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SYSTEMATIC REVIEW

Knowledge and attitudes of dental professionals toward patients with HIV/AIDS: a systematic review on discrimination in dental care

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ABSTRACT

Objective: To explore the knowledge and attitudes of dental professionals toward patients with Human Immunodeficiency Virus (HIV)/ Acquired Immunodeficiency Syndrome (AIDS) and to highlight evidence of discriminatory practices in dental care.

Methods: This qualitative systematic review was conducted by searching PubMed and Bireme databases for articles published between 2018 and 2022. Inclusion criteria were studies focusing on dental professionals, addressing either knowledge or attitudes regarding HIV/AIDS, and involving care provided to HIV-positive patients. A total of 1088 articles were initially retrieved. After removing duplicates and applying eligibility criteria based on the PRISMA guidelines, nine cross-sectional studies from India, Brazil, Iran, Indonesia, Turkey and Saudi Arabia were included. The total sample size across studies was 2,455 dental professionals. Quality appraisal was done using the Critical Appraisal Skills Programme checklist.

Results: The review revealed inconsistent levels of knowledge among dental professionals. While some participants demonstrated good awareness of HIV transmission and biosafety measures, significant gaps remained, especially regarding antiretroviral therapy and modes of infection. Despite this, high levels of fear and discomfort treating HIV-positive patients were commonly reported. Passive discriminatory attitudes included anxiety, avoidance, and lack of confidence, whereas active discrimination manifested through denial of treatment, preference for referrals, and reluctance to employ or be treated by HIV-positive individuals.

Conclusion: This review highlights that despite moderate knowledge, negative attitudes and discriminatory practices remain prevalent. There is a critical need for targeted interventions, sensitization and training of dental professionals, and policy enforcement to ensure ethical, non-discriminatory dental care for people living with HIV/AIDS.

Keywords: Knowledge (MeSH); Attitude (MeSH); Stomatology (MeSH); Oral Medicine (MeSH); Dentistry (MeSH); Patients (MeSH); HIV (MeSH); Acquired Immunodeficiency Syndrome (MeSH); Dental Care (MeSH); Dentists (MeSH); Comprehensive Dental Care (MeSH); Oral Hygiene (MeSH).

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INTRODUCTION

The human immunodeficiency virus is a chronic disease that degenerates the body's capacity to fight infections and disease,[1] the main vector of contagion being sexual practices, however, the conception of "disease" understood from the biomedical approach has been expanding, being considered a problem that crosses socio-cultural contexts.[2,3] Its presence, in audiovisual and informative media, influences the perception of the social environment, interpersonal relationships and labour relations, creating stereotyped ideas, beliefs and attitudes in the population towards people who suffer from it by way of social representation, which leads to "an early social death from the diagnosis of AIDS".[4]

According to the prevalence reports of the Joint United Nations Programme on HIV/AIDS ,[5] an increase in HIV cases has been reported in the last 10 years, with an estimated four thousand people acquiring the virus every day, and it is estimated that the annual rate could triple by 2025. Similarly, PAHO[6] reports that in the Americas region, of the 3.8 million cases, 2.5 million are found in Latin America, mostly in the young adult population.

The reports allow us to observe the number of people exposed to spaces of conflict as a result of their own condition, being singled out, judged and criticized by family members, people close to them, partners and health personnel,[7-9] stripping them of all aspects of individuality, leaving only the disease as "identity". This leads to reconstruction of personal identity and the way they interact with the world; there is denial, guilt, fear, self-criticism and a constant confrontation with the new way of life which, on the whole, ends with the acceptance of the diagnosis.[9,10]

This complex process brings about many changes, the main ones being: the feeling of social stigma and discrimination to which carriers of the virus are exposed, generating a physical and emotional burden,[11] which produces distancing behaviours, self-exclusion,[12] reduced levels of hope, fear of rejection,[10] complications during treatment,[13] and the appearance of other diseases.[14,15]

However, what is the degree of involvement of health staff in this

situation? Fauk N, et al., [16] identified that patients were treated in a derogatory manner by health staff, labelling them negatively, asking derogatory questions, avoiding physical contact and distributing information about the patient to colleagues to warn them about their condition. On the other hand, Boakye and Mavhandu-Mudzusi,[17] found that a group of nursing staff had inadequate knowledge and a fear of infection, leading to negative attitudes towards patients; while Lee H, et al.,[18] focusing their attention on the medical professional, found that the fear of being infected and what the disease symbolically represents, is what caused distancing and discriminatory attitudes.

Koseoglu Ornek O, et al.,[19] agree that the lack of specialised knowledge is what causes nurses and doctors not to be able to even shake hands or share a space because of "environmental contamination". And Attal B, et al., [20] found that there are no anti-stigma policies, with 93% of professionals considering that the measures taken by their hospitals are inadequate, resulting in 87% of staff reporting a form of discrimination; with Prah J, et al.,[21] indicating that concern about becoming infected predicts stigmatising attitudes, finding a tendency in nursing staff. In contrast, Elamin M, et al.,[22] report that the knowledge and attitudes of medical, nursing and midwifery staff are adequate.

This population of patients, in particular, due to problems associated with the immune system, are more susceptible to developing infections, gingival bleeding, oral lesions and supra gingival calculus,[23,24] making oral health care a priority.

However, there is also evidence of patients' poor perception of the care provided by the stomatologist,[25,26] and there are cases in which, due to fear of rejection and concern,[27] professionals have not been informed that they are serotype positive, preventing them from taking biosecurity measures for the intervention.

The aim of the study was to determine the knowledge and attitudes of dental professionals towards patients with HIV, in order to analyze the degree of knowledge about the virus and how this impact on attitudes towards patients, using information from studies that meet these characteristics.

METHODS

In order to carry out the qualitative systematic review, we searched for scientific articles that met the following inclusion criteria: they had to have been published within a range of five years from 2018 to 2022, the population was only dental professionals, at least one of the variables was considered, such as attitudes or knowledge, and the care was strictly for patients with HIV/AIDS.

The keywords selected for the information search were: Knowledge, Attitudes, Attitude, HIV, AIDS, Dentistry, stomatology, and odontology. Considering within the terms derivatives and synonyms that represent the same study variables and the type of population at the level of content.

The selected search engines used were the Pubmed and Bireme platforms, including all scientific productions between 2018 and 2022, representing a time range of 5 years.

As a result of the PubMed search, 1055 results were obtained and 33 results were extracted from Bireme, making a total of 1088 papers that have been taken as the total population.

The presentation of the diagram and data processing was done according to the reporting protocol proposed in the PRISMA statement.[28] For the suitability criteria, the Critical Appraisal Skills

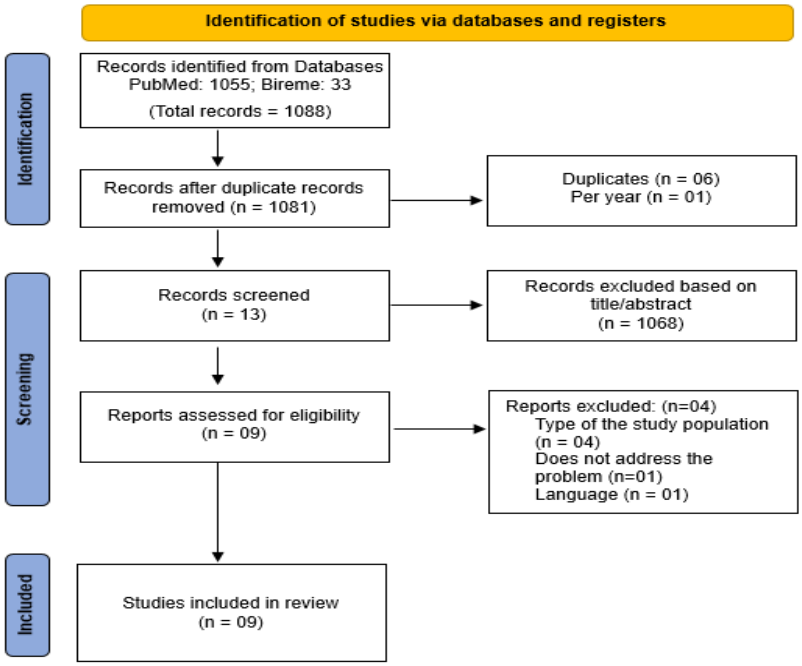

Figure 1: PRISMA flowchart of the study

Table I: Search string for review

Data base	Search string
PubMeD	((((((Knowledge[Title/Abstract]) OR (Attitudes[Title/Abstract]) OR (Attitude[Title/Abstract])) AND (HIV[Title/Abstract])) OR (AIDS[Title/Abstract])) AND (Dentistry[Title/Abstract])) OR (Stomatology[Title/Abstract]) OR (Odontology[Title/Abstract])
Bireme	(ti:(knowledge) OR ti:(attitudes) OR ti:(attitude)) AND (ti:(HIV) OR ti:(AIDS)) AND (ti:(dentistry) OR ti:(stomatology) OR ti:(odontology)) AND (year_cluster:[2018 TO 2022])

Note: Self-elaboration

Table II: Analysis of knowledge and attitudes towards HIV patients

Author/Year	Country	Sample Size	Method	Results	Conclusion
Rekhi A, et al., 2018 [30]	India	500	Quantitative	**Knowledge** 39.6% has no knowledge of treating HIV patients 56.4% is not aware of any measures against accidental punctures 18.4% has no knowledge of HIV oracy **Attitude** 47.2% is unwilling to care for an HIV-positive patient 34.4% considers that it is not an ethical responsibility to care for HIV-positive patients 36% considers that caring for HIV-positive patients exposes the professional 72% considers that it is difficult to deal with staff fears 45.6% considers that it does not have the necessary safety materials 82.4% treats all his patients as if he has HIV	Dentists' level of knowledge about HIV and AIDS was found to be average.
Garbin AJI, et al., 2020 [31]	Brasil	144	Quantitative	**Knowledge** 97% received HIV counselling **Attitude** 58% (high) y 33.3% (medium) fears caring for HIV patients 58.4% (high) y 28.8% (medium) feels at high risk of infection 68% considers that the dentist should not report HIV status 68% would not be treated by an HIV-positive dentist 79.9% would not hire an assistant with HIV 91.3% follows biosecurity protocols	The level of knowledge and attitudes are inconsistent, showing some prejudice towards people with HIV.
Sufiawati I, et al., 2024 [32]	Indonesia	435	Quantitative	44% has good knowledge 53% have a positive attitude 53% have positive behaviour 30.6% feel uncomfortable with people with HIV/AIDS; 44.4% feel that they can refuse to treat an HIV-positive patient; 85.2% is more comfortable providing care to non-HIV-positive patients; 24.8% refuse to treat HIV/AIDS infected patients in order to protect my family and myself; 55% Preferring to refer HIV-positive patients rather than to treat them.	Half of the dentists have good knowledge and behaviours towards HIV, but the others lack negative knowledge, attitudes and behaviours.
Golkari A, et al., 2016 [33]	Iran	120	Quantitative	**Knowledge** 68.7% answered correctly on means of transmission 36.2% responded correctly on the conditions cited that could be a manifestation related to HIV infection **Attitude** 62.1% believes that transmission in dental clinics is highly probable 79.6% claims that as dentists, they had an increased risk of infection 80.6% were concerned about occupational exposure 38.8% claim that they should have the right to refuse to attend 70% would not treat a patient with HIV	Dentists' level of knowledge and positive attitudes towards HIV patients were poor.
Garbin CAS, et al., 2018 [34]	Brasil	462	Quantitative	**Knowledge** 85.5% has received information about AIDS 58.9% knows the aetiological agents **Attitude** 85.3% would care for infected patients 63.9% (high) y 20.5% (medium) is wary of HIV patients 68.6% would not be treated by an HIV-positive dentist.	There are gaps in graduates' knowledge about AIDS, showing discriminatory attitudes towards infected people.

continued...

Rostamzadeh M, et al., 2018 [35]	Iran	106	Quantitative	**Knowledge** **E**l 25% believed to be transmitted by saliva el 85% believes it can be cured with antiretrovirals 70% believes that within a year HIV becomes AIDS 75% does not believe that the probability of needle-stick transmission is 50 to 75% **Attitude** **2**6% prefers not to treat positive patients 71% disagrees with the denial of care to a patient 40% is worried about becoming infected	There is a satisfactory level of dentists' knowledge and attitudes about HIV/AIDS infections. There is a satisfactory level of knowledge and attitude of dentists about HIV/AIDS infections, however, knowledge gaps suggest that more knowledge would improve attitudes and practices towards patients
Ranjan R, et al., 2019 [36]	India	200	Quantitative	**Knowledge** **6**0% said that HIV is spread through social contacts. 96% says that HIV transmission is through saliva 88% of them had no knowledge of antiretroviral therapy 50% of individuals believed that needlestick injury could be an entity to become infected with HIV **9**0% disagrees that HIV develops into AIDS 20% of them did not know about HIV vaccines **Attitude** 65 % who agreed to treat the infected patients 18 % refused to treat these patients. 60% of them were quite anxious when treating HIV patients. 45 % believed in the propagation of patients to dentists	Dentists did not have adequate knowledge in the field of HIV transmission. Fear and concern about becoming infected make them reluctant to treat these patients
Koseoglu Ornek O, et al., 2022 [37]	Turquía	58	Quantitative	**Knowledge** **3**6% sabe que no se transmite por saliva **Attitude** **7**2.4% is concerned about the possibility of infection in patients 81% concern about the risk of contagion during care 33.3% prefers not to treat HIV patients	The level of knowledge is mixed, but there is a constant concern about contagion.
Alshouibi EN and AlAlyani WS, 2018, [38]	Arabia Saudita	430	Quantitative	**Attitude** **9**8.1% refer to the last appointment of the day 84.7% referral to a specialist 100% wear double gloves 67% discriminated against the patient 69% does not feel confident about surgery 51.2% does not feel confident about non-surgical interventions	HIV-related discrimination was affected by gender, type of practice and self-protective attitudes of dentists. More acts of discrimination were reported in men than in women, with the level of trust being lower in those who display discriminatory behaviours

Program[29] was used to assess the quality of the work in terms of methodology and reporting of results.

The organization of the extracted data was done through meta-synthesis and meta-results, in order to extract the central ideas that provide the answers to the objective questions set out in the paper.

Regarding the data processing, of the 1088 search results, we proceeded to the second phase of cleaning those duplicates and those that are not considered in the range of years, 2018-2022, to enter the second phase of cleaning. Next, we screened, reading the titles and abstract of each paper, to select through the first filter those investigations that considered the study variables, and added 13 additional articles that were not found through the

search engines, leaving 26 articles. During the last phase, all the research was reviewed to see if it was considered suitable for inclusion in the final database, using the previously established inclusion criteria, leaving 9 studies that were systematised and reported in Table II.

Development: The organisation of the articles according to the year of publication is as follows: 56% (5) of the scientific production is in the year 2018, followed by 22% (2) in 2021, and 11% is distributed in the years 2020 (1) and 2022 (1).

100% of the papers are cross-sectional and descriptive, belonging to the countries Brazil (2), India (2), Iran (2), followed by Saudi Arabia (1), Indonesia (1) and Turkey (1); these represent the papers that met the inclusion criteria, fulfilling the function of data for the analysis.

The total population of the study is 2455 graduates and professionals of the dentistry/dentistry career, being the sex of the population indistinct, however, the age range is between 24 years and 50 years.

The results of the articles, as shown in Table I, were divided into knowledge and attitudes of professional staff regarding the treatment and care of patients with HIV, which will be used to divide the information in the study.

Knowledge of HIV care: The results of knowledge assessments have been mixed, however, with medium [30,37] and high [32,35] trends, with gaps in knowledge in specific areas associated with modes of transmission.[31,33,34,36]

Rekhi A, et al., [30] among the problems, identified that more than 75% of stomatologists were unaware that the probability of transmission through needle sticks and saliva is 50% to 75%, with 39.6% reporting that they did not know if there was differential treatment in HIV cases and 18.4% reporting that they were unaware of the antimalarial treatment of HIV. In contrast to Garbin AJI, et al., [31] Sufiawati I, et al., [32] and Garbin CAS, et al., [34] who reported that their samples had received counselling and had adequate levels of knowledge, but this was not reflected in the behaviours they exhibited in these cases.

Golkari A, et al., [33] delves deeper into the types of knowledge, obtaining that 31.3% of professionals do not know the means of transmission and 63.8% have difficulties in recognising stomatological conditions associated with HIV infections, and Saliba Garbín, et al.,[34] reports that 41.1% had problems with mentioning the etiological agents.

Rostamzadeh M, et al., [35] and Koseoglu Ornek O, et al., [37] observed that the common factor associated with fear is to consider that the percentage of infection through saliva is high, finding in turn that 96% believe that one of the main sources of transmission is saliva; finding that 20% do not know that there is a vaccine against HIV to halt its progression to AIDS. The report also found that 88% had deficient levels of knowledge regarding antiretroviral therapy as an early detection intervention.

Attitudes towards HIV patients: Acts of discrimination have been present in more than 90% of professionals,[31,34,36,38] with active and passive behaviours, which, despite the degree of knowledge, have shown how rigid beliefs about the disease provoke high levels of fear of contagion. For which, in the analysis of these tendencies, passive behaviours are those that do not directly alter the environment, although they guide beliefs and ways of interacting with the environment, and active behaviours are all activities that, through the manipulation of the elements, the individual takes a central role in the development of events.

Passive behaviour: The idea that the code of ethics empowers the stomatologist to refuse care to patients with HIV, constructs beliefs associated with the exclusion and distancing of any patient seeking professional service among 34.4% to 44% of the population depending on the study region,[30,32] which can be fed by the fear produced by exposure during care in 36% to 40% and the perception of not having the necessary biosafety materials in 45.6% of the total of those evaluated.[30,35]

These data are supported by the study by Garbin AJI, et al.,[31] which identifies that 91.3% of the professionals fear contagion when caring for positive patients, together with the high perception of risk, ranging from 79.6% to 87.2%,[33,31] which they consider to be encountered in clinical practice. There is constant discomfort (30.6%) when a new case arrives for consultation, with 85.2% of those interviewed preferring to see regular patients.[32]

This situation leads to consider that, at the level of probability, the perception of contagion during care is high (between 62.1% and 81%) and concern about occupational exposure (80.6%), leading to attitudes of suspicion,[33,37] which leads to the development of anxiety (60%) and ideas associated with the spread of the patient-dentist virus among 45% to 72.4% of the participants, regardless of the level of knowledge.[36,37]

Active behaviours: The reluctance to care for patients with HIV is evident when asked if dental professionals are willing to treat them. Studies show that between 47.2% and 70% of professionals do not exhibit an open attitude toward caring for these patients [30, 33], suggesting that this response may indicate stigmatizing behavior. Additionally, discomfort is often linked to concerns about colleagues' fears, with 72% expressing such sentiments. Research by Sufiawati I, et al.,[32] Koseoglu Ornek O, et al.,37 and Rostamzadeh M, et al.,[35] further reveals that between 24.8% and 33.3% of dental professionals have outright refused to treat HIV-positive patients, instead preferring to refer them to others (between 55% and 87.7%).

However, referrals [32,38] that may occur between colleagues or specialists due to insecurity are not the only ways that marginalisation has occurred, delaying the number of patient care to the end of the working day by direct request in 98.1% of cases in Alshouibi and AlAlyani's study,[38] attributed to lack of confidence to perform surgical and non-surgical interventions (69% - 51.2%) during the session.

Self-care conditioned distancing behaviours have been reported in

84.4% of care,[34] with critical cases of avoidance of handshake contact induced by stereotypical thoughts and inappropriate comments[38] that may cause displeasure and discomfort to patients.

However, acts of discrimination are not limited to direct care, as respondents say they would not be seen by any HIV-positive dental professional (68%) and, to the same extent, would refuse to hire assistants who reported being HIV-positive (79.9%) in their workplace.[31,34] This shows how entrenched attitudes of discrimination are, even though there is evidence that through biosafety protocols, contamination of staff-patients is complicated, adding that the likelihood of infection through needle sticks and saliva is very low.[31,34]

DISCUSSION

The evidence shows that, despite the mixed results in international knowledge assessments, there are difficulties in which stomatology personnel agree, starting with the aetiological agents of HIV [34] and the means of transmission,[33] which, when detected as deficient knowledge, produce a false perception of risk. This is replicated in other specialties such as nursing, with Boakye and Mavhandu-Mudzusi [17] determining that the fear of becoming infected is related to beliefs and competencies to identify mechanisms of contagion, and Koseoglu Ornek O, et al.,[19] showing that the stigmatising behaviours of health personnel occur to a greater extent in professionals with less training.

Knowledge about the risk of contagion through needle handling [30,35,36] and saliva [35-37] are the most frequent problems in clinical care, followed by those stomatologists who report not having the ability to detect oral manifestations of HIV in care [33] and the use of antiretrovirals [35,36] as early treatment to stop its progression to AIDS.

The attitudes towards patients that have been implicitly and explicitly recorded in the analysis range from refusing to see a patient because of their condition,[32,35,37] moving appointments to give the last number of care,[38] to referring them to other professionals,[32,38] due to discomfort or lack of knowledge regarding the type of care, without explaining the cause to the patient.

Considering the complex situation to which HIV-positive patients are exposed, situations such as being refused a handshake, [38] or seeing the distance adopted by the stomatologist,[34] when they come for help, are not isolated situations; Lee H, et al., [18] reports that the prejudices and beliefs of doctors regarding HIV-positive patients produce mistrust and suspicion, and Fauk N, et al.,[16] expresses a serious situation, which is the abuse of health personnel towards patients, asking derogatory questions, showing disinterest and indifference and using negative labels.

Vila-Sierra and Hernandez-Fuentes [25] and Muniz B, et al., [26] confirm the dissatisfaction and the feeling of poor care from professionals, which impacts on trust in institutions and adherence to treatment, which directly harms this vulnerable population.

CONCLUSION

This review concludes that while dental professionals often demonstrate moderate knowledge about HIV/AIDS, negative attitudes and discriminatory practices toward patients remain widespread. These behaviors-ranging from treatment refusal and delayed appointments to avoidance of physical contact and stigmatizing comments-are frequently rooted in misinformation, fear of transmission, and inadequate training. Such attitudes compromise the ethical obligation to provide equitable, patient-centered care. Strengthening the clinical preparedness and knowledge of dental professionals, particularly regarding transmission routes, oral manifestations, and the role of antiretroviral therapy, is essential. Targeted educational interventions, professional sensitization, and robust policy enforcement are urgently needed to eliminate stigma and ensure ethical, non-discriminatory dental care for people living with HIV/AIDS. This review seeks to contribute to bridging existing knowledge gaps and promoting inclusive, high-quality oral healthcare.

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AUTHORS' CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under:

ERPP, EFAS, RESL & IRPF: Conception and study design, acquisition, analysis and interpretation of data, drafting the manuscript, critical review, approval of the final version to be published

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

CONFLICT OF INTEREST

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DATA SHARING STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request