Services among Human Immunodeficiency Virus Patients

K G Sourabha<sup>1</sup>, Manjunath P Puranik<sup>2</sup>, S R Uma<sup>3</sup>, Ashwini Biradar<sup>4</sup>, B Puttaswamy<sup>5</sup>

<sup>1</sup>Senior Lecturer, Department of Public Health Dentistry, Dayananda Sagar College of Dental Sciences, Bengaluru, Karnataka, India, <sup>2</sup>Professor and Head, Department of Public Health Dentistry, Government Dental College and Research Institute, Bengaluru, Karnataka, India, <sup>3</sup>Senior Lecturer, Department of Public Health Dentistry, Government Dental College and Research Institute, Bengaluru, Karnataka, India, <sup>4</sup>Senior Lecturer, Department of Public Health Dentistry, Maharashtra Institute of Dental Sciences & Research Dental College, Latur, Maharashtra, India, <sup>5</sup>Senior Lecturer, Department of Public Health Dentistry, Goa Dental College and Hospital, Goa, India

## ABSTRACT

This review is based on the utilization of dental services among human immunodeficiency virus (HIV) patients. It mainly discusses the barriers according to Andersen model which includes the predisposing, enabling and need related factors. Barriers for not utilizing dental care among HIV patients were associated to age, education, gender, race/ethnicity, income, lack of dental insurance, fear and discomfort, ignorance, concerns with confidentiality, stigma and discrimination, and self-perceived oral health status. There is an increased burden of oral diseases in persons with HIV, there is a lack of utilization of dental care regularly, and that use is varied by the patient characteristics and availability of a regular source of dental care. It is advised that appropriate strategies should be planned to reduce the burden of oral diseases in HIV patients which have an impact on general health and oral health-related quality of life.

**Keywords:** Acquired immunodeficiency syndrome, Barriers, Human immunodeficiency virus, Dental services, Fear

**Corresponding Author:** Dr. K G Sourabha, Department of Public Health Dentistry, Dayananda Sagar College of Dental Sciences, Shavige Malleshwara Hills, Kumaraswamy Layout, Bengaluru - 560 078, Karnataka, India. Phone: +91-9945137853, E-mail: dr11sourabha@gmail.com

## INTRODUCTION

Acquired immunodeficiency syndrome (AIDS) is a fatal illness caused by a retrovirus known as the human immunodeficiency virus (HIV) which breaks down the body's immune system, leaving the victim vulnerable to a host of life-threatening opportunistic infections, neurological disorders, or unusual malignancies. Among the special features of HIV infection are that once infected, it is probable that a person will be infected for life. AIDS can be called our modern pandemic, affecting both industrialized and developing countries.<sup>1</sup>

Recognized as an emerging disease only in the early 1980s, AIDS has rapidly established itself throughout the world and has persisted well into the 21<sup>st</sup> century. AIDS has evolved from a mysterious illness to a global pandemic, which has infected tens of millions in <20 years.<sup>1</sup>

According to the World AIDS report (2011), out of 34 million people, there were 3.4 million children living with HIV. There were 2.7 million newly HIV infected

cases, which constituted 390,000 children.<sup>2</sup> Due to the increasing prevalence of HIV, it is one of the most serious challenges to global health and development.<sup>1</sup>

Discrimination, stigmatization, and denial are the expected outcomes of such values, affecting life in families, communities, workplaces, schools, and health care settings.<sup>3</sup>

In economically developed countries, the introduction of more effective antiretroviral drugs has increased the life expectancy and quality of life of HIV-infected person, which has led to an increase in the demand for healthcare, including dental care.<sup>4</sup>

Beginning early in the HIV epidemic it was reported that oral health was a significant problem in HIV-infected individuals.<sup>5</sup> HIV patients are affected by oral health problems and which adversely has an impact on quality of life.<sup>6</sup> In the early part of the HIV epidemic use of dental services was mainly limited to HIV-associated oral lesions, oral opportunistic infections, emergency

procedures, and not in the maintenance of a healthy functional dentition. In addition to having systemic implications, compromised oral health affects an individual's quality of life.<sup>7</sup>

The dental profession has a role to play in the management of HIV disease as individuals with the HIV virus suffer a high incidence of oral health problems due to their diminished immune systems. Due to inadequate food intake and poor nutrition as a result of poor oral health may affect absorption of HIV medications and hinder immune function, leaving individuals susceptible to the progression of their illness.<sup>8</sup>

Despite widespread public awareness, there remains a high level of misinformation among the general public concerning risks of infection and routes of transmission of HIV. Public misinformation is especially reflected in undue concern about contracting HIV in the dental setting. This increased concern makes it necessary for dentists to play an increasingly important role in educating the public about AIDS.<sup>9</sup>

Maintaining good oral health is important in maintaining proper nutrition, which is the key to one's overall health and increasing life expectancy.<sup>10</sup>

## INDIAN SCENARIO

"AIDS presents the most serious public health problem in India today."<sup>11</sup> Though India is a country with low HIV prevalence, it has the third largest number of people living with HIV/AIDS. HIV estimates for the year (2008-2009), 23.9 lakh people are living with HIV/AIDS with an adult prevalence of 0.31%.<sup>11</sup>

Most infections are transmitted through heterosexual route, in certain regions, injecting drug use, men who have sex with men and single male migrants are contributing for the spread of HIV epidemic.<sup>11</sup>

There are no studies reported in the literature in India regarding barriers in the utilization of dental services among HIV patients, in spite of increased number of people infected with HIV. This shows the paucity in literature regarding information on utilization of dental services in HIV-affected people, whereas studies relating to general health where barrier was related to the cost of treatment of antiretroviral treatment, gender disparity, access to care and testing, educational level, insurance status, housing status in India.

## HIV AND ORAL HEALTH

HIV has a significant impact on oral health. More than one-third of people who are seropositive for HIV develop

some kind of associated oral lesion which agrees to certain estimates that indicate more than 90% of HIV patients will have at least one manifestation.<sup>12</sup>

Oral lesions might be encountered at an early stage of HIV infection. Weinert *et al.* identified 16 oral conditions that might occur in HIV-infected patients, 7 of which can be suppressed by drug therapy.<sup>13</sup>

Manifestations such as oral candidiasis, oral hairy leukoplakia, Kaposi's sarcoma, recurrent periodontitis and gingivitis may be important markers of HIV infection.<sup>6</sup> Even routine oral health problems in persons infected with HIV (such as abscessed, decayed, or missing teeth; non-virulent periodontal diseases; and ill-fitting dentures) may cause pain, interfere with normal diet, accelerate weight loss, and jeopardize general health and well-being.<sup>14</sup>

Oral health professionals can contribute to early diagnosis, prevention and treatment of HIV and AIDS infection. Thus, it is recommended that HIV-infected individuals should see a dentist regularly.

As there is an increased risk of cross-infection which might take place from patient to patient, from dentist to patient and *vice versa*, has necessitated the introduction of strict HIV protective procedures in dentistry. However, poor compliance with standard infection control procedures have been reported.<sup>13</sup>

## BARRIERS IN UTILISATION OF DENTAL SERVICES (CONCEPTUAL MODEL)<sup>13</sup>

The conceptual model used in the study for identification of variables to be considered relative to utilization is the behavioral model proposed by Andersen who distinguishes among predisposing, enabling and need factors (Figure 1).<sup>13</sup>

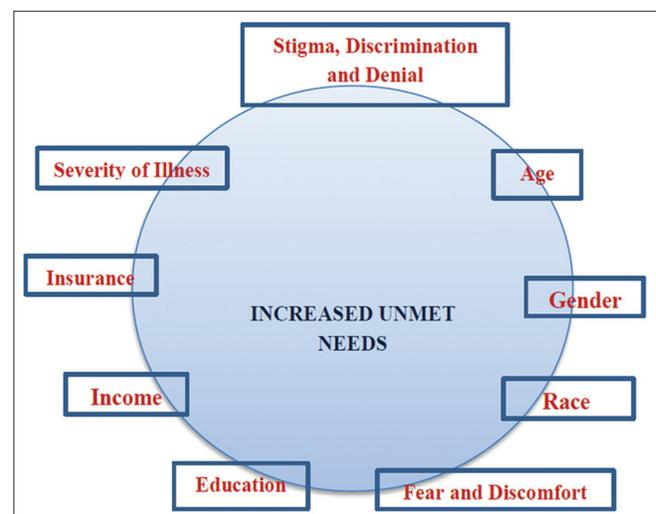


Figure 1: Most important barriers in utilization of dental service

## PREDISPOSING FACTORS

### Age

Age was an important barrier to avail dental services even if the services were given free of cost. The younger age group visited the dentist more regularly in comparison to the older age group. This may be due to the fact that the younger age group had more knowledge and fewer barriers. It was also found that the older age group did not think that oral health was important.<sup>15</sup>

Based on HIV Cost and Services Utilization Study (HCSUS), that participants over 50 years of age were less likely to report unmet needs for dental care than younger participants.<sup>16</sup>

### Education

Education is an important predisposing factor that consistently predicted use of specific dental services. Those with less than high school education were more likely to report an unmet need for dental care than those with more education.<sup>7</sup>

Patients with more than high school education were more likely to have seen a dentist regularly and use all of the dental services except extractions than those with less education.<sup>17</sup> Women who did not complete high school had more of non-utilization of dental care in the past year.<sup>18</sup>

Education is correlated, with the use of dental services. Higher the education, higher probability of having a dental visit.<sup>12</sup>

### Gender

Men with HIV infection reported visiting a dentist without informing the dentist of their HIV status. This was because of the negative attitude of the dental team.<sup>19</sup> HIV positive women who perceived their oral health as being fair or poor had unmet need compared to women having good or excellent oral health. The main reason for not making dental visit among some women was that they felt discriminated against or were uncomfortable with dental treatment because of their positive HIV status.<sup>19</sup>

Authors felt that dedicated dental clinics have a recognized role providing specialized care for people with symptomatic HIV disease especially by providing a safety net for people with asymptomatic HIV infection who are unable to obtain care elsewhere.<sup>19</sup> There is a need to inform HIV-infected patients and their primary care providers regarding available benefits and to educate dental professionals in managing fearful patients and promote public health campaigns that raise patient awareness.<sup>18</sup>

## Race/Ethnicity

In a North Carolina study in blacks, fear and cost was the primary barrier to care and among White's education, employment status and the cost was the primary barrier which was associated with unmet dental needs. Significantly higher rates of perceived unmet needs are found among Blacks. Discrimination in relation to access and level of dental care exists, with black African women being at most risk.<sup>20</sup>

Blacks were 1.76 times more likely than Whites to have some third party coverage with most of this being Medicaid dental coverage. Cost remained a barrier because the patients were unaware of the dental benefits under Medicaid or they were unable to find dental providers who accept Medicaid-covered patients.<sup>20</sup>

To eliminate the oral health disadvantages of Blacks with HIV infection, a culturally sensitive health promotion campaign are needed and efforts are needed to raise professional standards and HIV awareness to prevent continuing inequalities in dental care provision and to create awareness about the benefits of Medicaid coverage.<sup>20</sup>

## ENABLING FACTORS

### Income and Insurance

Economics plays a critical role in health care. The cost of dental care and availability of insurance coverage have profound impact on the utilization of health care services.<sup>21</sup>

Dental insurance status is an important predictor of use of dental services. Dental insurance is one of the enabling factors associated with more dental visits.<sup>12</sup> Substantial disparities in health insurance coverage exist among different population groups. The uninsured use fewer health services than insured individuals. Extending the benefits of private insurance to uninsured individuals would significantly increase utilization rates of services by uninsured patients.<sup>21</sup>

Based on HCSUS those whose yearly income was <\$10,000 were more likely to report unmet needs for care than those with higher incomes.<sup>22</sup>

The HCSUS survey found that the perception of unmet need for dental care was greatest among participants who lacked dental insurance.<sup>23</sup>

Some of the individuals were Medicaid recipients who lived in US in which Medicaid does not provide dental benefits; others were uninsured or had private health insurance, but no dental coverage.<sup>23</sup>

Almost one-half of the US population is enrolled in the Medicaid program, but a substantial number (41,200) accounting for about 40% of those in the program, live in US without adult dental benefits beyond treatment of pain and infection.<sup>24</sup>

A clear public policy imperative to increase access to dental care for those with HIV is to prevent the erosion of adult dental benefits where there is coverage, and to work to include adult dental benefits in states without such coverage<sup>24</sup> and it is suggested that HIV patients should have frequent dental visits hence reducing the cost of complex treatment.<sup>25</sup>

## NEED RELATED FACTORS

Need related factor is the strongest predictor of dental care utilization. Patients who perceived good teeth condition were less likely to have attended dental care for treatment.<sup>13</sup>

## FEAR AND DISCOMFORT

Fear of dentists was a strong and an independent predictor of lack of use of dental care. The main reason was discomfort or fear of dentists for not visiting a dentist when needed.<sup>26</sup>

Approximately 50% of HIV patients who said that they had disclosed their status disclosure subsequently resulted in being refused dental treatment. Of the remaining patients who did not disclose their HIV status (25/51, 49%), the most common reasons given for non-disclosure included fear of being treated differently (12/46 responses, 26%) that it was unnecessary for the dentist to know (20%).<sup>6</sup> Charbonneau *et al.* found that although 83% of people with HIV preferred their dentist to be aware of their status, 25% had never disclosed it to a dentist.<sup>27</sup>

According to these patients the reasons given by the dentist were lack of proper equipment, concern over possible dental complications because of HIV-related immunosuppression and unwillingness to treat HIV-infected persons, the dentist referred the patient without any explanation to either a public facility or another private dentist.<sup>4</sup> The more attention should be paid to the professionalism of dentists. One response to access problems is the development of clinics dedicated to patients with HIV.<sup>27</sup>

## IGNORANCE

Access to oral health care may be influenced by many factors including a lack of perception of the importance

of oral health and an ignorance of existing services. The physicians should be educated and encouraged to include regular dental check-ups in their routine management of HIV positive patient.<sup>28</sup>

## DENTISTS' ATTITUDES TOWARD HIV PATIENTS

The majority of the undergraduates are willing to treat HIV patients compared to postgraduate students and staff. This may be because undergraduate dental education training at other institutions may not have placed as great an emphasis on preparing future dentists for the treatment of HIV/AIDS patients.<sup>29</sup>

However dentists, who had treated more than two known HIV-positive patients in the past year, those who had a friend who is HIV-positive and also younger dentists were more likely to have positive attitudes toward HIV patients.<sup>30</sup>

Dentists' decisions not to treat are linked to notions of professional autonomy and may be complicated by an inflated sense of transmission risk.<sup>10</sup>

Some of the excuses given by the dentist in treating HIV-infected patients:

- Dentists claimed that certain circumstances excused them from fulfilling their professional obligations to HIV-infected patients<sup>31</sup>
- They feel excused because of the danger to their lives, their families, and employees and other patients<sup>31</sup>
- Dentists believed that they have a right to refuse to treat HIV-infected patients because there are limits to what a profession may justly demand of its members entering a place of contagion to care for the sick<sup>31</sup>
- In addition, dentists were concerned about loss of staff and other patients.<sup>27</sup>

The ever increasing number of people with HIV/AIDS re-emphasizes the need for proper cross infection control in clinical practice. Hence, more emphasis should be placed on adequate infection control measures in dental practice.<sup>32</sup>

Correspondingly, younger dentists are more likely to accept patients with HIV than older dentists, which were revealed in a recent study of US dental students where they found that 83% were willing to treat. There is still work to be done on the attitudes and behavior of dentists toward people with HIV. But, this is not a simple educational task.<sup>27</sup>

Lancaster *et al.* reported common misunderstandings regarding the public's knowledge about HIV and AIDS. Most of the respondent feel they could contract

an infection in the dental clinic and 43% identified HIV as a risk.<sup>13</sup>

Despite this high degree of willingness to treat, 84% of the sample maintained that it was their right to decide whether to accept an HIV-positive patient for treatment. Seventy-five percent reported that they were afraid of displaying a willingness to treat HIV-positive patients for fear that they would lose other patients. Eighty percent of the sample agreed that HIV makes dentistry a high-risk occupation. Despite dentists' expressed willingness to treat HIV-positive patients, they still have a tremendous fear of contagion.<sup>30</sup> Dentists are less willing to treat patients with symptomatic as compared to patients who are asymptomatic.<sup>33</sup>

Several participants stated that they would not discriminate against these patients or that the patient with HIV/AIDS was no different from any other patient and that all patients were and should be treated the same. The more common, respondents stated that they felt they had enough training in HIV management to be competent and comfortable in doing so.<sup>34</sup>

Training programs for dental students should include components that address empathic communication and also the focus of continuing education for practitioners where a measure to take universal precaution should be emphasized.<sup>34</sup> It is critical for the public to be properly educated about the continued safety of the dental office and receive accurate information about AIDS and AIDS transmission.<sup>35</sup>

## CONCERNS ABOUT CONFIDENTIALITY

A person is assured protection by law against unreasonable, substantial or serious interference with his or her privacy, particularly personal and medical information.<sup>10</sup>

The Health Insurance Portability and Accountability Act (HIPAA) regulations and Americans with Disabilities Act protect people with HIV and their right to disclosure of their status.<sup>10</sup>

Concerns about confidentiality have also been shown to be a major barrier in seeking not only dental care, but all medical services, highlighting the board importance of complying with HIPAA regulations and other confidentiality laws. Patients may view confidentiality as an issue of respect.<sup>10</sup>

A recent national study in the US regarding oral health findings for HIV-positive dental patients revealed that 18% of patients and 8% of respondent did not trust their dentist to preserve their privacy.<sup>10</sup>

In most they expressed fear of rejection, but they were also worried about breach of confidentiality if they disclosed their HIV status.<sup>17</sup>

Some of the patients thought it was unnecessary to disclose their HIV infection as they used gloves and mouth mask routinely which reduced the transmission of infection. Some patients disclosed their status as they wanted to alert the dentist to possible increased risk, to help the dentist understand their oral pathological condition.<sup>17</sup>

Attention to the need for confidentiality provides educational opportunities for both ethical behavior and the larger social implications of oral health. The young graduates should be well prepared to maintain confidentiality with sensitivity as stigma is attached to HIV disease, hence enhancing patients' access to health care and can go a long way toward preserving the quality of life for HIV-positive patients.<sup>10</sup>

In India, the amended code of Ethics of Medical Council of India states, confidential information entrusted by patients to a physician should never be revealed unless their revelation is required by the laws of the state. However, to protect a healthy person against a communicable disease to which he is about to be exposed the physician should act as he would wish another to act toward one of his own family members in similar circumstances.

The registered medical practitioner shall not disclose the secrets of his patient that have been learnt in the exercise of his/her profession except:

1. In a court of law under the orders of the judge
2. Notifiable disease
3. In circumstances where there is a serious and known risk to a specific person and/or community.<sup>36</sup>

## HIV AND LAW

"Health care is a right of all citizens and the duty of State." Equality and non-discrimination, inviolable in every key international human rights agreement, are the pillars on which all other human rights rest. The three elements of legal environments law, enforcement, and access to justice are interdependent.<sup>37</sup>

Some anti-discrimination laws find their underpinnings in national constitutions; others are built of case law or state-recognized religious law, such as the concept of privacy in Sharia. Of 168 countries reviewed by UNAIDS, 123 reported that they had passed legislation to outlaw discrimination based on HIV. 111 countries have specific non-discrimination laws or regulations that protect at least some specific populations based on their vulnerability to HIV.<sup>37</sup>

On October 3, 2008, a panel Supreme Court instructed that health workers cannot refuse to provide treatment to HIV-positive people. India's Supreme Court rules which state that health care workers in all government and private hospitals cannot refuse medical treatment to people living with HIV/AIDS.<sup>38</sup>

HIV: Its first name is "human." To defeat it, the world and its laws must embrace and promote what every living person shares: the fragile, immensely potent human rights to equality, dignity, and health.<sup>36</sup>

## RECOMMENDATION

Some of the recommendations to reinforce the importance of mutual respect and the social obligations of the health care workers and patients are:

1. Concerted and continual efforts to ameliorate public fear of AIDS through educational campaigns designed to increase knowledge and awareness of HIV transmission and risk behaviors.
2. Development of safer instrumentation, protective barriers, and procedures along with the greater voluntary use of infection control practices in health care institutions to minimize the potential for accidental exposure to HIV.
3. Development and implementation of financial reimbursement mechanisms by professional organizations to compensate for the loss of practice incurred by HIV-positive health care workers. This should be combined with the exploration and development of alternative forms of insurance that might be purchased by health providers to protect the health practitioner's family should loss of income result from subsequent AIDS infection.
4. Training programs for dental students should include components that address empathic communication and should also focus on continuing education for the practitioner.
5. Strict enforcement of anti-discrimination laws and regulations designed to protect persons with HIV infection.
6. It is required that HIV-infected patients inform their dentist or physician of their status.
7. HIV patient should be educated to make periodic visits to the dentist so that the burden of oral diseases can be reduced and hence the impact one cost and accumulation of dental needs can be reduced.
8. Development of dedicated dental clinics and HIV friendly dentist can increase the use of dental care among HIV patients and all patients can be treated equally.
9. Ensuring that graduates are well prepared to maintain confidentiality with sensitivity to the role stigma plays in HIV disease has the potential to enhance patient's access to health care. This can go

a long way toward preserving the quality of life for HIV-positive patients.

## CONCLUSION

The role of oral health care workers in diagnosis and treatment of HIV patients and the adoption of a team approach involving physicians, dental surgeons, nursing staff, and community care workers are very important in ensuring the best management of HIV patients. There should be a formal training of attending physicians in the recognition and management of oral lesions in HIV patients and they should also be encouraged to include regular dental checkups and refer their patients for regular screening and prophylaxis as part of their preventive management of HIV patients. It is also recommended that patients with HIV should be referred to a dentist for routine check-ups 2 times a year.<sup>21</sup>

## REFERENCES

1. Park K. Textbook of Preventive and Social Medicine. 21<sup>st</sup> ed. India: Banarsidas Bhanot Publishers; 2010. p. 316-20.
2. UNAIDS World AIDS Day Report 2011. Available from: <http://www.unaids.org/.unaids/.unaidspublication/2011/jc2216>. [Last accessed on 2012 May 07].
3. India: HIV and AIDS-related Discrimination, Stigmatization and Denial. Available from: [http://www.data.unaids.org/publications/irc-pub02/jc587-india\\_en.pdf](http://www.data.unaids.org/publications/irc-pub02/jc587-india_en.pdf). [Last accessed on 2012 May 07].
4. Giuliani M, Lajolo C, Rezza G, Arici C, Babudieri S, Grima P, *et al.* Dental care and HIV-infected individuals: Are they equally treated? *Community Dent Oral Epidemiol* 2005;33:447-53.
5. Coulter ID, Marcus M, Freed JR, Der-Martirosian C, Cunningham WE, Andersen RM, *et al.* Use of dental care by HIV-infected medical patients. *J Dent Res* 2000;79:1356-61.
6. Levett T, Slide C, Mallick F, Lau R. Access to dental care for HIV patients: Does it matter and does discrimination exist? *Int J STD AIDS* 2009;20:782-4.
7. Mascarenhas AK, Smith SR. Access and use of specific dental services in HIV disease. *J Public Health Dent* 2000;60:172-81.
8. Mofidi M, Gambrell A. Community-based dental partnerships: Improving access to dental care for persons living with HIV/AIDS. *J Dent Educ* 2009;73:1247-59.
9. Grace EG, Cohen LA, Ward MA. Public knowledge/perceptions about AIDS transmission: Concerns about use of dental services. *Community Dent Oral Epidemiol* 1994;22:52-5.
10. Rohn EJ, Sankar A, Hoelscher DC, Luborsky M, Parise MH. How do social-psychological concerns impede the delivery of care to people with HIV? Issues for dental education. *J Dent Educ* 2006;70:1038-42.
11. National AIDS Control Organisation. Ministry of Health & Family Welfare. Annual Report. 2010-11. Available from: <http://www.nacoonline.org>. [Last accessed on 2012 May 10].
12. Dobalian A, Andersen RM, Stein JA, Hays RD, Cunningham WE, Marcus M. The impact of HIV on oral health and subsequent use of dental services. *J Public Health Dent* 2003;63:78-85.
13. Nasir EF, Aström AN, David J, Ali RW. 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.
14. Schneider DA, Hardwick KS, Marconi KM, Niemcryk SJ, Bowen GS. Delivery of oral health care through the Ryan White

- CARE Act to people infected with HIV. *J Public Health Dent* 1993;53:258-64.
15. Kakatkar G, Bhat N, Nagarajappa R, Prasad V, Sharda A, Asawa K, *et al.* Barriers to the utilization of dental services in udaipur, India. *J Dent (Tehran)* 2011;8:81-9.
  16. Leibowitz A, Bozzette SA, Coulter ID. Do people with HIV get the dental care they need? Results of the HCSUS study. RAND Corporation 2005;RB-9067.
  17. Jacobson JA, Stocking C, Gramelspacher G. Dental care experience of HIV-infected men in Chicago. *J Am Dent Assoc* 1989;119:605-8.
  18. Shiboski CH, Cohen M, Weber K, Shansky A, Malvin K, Greenblatt RM. Factors associated with use of dental services among HIV-infected and high-risk uninfected women. *J Am Dent Assoc* 2005;136:1242-55.
  19. Robinson PG, Croucher R. Access to dental care – Experiences of men with HIV infection in the United Kingdom. *Community Dent Oral Epidemiol* 1993;21:306-8.
  20. Patton LL, Strauss RP, McKaig RG, Porter DR, Eron JJ Jr. Perceived oral health status, unmet needs, and barriers to dental care among HIV/AIDS patients in a North Carolina cohort: Impacts of race. *J Public Health Dent* 2003;63:86-91.
  21. Gluck G, Morganstein WM. *Jong's Community Dental Health*. 5<sup>th</sup> ed. St. Louis: Mosby Publishers; 2002. p. 108.
  22. Heslin KC, Cunningham WE, Marcus M, Coulter I, Freed J, Der-Martirosian C, *et al.* A comparison of unmet needs for dental and medical care among persons with HIV infection receiving care in the United States. *J Public Health Dent* 2001;61:14-21.
  23. Marcus M, Yamamoto JM, Der-Martirosian C, Freed BA, Maida CA, Younai F, *et al.* National estimates of out-of-pocket dental costs for HIV-infected users of medical care. *J Am Dent Assoc* 2005;136:1406-14.
  24. Freed JR, Marcus M, Freed BA, Der-Martirosian C, Maida CA, Younai FS, *et al.* Oral health findings for HIV-infected adult medical patients from the HIV Cost and Services Utilization Study. *J Am Dent Assoc* 2005;136:1396-405.
  25. Hastreiter RJ, Jiang P. Do regular dental visits affect the oral health care provided to people with HIV? *J Am Dent Assoc* 2002;133:1343-50.
  26. Shiboski CH, Palacio H, Neuhaus JM, Greenblatt RM. Dental care access and use among HIV-infected women. *Am J Public Health* 1999;89:834-9.
  27. Robinson PG. Implications of HIV disease for oral health services. *Adv Dent Res* 2006;19:73-9.
  28. Sofola OO, Uti OG, Emeka O. Access to oral health care for HIV patients in Nigeria: Role of attending physicians. *J Oral Health* 2012;1:1-6.
  29. Cohen LA, Romberg E, Grace EG, Barnes DM. Attitudes of advanced dental education students toward individuals with AIDS. *J Dent Educ* 2005;69:896-900.
  30. Bennett ME, Weyant RJ, Wallisch JM, Green G. Dentists' attitudes toward the treatment of HIV-positive patients. *J Am Dent Assoc* 1995;126:509-14.
  31. Davis M. Dentistry and AIDS: An ethical opinion. *J Am Dent Assoc* 1989;Suppl:9S-11.
  32. Ukpebor M, Braimoh OB. HIV/AIDS; Oral complications and challenges, the Nigerian experience. *Benin J Postgrad Med* 2007;9:44-54.
  33. Sadowsky D, Kunzel C. Measuring dentists' willingness to treat HIV-positive patients. *J Am Dent Assoc* 1994;125:705-10.
  34. Wiltshire AD, Ross MW, Brimlow DL. Empathic communication between dental professionals and persons living with HIV and AIDS. *J Dent Educ* 2002;66:86-93.
  35. Cohen LA, Grace EG, Ward MA. Maryland residents' attitudes toward AIDS and the use of dental services. *J Public Health Dent* 1992;52:81-5.
  36. Kaur V, Singh G. Ethical and legal issues in AIDS. *Indian J Sex Transm Dis* 2008;29:63-7.
  37. Global Commission on HIV and the Law. Risks, Rights and Health. Available from: <http://www.hivlawcommission.org/>. [Last accessed on 2012 May 10].
  38. Health Workers Cannot Refuse To Provide Treatment to HIV-Positive People, India's Supreme Court Rules. Friday, October 3, 2008 (The Hindu, 10/2). Available from: <http://www.thebody.com/content/art48888.html> [Last accessed on 2012 May 07].

**How to cite this article:** Sourabha KG, Puranik MP, Uma SR, Biradar A, Puttaswamy P. Barriers in Utilization of Dental Services among Human Immunodeficiency Virus Patients. *Int J Adv Health Sci* 2015;2(3):23-29.

**Source of Support:** Nil, **Conflict of Interest:** None declared.