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Service Category Definition - Ryan White Part B

Local Service Category:	Oral Health Care
Amount Available:	To be determined
Unit Cost:	
Budget Requirements or Restrictions (TRG Only):	Maximum of 10% of budget for Administrative Costs
Local Service Category Definition:	<p>Restorative dental services, oral surgery, root canal therapy, fixed and removable prosthodontics; periodontal services includes subgingival scaling, gingival curettage, osseous surgery, gingivectomy, provisional splinting, laser procedures and maintenance. Oral medication (including pain control) for HIV patients 15 years old or older must be based on a comprehensive individual treatment plan. Prosthodontics services to people living with HIV including but not limited to examinations and diagnosis of need for dentures, crowns, bridgework and implants, diagnostic measurements, laboratory services, tooth extraction, relines and denture repairs.</p> <p>Emergency procedures will be treated on a walk-in basis as availability and funding allows. Funded Oral Health Care providers are permitted to provide necessary emergency care regardless of a client's annual benefit balance. If a provider cannot provide adequate services for emergency care, the patient should be referred to a hospital emergency room.</p>
Target Population (age, gender, geographic, race, ethnicity, etc.):	People living with HIV residing in the Houston HIV Service Delivery Area (HSDA).
Services to be Provided:	<p>Services must include, but are not limited to: individual comprehensive treatment plan; diagnosis and treatment of HIV-related oral pathology, including oral Kaposi's Sarcoma, CMV ulceration, hairy leukoplakia, xerostomia, lichen planus, aphthous ulcers and herpetic lesions; diffuse infiltrative lymphocytosis; standard preventive procedures, including oral hygiene instruction, diet counseling and home care program; oral prophylaxis; restorative care; oral surgery including dental implants; root canal therapy; fixed and removable prosthodontics including crowns and bridges; periodontal services, including subgingival scaling, gingival curettage, osseous surgery, gingivectomy, provisional splinting, laser procedures and maintenance. Proposer must have mechanism in place to provide oral pain medication as prescribed for clients by the dentist.</p> <p>Limitations:</p> <ul style="list-style-type: none"> • Cosmetic dentistry for cosmetic purposes only is prohibited. • Maximum amount that may be funded by Ryan White/State Services per patient is \$3,000/year. <ul style="list-style-type: none"> • In cases of emergency, the maximum amount may exceed the above cap • In cases where there is extensive care needed once the procedure has begun, the maximum amount may exceed the above cap. • Dental providers must document <i>via approved waiver</i> the reason for exceeding the yearly maximum amount.
Service Unit Definition(s) (TRG Only):	General Dentistry: A unit of service is defined as one (1) dental visit which includes restorative dental services, oral surgery, root canal therapy, fixed and removable prosthodontics; periodontal services includes subgingival scaling, gingival curettage, osseous surgery, gingivectomy, provisional splinting, laser procedures and maintenance. Oral medication (including pain control) for HIV patients 15 years old or older must be based on a comprehensive individual treatment plan.

	Prosthodontics: A unit of services is defined as one (1) Prosthodontics visit.
Financial Eligibility:	Income at or below 300% Federal Poverty Guidelines. Maximum amount that may be funded by Ryan White/State Services per patient is \$3,000/year.
Client Eligibility:	Person living with HIV; Adult resident of Houston HSDA
Agency Requirements (TRG Only):	<p>To ensure that Ryan White is payer of last resort, Agency and/or dental providers (clinicians) must be Medicaid certified and enrolled in all Dental Plans offered to Texas STAR+PLUS eligible clients in the Houston EMA/HSDA. Agency/providers must ensure Medicaid certification and billing capability for STAR+PLUS eligible patients remains current throughout the contract term.</p> <p>Agency must document that the primary patient care dentist has 2 years prior experience treating HIV disease and/or on-going HIV educational programs that are documented in personnel files and updated regularly. Dental facility and appropriate dental staff must maintain Texas licensure/certification and follow all applicable OSHA requirements for patient management and laboratory protocol.</p>
Staff Requirements:	State of Texas dental license; licensed dental hygienist and state radiology certification for dental assistants.
Special Requirements (TRG Only):	<p>Must comply with the Houston EMA/HSDA Standards of Care.</p> <p>The agency must comply with the DSHS Oral Health Care Standards of Care. The agency must have policies and procedures in place that comply with the standards <i>prior</i> to delivery of the service.</p>

FY 2020 RWPC “How to Best Meet the Need” Decision Process

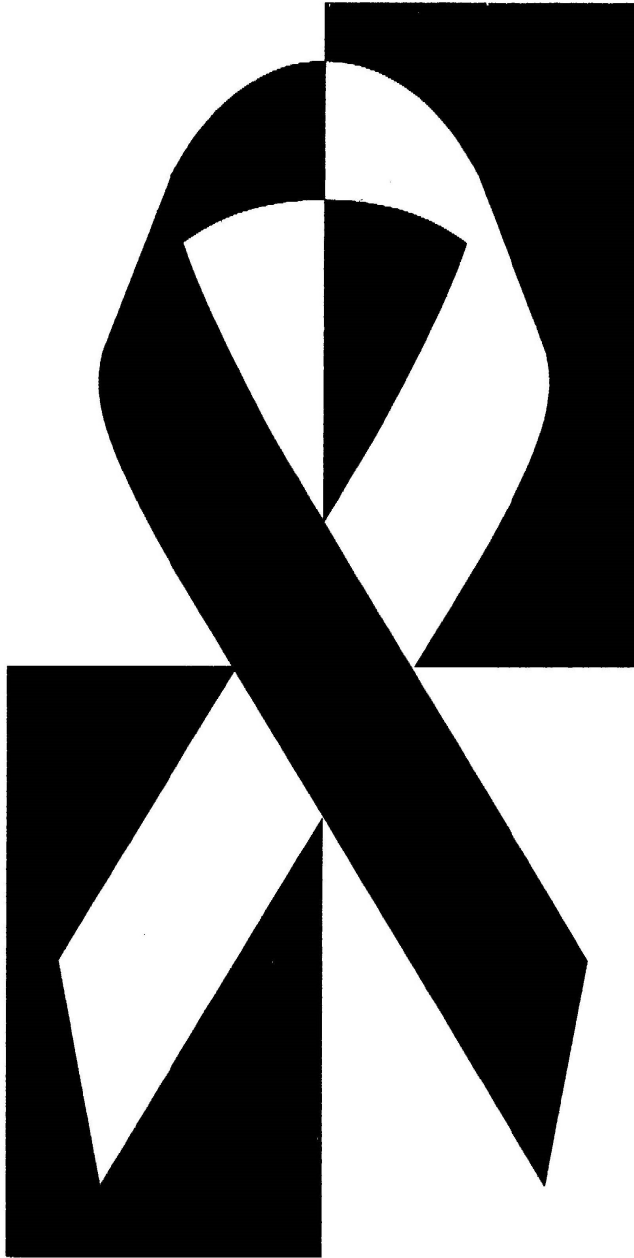
Step in Process: Council		Date: 06/13/19
Recommendations:	Approved: Y: _____ No: _____ Approved With Changes: _____	If approved with changes list changes below:
1.		
2.		
3.		
Step in Process: Steering Committee		Date: 06/06/19
Recommendations:	Approved: Y: _____ No: _____ Approved With Changes: _____	If approved with changes list changes below:
1.		
2.		
3.		
Step in Process: Quality Improvement Committee		Date: 05/14/19
Recommendations:	Approved: Y: _____ No: _____ Approved With Changes: _____	If approved with changes list changes below:
1.		
2.		
3.		
Step in Process: HTBMN Workgroup #2		Date: 04/23/19
Recommendations:	Financial Eligibility: 300%	
1.		
2.		
3.		

Houston EMA/HSDA Ryan White Part A/MAI Service Definition Oral Health/Rural (Last Review/Approval Date: 6/3/16)	
HRSA Service Category Title: RWGA Only	Oral Health
Local Service Category Title:	Oral Health – <u>Rural (North)</u>
Budget Type: RWGA Only	Unit Cost
Budget Requirements or Restrictions: RWGA Only	Not Applicable
HRSA Service Category Definition: RWGA Only	Oral health care includes diagnostic, preventive, and therapeutic services provided by general dental practitioners, dental specialists, dental hygienists and auxiliaries, and other trained primary care providers.
Local Service Category Definition:	Restorative dental services, oral surgery, root canal therapy, fixed and removable prosthodontics; periodontal services includes subgingival scaling, gingival curettage, osseous surgery, gingivectomy, provisional splinting, laser procedures and maintenance. Oral medication (including pain control) for HIV patients 15 years old or older must be based on a comprehensive individual treatment plan. Prosthodontics services to HIV-infected individuals including, but not limited to examinations and diagnosis of need for dentures, diagnostic measurements, laboratory services, tooth extractions, relines and denture repairs.
Target Population (age, gender, geographic, race, ethnicity, etc.):	HIV/AIDS infected individuals residing in Houston Eligible Metropolitan Area (EMA) or Health Service Delivery Area (HSDA) counties other than Harris County. Comprehensive Oral Health services targeted to individuals residing in the northern counties of the EMA/HSDA, including Waller, Walker, Montgomery, Austin, Chambers and Liberty Counties.
Services to be Provided:	Services must include, but are not limited to: individual comprehensive treatment plan; diagnosis and treatment of HIV-related oral pathology, including oral Kaposi's Sarcoma, CMV ulceration, hairy leukoplakia, xerostomia, lichen planus, aphthous ulcers and herpetic lesions; diffuse infiltrative lymphocytosis; standard preventive procedures, including oral hygiene instruction, diet counseling and home care program; oral prophylaxis; restorative care; oral surgery including dental implants; root canal therapy; fixed and removable prosthodontics including crowns, bridges and implants; periodontal services, including subgingival scaling, gingival curettage, osseous surgery, gingivectomy, provisional splinting, laser procedures and maintenance. Proposer must have mechanism in place to provide oral pain medication as prescribed for clients by the dentist.
Service Unit Definition(s): RWGA Only	General Dentistry: A unit of service is defined as one (1) dental visit which includes restorative dental services, oral surgery, root

	<p>canal therapy, fixed and removable prosthodontics; periodontal services includes subgingival scaling, gingival curettage, osseous surgery, gingivectomy, provisional splinting, laser procedures and maintenance. Oral medication (including pain control) for HIV patients 15 years old or older must be based on a comprehensive individual treatment plan.</p> <p>Prosthodontics: A unit of services is defined as one (1) Prosthodontics visit.</p>
Financial Eligibility:	Refer to the RWPC's approved <i>Financial Eligibility for Houston EMA/HSDA Services</i> .
Client Eligibility:	HIV-infected adults residing in the rural area of Houston EMA/HSDA meeting financial eligibility criteria.
Agency Requirements:	<p>Agency must document that the primary patient care dentist has 2 years prior experience treating HIV disease and/or on-going HIV educational programs that are documented in personnel files and updated regularly.</p> <p>Service delivery site must be located in one of the northern counties of the EMA/HSDA area: Waller, Walker, Montgomery, Austin, Chambers or Liberty Counties</p>
Staff Requirements:	State of Texas dental license; licensed dental hygienist and state radiology certification for dental assistants.
Special Requirements: RWGA Only	<p>Agency and/or dental providers (clinicians) must be Medicaid certified and enrolled in all Dental Plans offered to Texas STAR+PLUS eligible clients in the Houston EMA/HSDA. Agency/providers must ensure Medicaid certification and billing capability for STAR+PLUS eligible patients remains current throughout the contract term.</p> <p>Must comply with the joint Part A/B standards of care where applicable.</p>

FY 2020 RWPC “How to Best Meet the Need” Decision Process

Step in Process: Council		Date: 06/13/19
Recommendations:	Approved: Y: _____ No: _____ Approved With Changes: _____	If approved with changes list changes below:
1.		
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Step in Process: Steering Committee		Date: 06/06/19
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1.		
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3.		
Step in Process: HTBMN Workgroup #2		Date: 04/23/19
Recommendations:	Financial Eligibility: 300%	
1.		
2.		
3.		



ORAL HEALTH CARE SERVICES
2018 CHART REVIEW

PREFACE

DSHS Monitoring Requirements

The Texas Department of State Health Services (DSHS) contracts with The Houston Regional HIV/AIDS Resource Group, Inc. (TRG) to ensure that Ryan White Part B and State of Texas HIV Services funding is utilized to provide in accordance to negotiated Priorities and Allocations for the designated Health Service Delivery Area (HSDA). In Houston, the HSDA is a ten-county area including the following counties: Austin, Chambers, Colorado, Fort Bend, Harris, Liberty, Montgomery, Walker, Waller, and Wharton. As part of its General Provisions for Grant Agreements, DSHS also requires that TRG ensures that all Subgrantee's comply with statutes and rules, perform client financial assessments, and delivery service in a manner consistent with established protocols and standards.

As part of those requirements, TRG is required to perform annual quality compliance reviews on all Subgrantee's. Quality Compliance Reviews focus on issues of administrative, clinical, consumer involvement, data management, fiscal, programmatic and quality management nature. Administrative review examines Subgrantee operating systems including, but not limited to, non-discrimination, personnel management and Board of Directors. Clinical review includes review of clinical service provision in the framework of established protocols, procedures, standards and guidelines. Consumer involvement review examines the Subgrantee's frame work for gather client feedback and resolving client problems. Data management review examines the Subgrantee's collection of required data elements, service encounter data, and supporting documentation. Fiscal review examines the documentation to support billed units as well as the Subgrantee's fiscal management and control systems. Programmatic review examines non-clinical service provision in the framework of established protocols, procedures, standards and guidelines. Quality management review ensures that each Subgrantee has systems in place to address the mandate for a continuous quality management program.

QM Component of Monitoring

As a result of quality compliance reviews, the Subgrantee receives a list of findings that must be address. The Subgrantee is required to submit an improvement plan to bring the area of the finding into compliance. This plan is monitored as part of the Subgrantee's overall quality management monitoring. Additional follow-up reviews may occur (depending on the nature of the finding) to ensure that the improvement plan is being effectively implemented.

Scope of Funding

TRG contracts with two Subgrantees to provide oral health care services in the Houston HSDA.

INTRODUCTION

Description of Service

Restorative dental services, oral surgery, root canal therapy, fixed and removable prosthodontics; periodontal services includes subgingival scaling, gingival curettage, osseous surgery, gingivectomy, provisional splinting, laser procedures and maintenance. Oral medication (including pain control) for HIV patients 15 years old or older must be based on a comprehensive individual treatment plan. Prosthodontics services to individuals living with HIV including but not limited to examinations and diagnosis of need for dentures, crowns, bridgework and implants, diagnostic measurements, laboratory services, tooth extraction, relines and denture repairs.

Emergency procedures will be treated on a walk-in basis as availability and funding allows. Funded Oral Health Care providers are permitted to provide necessary emergency care regardless of a client's annual benefit balance. If a provider cannot provide adequate services for emergency care, the patient should be referred to a hospital emergency room.

Tool Development

The TRG Oral Healthcare Review tool is based upon the established local and DSHS standards of care.

Chart Review Process

All charts were reviewed by Bachelors-degree registered nurse experienced in treatment, management, and clinical operations in HIV care. The collected data for each site was recorded directly into a preformatted computerized database. The data collected during this process is to be used for service improvement.

File Sample Selection Process

File sample was selected from a provider population of 3,416 clients who accessed oral healthcare services in the measurement year. The records of 123 clients were reviewed, representing 3.6% of the unduplicated population. The demographic makeup of the provider was used as a key to file sample pull.

NOTE: DSHS has changed the file sample percentage which will result in a lower number of files being reviewed in 2018.

Demographics- Oral Healthcare Services

2017 Annual

Total UDC: 2918 Total New: 783

Age	Number of Clients	% of Total
Client's age as of the end of the reporting period		
Less than 2 years	0	0.00%
02 - 12 years	0	0.00%
13 - 24 years	66	2.26%
25 - 44 years	1091	37.40%
45 - 64 years	1565	53.62%
65 years or older	196	6.72%
Unknown	0	0.00%
	2918	100%
Gender	Number of Clients	% of Total
"Other" and "Refused" are counted as "Unknown"		
Female	759	26.01%
Male	2132	73.06%
Transgender FTM	1	0.04%
Transgender MTF	26	0.89%
Unknown	0	0.00%
	2918	100%
Race/Ethnicity	Number of Clients	% of Total
Includes Multi-Racial Clients		
White	473	16.21%
Black	1478	50.65%
Hispanic	917	31.43%
Asian	43	1.47%
Hawaiian/Pacific Islander	1	0.04%
Indian/Alaskan Native	6	0.20%
Unknown	0	0%
	2918	100%

From 01/01/17 - 12/31/17

2018 Annual

Total UDC: 3416 Total New: unk

Age	Number of Clients	% of Total
Client's age as of the end of the reporting period		
Less than 2 years	0	0.00%
02 - 12 years	0	0.00%
13 - 24 years	89	2.61%
25 - 44 years	1331	38.96%
45 - 64 years	1784	52.22%
65 years or older	212	6.21%
Unknown	0	0.00%
	3416	100%
Gender	Number of Clients	% of Total
"Other" and "Refused" are counted as "Unknown"		
Female	922	26.99%
Male	2494	73.00%
Transgender FTM	1*	0.02%
Transgender MTF	45*	1.31%
Unknown	0	0.00%
	3416	100%
Race/Ethnicity	Number of Clients	% of Total
Includes Multi-Racial Clients		
White	1493	43.70%
Black	1845	54.01%
Hispanic	1045*	30.59%
Asian	39	1.14%
Hawaiian/Pacific Islander	2	0.05%
Indian/Alaskan Native	14	0.41%
Multi/Unknown	23	0.67%
	3416	100%

From 01/01/18 - 12/31/18



RESULTS OF REVIEW

Client's HIV primary care provider contact information is documented in the client's oral health care record.

	Yes	No	N/A
Number of client records that showed evidence of the measure	99	24	-
Number of clients records that were reviewed.	123	123	-
Rate	80%	20%	-

An initial or updated dental and medical history within the last year is documented in the client's oral healthcare record (HRSA HAB Measure)

	Yes	No	N/A
Number of client records that showed evidence of the measure	120	2	1
Clients records that were reviewed.	122	122	123
Rate	98%	2%	0.8%

Periodontal Screening/Examination conducted within the last year is documented in the client's oral healthcare record (HRSA HAB Measure)

	Yes	No	N/A
Number of client records that showed evidence of the measure	59	60	4
Clients records that were reviewed.	119	119	123
Rate	50%	50%	3%

Dental provider obtained an initial baseline blood pressure/pulse reading during the initial limited physical examination and is documented in the client's oral healthcare record. If not obtained, dental provider documented reason.

	Yes	No	N/A
Number of client records that showed evidence of the measure	119	4	-
Clients records that were reviewed.	123	123	-
Rate	97%	3%	-

Oral examination conducted within the last year is documented in the client's oral healthcare record

	Yes	No	N/A
Number of client records that showed evidence of the measure	120	2	1
Clients records that were reviewed.	122	122	123
Rate	98%	2%	0.8%

Dental treatment plan to include specific diagnostic, preventive, and therapeutic was established or updated within the last year and signed by the oral healthcare professional providing the services (HRSA HAB Measure)

	Yes	No	N/A
Number of client records that showed evidence of the measure	114	7	2
Clients records that were reviewed.	121	121	123
Rate	93%	7%	2%

Phase 1 treatment plan to include prevention, maintenance and/or elimination of oral pathology resulting from dental caries or periodontal disease was established within one year of initial assessment and signed by the oral healthcare professional providing the services (HRSA HAB Measure)

	Yes	No	N/A
Number of client records that showed evidence of the measure	100	7	16
Clients records that were reviewed.	107	107	123
Rate	93%	7%	13%

Oral health education for oral hygiene instruction and smoking cessation if applicable conducted within the last year is documented in the patient's oral healthcare record (HRSA HAB Measure)

	Yes	No	N/A
Client records that showed evidence of an intraoral exam.	99	3	1
Clients in oral health services that were reviewed.	122	122	123
Rate	81%	19%	0.8%

CONCLUSIONS

The 2018 data shows a continuation of excellent overall oral healthcare services. All indicators reviewed were modified for the Germane Solutions review, which has a threshold of 50%. All but one indicator was well above the established threshold for DSHS. Phase 1 treatment plans and completed oral health examinations were well documented. Periodontal screening/examination did decrease from 88% to 50% this year. Oral instruction and smoking cessation were a new data element in 2017, it was assessed at a compliance rate of 24%. It was re-examined this year and improved to 81%, a 57% improvement.

Umair A. Shah, M.D., M.P.H.
 Executive Director
 2223 West Loop South
 Houston, Texas 77027
 Tel: (713) 439-6000
 Fax: (713) 439-6080



Brian C. Reed, M.D.
 Director,
 Disease Control & Clinical Prevention Division
 2223 West Loop South
 Houston, Texas 77027
 Tel: (713) 439-6000
 Fax: (713) 439-6199

**FY 2017 PERFORMANCE MEASURES
 RYAN WHITE GRANT ADMINISTRATION
 HARRIS COUNTY PUBLIC HEALTH (HCPH)**

**Oral Health Care
 All Providers**

HIV Performance Measures	FY 2017
75% of HIV-related and general oral pathologies will be resolved, improved or maintained at most recent follow-up	No data is available

Clinical Chart Review Measures*	FY 2015	FY 2016
75% of oral health clients will have a dental health history (initial or updated) at least once in the measurement year	93%	87%
75% of oral health clients will have a medical health history (initial or updated) at least once in the measurement year	83%	87%
90% of oral health clients will have a dental treatment plan developed and/or updated at least once in the measurement year	81%	94%
85% of oral health clients will receive oral health education at least once in the measurement year	80%	88%
90% of oral health clients will have a periodontal screen or examination at least once in the measurement year	92%	84%
60% oral health clients will have a Phase 1 treatment plan that is completed within 12 months	86%	71%

* To review the full FY 2016 chart review reports, please visit:
<http://publichealth.harriscountytexas.gov/Services-Programs/Programs/RyanWhite/Quality>

HCPH is the local public health agency for the Harris County, Texas jurisdiction. It provides a wide variety of public health activities and services aimed at improving the health and well-being of the Harris County community.

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Umair A. Shah, M.D., M.P.H.
Executive Director



Harris County
Public Health
Building a Healthy Community

2223 West Loop South
Houston, Texas 77027
Tel: (713) 439-6000
Fax: (713) 439-6080

Oral Health Care-Rural Target Chart Review FY 2017

Ryan White Part A Quality Management Program–Houston EMA

October 2018

CONTACT:

Heather Keizman
Project Coordinator–Clinical Quality Improvement
Harris County Public Health & Environmental Services
Ryan White Grant Administration
2223 West Loop South, RM 431
Houston, TX 77027
713-439-6037
hkeizman@hcphes.org

HCPH is the local public health agency for the Harris County, Texas jurisdiction. It provides a wide variety of public health activities and services aimed at improving the health and well-being of the Harris County community.

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Introduction

Part A funds of the Ryan White Care Act are administered in the Houston Eligible Metropolitan Area (EMA) by the Ryan White Grant Administration Section of Harris County Public Health. During FY 17, a comprehensive review of client dental records was conducted for services provided between 3/1/17 to 2/28/18. This review included one provider of Adult Oral Health Care that received Part A funding for rural-targeted Oral Health Care in the Houston EMA.

The primary purpose of this annual review process is to assess Part A oral health care provided to people living with HIV in the Houston EMA. Unlike primary care, there are no federal guidelines published by the U.S Health and Human Services Department for oral health care targeting people living with HIV. Therefore, Ryan White Grant Administration has adopted general guidelines from peer-reviewed literature that address oral health care for people living with HIV, as well as literature published by national dental organizations such as the American Dental Association and the Academy of General Dentistry, to measure the quality of Part A funded oral health care. The Ryan White Grant Administration Project Coordinator for Clinical Quality Improvement (PC/CQI) performed the chart review.

Scope of This Report

This report provides background on the project, supplemental information on the design of the data collection tool, and presents the pertinent findings of the FY 17 oral health care chart review. Any additional data analysis of items or information not included in this report can likely be provided after a request is submitted to Ryan White Grant Administration.

The Data Collection Tool

The data collection tool employed in the review was developed through a period of in-depth research and a series of working meetings between Ryan White Grant Administration. By studying the processes of previous dental record reviews and researching the most recent HIV-related and general oral health practice guidelines, a listing of potential data collection items was developed. Further research provided for the editing of this list to yield what is believed to represent the most pertinent data elements for oral health care in the Houston EMA. Topics covered by the data collection tool include, but are not limited to the following: basic client information, completeness of the health history, hard & soft tissue examinations, disease prevention, and periodontal examinations.

The Chart Review Process

All charts were reviewed by the PC/CQI, a Master's-level registered nurse experienced in identifying documentation issues and assessing adherence to published guidelines. The collected data for each site was recorded directly into a preformatted database. Once all data collection was completed, the database was queried for analysis. The data collected during this process is intended to be used for the purpose of service improvement.

The specific parameters established for the data collection process were developed from HIV-related and general oral health care guidelines available in peer-reviewed literature, and the professional experience of the reviewer on standard record documentation practices. Table 1 summarizes the various documentation criteria employed during the review.

Table 1. Data Collection Parameters

Review Area	Documentation Criteria
Health History	Completeness of Initial Health History: includes but not limited to past medical history, medications, allergies, substance use, HIV MD/primary care status, physician contact info, etc.; Completed updates to the initial health history
Hard/Soft Tissue Exam	Findings—abnormal or normal, diagnoses, treatment plan, treatment plan updates
Disease Prevention	Prophylaxis, oral hygiene instructions
Periodontal screening	Completeness

The Sample Selection Process

The sample population was selected from a pool of 322 unduplicated clients who accessed Part A oral health care between 3/1/17 and 2/28/18. The medical charts of 75 of these clients were used in the review, representing 23.3% of the pool of unduplicated clients.

In an effort to make the sample population as representative of the actual Part A oral health care population as possible, the EMA's Centralized Patient Care Data Management System (CPCDMS) was used to generate a list of client codes to be reviewed. The demographic make-up (race/ethnicity, gender, age) of clients accessing oral health services between 3/1/17 and 2/28/18 was determined by CPCDMS, which in turn allowed Ryan White Grant Administration to generate a sample of specified size that closely mirrors that same demographic make-up.

Characteristics of the Sample Population

The review sample population was generally comparable to the Part A population receiving rural-targeted oral health care in terms of race/ethnicity, gender, and age. It is important to note that the chart review findings in this report apply only to those who received rural-targeted oral health care from a Part A provider and cannot be generalized to all Ryan White clients or to the broader population of people living with HIV. Table 2 compares the review sample population with the Ryan White Part A rural-targeted oral health care population as a whole.

	Sample		Ryan White Part A EMA	
	Number	Percent	Number	Percent
Race/Ethnicity				
African American	28	37.3%	130	40.4%
White	46	61.3%	184	57.1%
Asian	1	1.3%	6	1.9%
Native Hawaiian/Pacific Islander	0	0%	0	0%
American Indian/Alaska Native	0	0%	2	.6%
Multi-Race	0	0%	0	0%
	75		322	
Hispanic Status				
Hispanic	21	22.7%	82	25.5%
Non-Hispanic	54	77.3%	240	74.5%
	75		322	
Gender				
Male	51	62.7%	213	66.1%
Female	24	34.7%	108	33.5%
Transgender	0	2.7%	1	.3%
	75		322	
Age				
<=24	2	5.3%	16	5%
25 – 34	17	20%	70	21.7%
35 – 44	22	28%	95	29.5%
45 – 49	9	26.7%	43	13.4%
50 – 64	19	14.7%	91	28.3%
65+	2	4%	7	2.2%
	75		322	

Findings

Clinic Visits

Information gathered during the 2017 chart review included the number of visits during the study period. The average number of oral health visits per patient in the sample population was seven.

Health History

A complete and thorough assessment of a client's medical history is essential. Such information, such as current medications or any history of alcoholism for example, offers oral health care providers key information that may determine the appropriateness of prescriptions, oral health treatments and procedures.

Assessment of Medical History

	2015	2016	2017
Primary Care Provider	88%	93%	100%
Medical/Dental Health History*	93%	87%	95%
Medical History 6 month Update	94%	100%	100%

*HIV/AIDS Bureau (HAB) Performance Measures

Health Assessments

	2015	2016	2017
Vital Signs	99%	95%	99%
CBC documented	63%	78%	97%
Screening for Antibiotic Prophylaxis	91%	52%	95%

Prevention and Detection of Oral Disease

Maintaining good oral health is vital to the overall quality of life for people living with HIV because the condition of one's oral health often plays a major role in how well patients are able to manage their HIV disease. Poor oral health due to a lack of dental care may lead to the onset and progression of oral manifestations of HIV disease, which makes maintaining proper diet and nutrition or adherence to antiretroviral therapy very difficult to achieve. Furthermore, poor oral health places additional burden on an already compromised immune system.

	2015	2016	2017
Oral Health Education*	80%	88%	99%
Intraoral Exam	88%	88%	88%
Extraoral Exam	88%	86%	88%
Periodontal screening*	92%	84%	81%
X-rays present	92%	91%	92%
Treatment plan*	81%	94%	99%

*HIV/AIDS Bureau (HAB) Performance Measures

Treatment Plan Status

	2017
Treatment plan complete	27%
Dental procedures done, additional procedures needed	60%
No dental procedures needed	11%
No dental procedures done	3%

Conclusions

Overall, oral health care services continues its trend of high quality care. The Houston EMA oral health care program has established a strong foundation for preventative care and we expect continued high levels of care for Houston EMA clients in future.

Appendix A – Resources

Dental Alliance for AIDS/HIV Care. (2000). *Principles of Oral Health Management for the HIV/AIDS Patient*. Retrieved from:

http://aidsetc.org/sites/default/files/resources_files/Princ_Oral_Health_HIV.pdf.

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RESEARCH ARTICLE

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Oral health and health-related quality of life in HIV patients

Vinicius da Costa Vieira¹, Liliane Lins^{1*} , Viviane Almeida Sarmiento², Eduardo Martins Netto³ and Carlos Brites³

Abstract

Background: Oral health care may improve the health-related quality of life (HRQoL) of HIV/AIDS patients. We aimed to evaluate oral health and HRQoL of HIV/AIDS patients using antiretroviral therapy.

Methods: A cross-sectional study included 120 HIV-infected patients, aged ≥ 18 years, from February, 2016 to September, 2017. The 36-Item Short Form Health Survey (SF-36) was used to evaluate the HRQoL. We assessed dental caries status using the Decayed, Missing and Filled Teeth (DMFT) index. Information about demographic, socioeconomic status, depression, and other comorbidities were collected. All patients with depression had a medical diagnosis. Comorbidities were defined as medical diagnoses of arterial hypertension, type-2 diabetes, tuberculosis, syphilis, cardiopathy, chronic renal failure, lymphoma, HCV infection, HBV infection and fatty liver disease. Independent t-tests were used to compare differences between mean levels of HRQoL, age, and DMFT and its components according to groups of sex, comorbidities and depression. Simple linear regression was used to analyze the relationship between the Mental Component Summary (MCS) and DMFT, and a multiple regression equation investigated depression, age, MCS, and comorbidities as predictors of DMFT.

Results: The mean DMFT index was 12.4 ± 8.2 . A linear regression equation estimated a significant ($p = 0.022$) decrease of 0.25 unit (%) in MCS for each unit increase in DMFT. Among depressed patients, a significant ($p = 0.008$) decrease of 0.67% in MCS for each unit increase in DMFT was estimated. Depressed patients showed worse oral health indicators (DMFT index; $p \leq 0.001$; and mean Missing Teeth; $p \leq 0.052$) and lower HRQoL domains than non-depressed patients. DMFT remained associated with depression ($P < 0.005$) after controlling for age, MCS, and comorbidities.

Conclusions: We found association between poorer oral health (higher DMFT index) and lower Mental Health Component Summary in HIV-infected patients with depression. Patients with depression deserve especial attention to their HRQoL and oral care.

Keywords: Health-related quality of life, Oral health, Depression, HIV

Background

The proper use of antiretroviral therapy (ART) has extended the life expectancy of people living with HIV/AIDS [1]. In consequence, several health-related outcomes have been observed, that contributed to a higher frequency of chronic comorbidities [2–4], depression and depressive symptoms [5, 6] that lead to a poorer health-related quality of life (HRQoL) [3, 6–8] and increases the risk of low adherence to ART [9]. Assessing depression symptoms before initiating ART may be effective to

improve adherence and characterize the health-related quality of life of these patients [10]. The assessment of the health-related quality of life became an integral part of HIV/AIDS patients' follow-up [4].

In the past, detection of oral health lesions were often useful in the clinical diagnosis of HIV/AIDS infection, particularly among immunosuppressed patients [11]. There is no consensus about the association of poor oral health, particularly measured by DMFT index, with HIV infection. Some reports have shown greater risk for development of dental caries in HIV patients during antiretroviral drugs treatment [12, 13]. Another study reported a decrease in the incidence of dental caries following

* Correspondence: liliane.lins@ufba.br

¹School of Medicine, Federal University of Bahia, Praça XV de Novembro, Largo do Terreiro de Jesus s/n, Salvador, Bahia CEP 400260-10, Brazil
Full list of author information is available at the end of the article



antiretroviral therapy [14]. A study among HIV-positive patients reported higher levels of immune activation markers HLA-DR and CD38 expressions in the peripheral blood when oral lesions were present [15], suggesting that oral health may significantly impact the immune response of HIV patients, including those under suppressive ART. However, HLA-DR and CD38 levels did not vary substantially according to the DMFT index.

Oral health care may improve the HRQoL of HIV/AIDS patients. A study in HIV patients has reported higher DMFT index associated with poorer Oral Health-Related Quality of Life [16]. However, this study did not investigate the association between DMFT index and the SF-36 domain scores. The SF-36 questionnaire is a widely used instrument to evaluate HRQoL, based on two different constructs, the Physical Component and the Mental Component [17]. This study aimed to evaluate the oral health and HRQoL of HIV/AIDS patients in use of ART.

Methods

Study design and participants

This is a cross-sectional study of HIV-infected patients, aged 18 years or more, consecutively recruited at the HIV Clinic of the University Hospital Professor Edgard Santos, Federal University of Bahia, Salvador, Bahia, Brazil, between February 2016 and September 2017. We excluded from the study patients unable to communicate or who had difficulty to understand SF-36 questionnaire.

Assessment

Information about demographic, socioeconomic status, clinical history, HIV-1 RNA plasma viral load and CD4/CD8 cells count were collected from each patient during medical examination, using a structured questionnaire. The 36-Item Short Form Health Survey (SF-36) was used to evaluate the HRQoL¹⁷. We used the SF-36 as recommended by QualityMetric Incorporated [17] to generate eight domains - physical functioning (PF), role limitations due to physical problems (RP), bodily pain (BP), general health perceptions (GH), vitality (VT), social functioning (SF), role limitations due to emotional problems (RE) and mental health (MH). The raw score of these domains varies from 0 to 100, where 100 represents the best HRQoL. SF-36 scores were normalized, assuming a mean of 50 and a standard deviation of 10, taking the general population of the USA as standard. The normalized domains were aggregated into either Physical Component Summary (PCS) or Mental Component Summary (MCS) [17]. Our study was licensed by QualityMetric Health Outcomes™ under number QM025905.

We used the World Health Organization and the European Association of Dental Public Health criteria for oral health status evaluation [18, 19]. We measured clinical attachment loss, probing pocket depth and tooth

mobility to evaluate periodontal disease. The number of Decayed, Missing and Filled Teeth were determined. Cariogenic diet was accessed using open *questions in the structured questionnaire*. The same researcher has evaluated all patients. The *intrarater* reliability ($k = 0.67$) was substantially satisfactory, as measured by the Kappa statistics [20]. Stimulated salivary flow measured less than 1 mL/min was considered as reduced [21].

Statistical analysis

Health-related quality of life (HRQoL) [17] and the number of Decayed, Missing and Filled Teeth (DMFT index) [18] were considered as dependent variables. Independent t-tests were used to compare differences between mean levels of HRQoL, age, and DMFT and its components according to groups of sex, comorbidities and depression. Simple linear regression technique was used to analyze the relationship between MCS and DMFT, and a multiple regression equation investigated age, depression, MCS, and comorbidities as predictors of DMFT. All patients with depression had a medical diagnosis. Comorbidities were defined as medical diagnoses of arterial hypertension, type-2 diabetes, tuberculosis, syphilis, cardiopathy, chronic renal failure, lymphoma, HCV infection, HBV infection and fatty liver disease. Data were analyzed by using the Statistical Package for the Social Sciences 18 (SPSS).

Ethical procedures

The study was approved by the Ethics Review Board of University Hospital Professor Edgard Santos, Federal University of Bahia under the Certificate of Presentation of Ethical Appreciation (CPEA 57172216.2.0000.0049) in accordance with the Declaration of Helsinki 2013 and the National Council Resolution 466/12 and. All participants were informed and signed a consent form approved by the Ethics Board.

Results

The study enrolled 120 patients (64 males; 56 females). Age ranged from 20 to 72 years, and the mean (\pm SD) was 44.9 ± 11.7 years. Most were Mulatto (57.5%) or Black (24.2%) and were not in a stable relationship (73.3%). Thirty-six (30.0%) of the patients had elementary schooling level (four or less years); 70.8% were non-smokers; 65.0% consumed alcohol, and 28 (23.3%) had diagnosis of depression.

Arterial hypertension was present in 22 (18.3%) patients, type-2 diabetes in seven (5.8%), tuberculosis in eight (6.7%), syphilis in six (5.0%), cardiopathy in four (3.3%), chronic renal failure in two (3.5%) and lymphoma in one (0.8%). Of the patients with hepatic comorbidities, five (4.2%) had HCV, three (2.5%) HBV and three (2.5%) had fatty liver disease. Periodontitis and gingivitis

Table 1 Demographic and clinical characteristics of 120 HIV-infected patients, Salvador, Bahia, 2017

Demographic and clinical characteristic	
Age, mean SD	44.9 ± 11.7
Sex N (%)	
Male	64 (53.3)
Female	56 (46.7)
Marital status N (%)	
Single	88 (73.3)
Married/stable relationship	32 (26.7)
Ethnicity N (%)	
Caucasian	22 (18.3)
Mulatto	69 (57.5)
Black	29 (24.2)
Educational status N (%)	
Elementary	36 (30.0)
High School	66 (55.0)
College	18 (15.0)
Alcohol consumption N (%)	
Yes	78 (65.0)
No	42 (35.0)
Smoking status N (%)	
Non Smoker	85 (70.8)
Smoker	35 (29.2)
Comorbidities N (%)	
Yes	62 (51.7)
No	58 (48.3)
Depression N (%)	
Yes	28 (23.3)
No	92 (76.7)
Daily dental brushing N (%)	
≥ 3 times	58 (48.3)
< 3 times	62 (51.7)
Dental floss use N (%)	
Yes	51 (42.5)
No	69 (67.5)
Cariogenic diet N (%)	
Yes	65 (54.2)
No	55 (45.8)
Edentulism N (%)	
Dentate	112 (93.3)
Edentulous	8 (6.7)
Periodontal disease	
Periodontitis	52 (46.4)
Gingivitis	47 (42.0)
No periodontal disease	13 (11.6)

Table 1 Demographic and clinical characteristics of 120 HIV-infected patients, Salvador, Bahia, 2017 (Continued)

Demographic and clinical characteristic	
DMFT, mean SD	12.4 ± 8.2
Decayed, mean SD	1.1 ± 1.9
Missing, mean SD	7.9 ± 8.7
Filled, mean SD	3.4 ± 4.0
CD4 cells/mm ³ , mean SD	656 ± 363
CD8 cells/mm ³ , mean SD	1008 ± 486
CD4/CD8 ratio	0.75 ± 0.44
Viral Load, mean SD ^a	35,245 ± 135,993
Viral Load, geometric mean SD ^a	309.3 */÷ 17.1

^aOnly patients with viral loads > zero

were found in 52 (46.4%) and 47 (42.0%) of dentate patients, respectively. Twenty-four patients (20.0%) had reduced salivary flow; and the mean DMFT index was 12.4 ± 8.2 (1.1 ± 1.9 decayed teeth; 7.9 ± 8.7 missing teeth and 3.4 ± 4.0 filled teeth). Eighty patients (66.7%) had CD4 counts equal or greater than 500 cells/mm³ and 75 (62.5%) had undetectable viral load (Table 1).

Patients with comorbidities were older (47.2 ± 11.0 vs. 42.4 ± 11.9 ; $P = 0.026$), and presented higher mean DMFT (14.0 ± 7.9 vs. 10.7 ± 8.2 ; $P = 0.026$). All SF-36 normalized mean scores were systematically lower in patients with comorbidities. Among patients with comorbidities, means of all SF-36 domains were significantly lower ($P < 0.05$), except for MH (Table 2). Women showed SF-36 scores systematically lower than men in all domains, and means of RP (0.006), BP (0.016), VT (0.044), MH (0.001) and MCS (0.013) were significantly lower. Compared to males, females presented higher mean DMFT ($P < 0.001$) and mean Missing Teeth indexes ($P < 0.033$) (Table 3).

A linear regression equation estimated a significant ($p = 0.022$) decrease of 0.25 unit (%) in MCS for each unit increase in DMFT. Among depressed patients, a significant ($p = 0.008$) decrease of 0.67% in MCS for each unit increase in DMFT was estimated. (Fig. 1 and Table 4). Depressed patients showed worse oral health indicators (DMFT index; $p \leq 0.001$ and mean Missing Teeth; $p \leq 0.052$) and lower HRQoL domains than those without depressive symptoms. DMFT remained associated with depression ($P < 0.005$) after controlling for age, MCS, and comorbidities.

Discussion

Depression is the most common prevalent neuropsychiatric symptom in HIV-1 patients [5]. According to our results, patients with depression had higher mean of missing teeth than patients without depression ($P \leq 0.052$). A linear regression equation predicted a significant ($P < 0.008$) decrease of 0.67 unit (%) in MCS for each unit of DMFT

Table 2 Mean and Standard Deviations of characteristics (Age, Oral Health Profile, and Health-related Quality of Life) of 120 patients according to comorbidities, Salvador, Bahia, Brazil, 2017

Characteristics	With Comorbidity (N = 62)	Without Comorbidity (N = 58)	Mean Difference	P≤*
Age	47.2 ± 11.0	42.4 ± 11.9	4.8	0.026
DMFT Index	14.0 ± 7.9	10.7 ± 8.2	3.3	0.026
Decayed	1.2 ± 1.6	1.2 ± 2.2	0.0	0.652
Missing	9.2 ± 8.5	6.4 ± 8.7	2.8	0.072
Filled	3.7 ± 4.4	3.1 ± 3.4	0.6	0.377
Physical Functioning (PF)	48.9 ± 9.8	54.8 ± 4.9	-5.9	0.001
Role Physical (RP)	40.6 ± 9.6	45.3 ± 8.7	-4.7	0.006
Bodily Pain (BP)	46.4 ± 11.8	52.5 ± 9.3	-6.1	0.002
General Health (GH)	48.5 ± 10.9	54.1 ± 9.9	-5.6	0.004
Vitality (VT)	52.1 ± 10.8	56.1 ± 8.9	-4.0	0.030
Social Functioning (SF)	47.5 ± 12.1	52.2 ± 8.1	-4.7	0.014
Role Emotional (RE)	35.4 ± 11.2	42.2 ± 9.0	-6.8	0.001
Mental Health (MH)	46.9 ± 12.8	50.3 ± 9.2	-3.4	0.099
Physical Component Summary (PCS)	48.3 ± 8.6	53.8 ± 6.9	-5.5	0.001
Mental Component Summary (MCS)	43.8 ± 10.8	48.0 ± 8.2	-5.2	0.019

*Independent Sample Student-t Test

among patients with depression. Depression can decrease the likelihood of using oral health services, and is associated with teeth loss [22].

In this study, patients with HIV had a mean DMFT of 12.4. DMFT mean in patients with HIV varies around the world, ranging from 8.7 in Australia [23], to 16.9 in Portugal [24]. In Brazil, DMFT means of 16.9, 17.64 and 18.8 have been reported [25–27]. These differences in DMFT means can be attributed to hygienic behavioral, access to dental services and socioeconomic status [28, 29].

A multivariate linear regression identified age ($P < 0.001$) and depression ($P < 0.004$) as good and independent predictors of DMFT, even after adjusting for mental health and comorbidities. Correlation between age and the mean DMFT index have also been reported not only in HIV/AIDS patients [28], but also in non-HIV/AIDS patients [30]. Older age is associated with greater frequency of dental extraction due to caries, periodontal disease, and presence of comorbidities such as diabetes, hypertension or hyperlipidemia [30].

Table 3 Mean and Standard Deviations of Oral Health Profile and Health-related Quality of Life indicators of 120 patients according to sex, Salvador, Bahia, Brazil, 2017

Indicator	Male (N = 64)	Female (N = 56)	Mean Difference	P≤*
DMFT Index- mean (SD)	10.1 ± 8.0	15.1 ± 7.8	-5.0	0.001
Decayed- mean (SD)	0.8 ± 1.4	1.5 ± 2.4	-0.7	0.065
Missing- mean (SD)	6.3 ± 7.8	9.7 ± 9.3	-3.4	0.033
Filled- mean (SD)	3.0 ± 3.5	3.9 ± 4.4	-0.9	0.229
Physical Functioning (PF)	53.0 ± 7.6	50.4 ± 9.0	2.6	0.089
Role Physical (RP)	45.1 ± 8.2	40.3 ± 10.2	4.8	0.006
Bodily Pain (BP)	51.6 ± 10.0	46.8 ± 11.7	4.8	0.016
General Health (GH)	52.3 ± 10.3	50.0 ± 11.3	2.3	0.236
Vitality (VT)	55.8 ± 10.2	52.1 ± 9.7	3.7	0.044
Social Functioning (SF)	50.9 ± 9.3	48.6 ± 11.9	2.3	0.236
Role Emotional (RE)	39.7 ± 10.7	37.5 ± 10.8	2.2	0.247
Mental Health (MH)	52.1 ± 8.6	44.6 ± 12.7	7.5	0.001
Physical Component Summary (PCS)	52.3 ± 7.2	49.4 ± 9.2	2.9	0.057
Mental Component Summary (MCS)	47.9 ± 8.6	43.4 ± 10.6	4.5	0.013

*Independent Sample Student-t Test

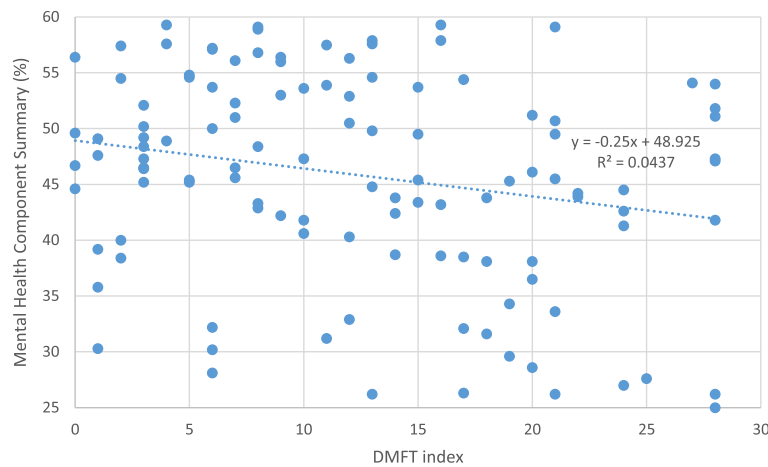


Fig. 1 Association between Mental Health Component Summary and DMFT index in 120-HIV-infected patients

In our study, women had systematically lower mean scores of SF-36 domains, lower MCS ($P < 0.013$) and PCS ($P < 0.057$). Our data are according to a previous study that reported females have significant lower MCS score, but not PCS [31]. Our male patients presented significantly lower mean of missing teeth than the females, differing of the results reported by in an Iranian study [28].

In a meta-analysis with 42,366 patients, from 111 studies, the prevalence of depressive symptoms ranged from 12.8 to 78.0% in HIV/AIDS patients using ART [9]. In our patients, the prevalence of depression was 23.3%, which is in accordance with the mentioned meta-analysis. The actual diagnosis of depression, as well as its previous history, have been associated with poorer HRQoL in HIV-infected

patients [32]. The group with confirmed diagnosis of depression exhibited significantly lower means in all SF-36 domains and in physical and mental summary components. As expected, depression was more associated with mental health domains. The presence of major depressive disorders along patient's life is correlated with both Physical and Mental summary scores of HRQoL [2]. Depression may also be associated with sleep disorders and appetite decrease [8].

HIV-infected patients aged 50 years or older may have multiple comorbidities and risk for cardiovascular and renal diseases [4]. In our study, at least one comorbidity was present in 51.7% of the IHV-patients. Patients without comorbidities presented lower mean DMFT. Patients with comorbidity were 4.8 years older than those without

Table 4 Mean and Standard Deviations characteristics (Oral Health Profile and Health-related Quality of Life) of 120 patients according to depression, Salvador, Bahia, Brazil, 2017

Characteristics	Depressed (N = 28)	Nondepressed (N = 92)	Mean Difference	P≤*
DMFT Index- mean (SD)	16.9 ± 6.5	11.1 ± 8.2	5.8	0.001
Decayed- mean (SD)	1.5 ± 2.0	1.0 ± 1.9	0.5	0.217
Missing- mean (SD)	10.6 ± 8.4	7.0 ± 8.6	3.6	0.052
Filled- mean (SD)	4.8 ± 4.8	3.0 ± 3.6	1.8	0.083
Physical Functioning (PF)	48.0 ± 9.3	52.9 ± 7.7	- 4.9	0.006
Role Physical (RP)	36.6 ± 10.9	44.8 ± 8.1	-8.2	0.001
Bodily Pain (BP)	43.3 ± 11.4	51.2 ± 10.4	-7.9	0.001
General Health (GH)	47.0 ± 13.2	52.5 ± 9.7	- 5.5	0.050
Vitality (VT)	49.2 ± 9.1	55.5 ± 10.0	- 6.3	0.003
Social Functioning (SF)	44.1 ± 13.0	51.6 ± 9.2	-7.5	0.008
Role Emotional (RE)	29.2 ± 10.8	41.6 ± 9.0	-12.4	0.001
Mental Health (MH)	39.9 ± 13.6	51.2 ± 9.1	- 11.3	0.001
Physical Component Summary (PCS)	47.8 ± 9.1	51.9 ± 7.8	-4.1	0.021
Mental Component Summary (MCS)	37.1 ± 8.8	48.5 ± 8.5	-11.4	0.001

*Independent Sample Student-t Test

comorbidities, what may partially explain the worse mean DMFT. The group with comorbidities also presented lower means of PCS and MCS scores. The negative effect of comorbidities, specifically on the physical domains of HRQoL, has been also reported [2]. On the other hand, our patients were in use of ART for at least one year, so we can assume that they had enough time to get benefits from this medical treatment, including in their HRQoL. Improvements in physical and mental aspects of HRQoL were reported in patients using ART for one year [31].

Our study has some limitations. First, we used a cross-sectional design that have inherent methodological limitations, like the difficulty to establish the correct temporal sequence of exposure and effect. Our patients were recruited from a single reference center for HIV-infected patients. We did not take the exposure duration to ART into consideration in our analysis. The results of some clinical data were obtained from medical records. We did not have an HIV-uninfected population to compare the frequency of comorbidities. However, this is a well characterized sample that was large enough to provide insights on significant associations between oral health and HRQoL, a field with scarce data, especially in less-developed settings.

Conclusions

In conclusion, this study found associations between poor oral health (high DMFT index) and Mental Health Component Summary in HIV-infected patients with depression. Lower health-related quality of life and poorer oral health were observed in patients with comorbidities. These findings reinforce that patients with depression should deserve especial attention to their HRQoL and oral care.

Availability of data and materials

The patients' data are not publically available in order to maintain them in strict confidence; however, it may be obtained from corresponding author on reasonable request.

Authors' contributions

We declare that all authors included in this paper fulfill authorship criteria. LL, VAS, EMN and CB have worked in the conception and design of the study; VCV and VAS have worked on data collection. LL, EMN and CB have performed statistical data analyses and interpretation. LL and VCV have written the article. All authors have critically reviewed the manuscript and approved its last version for publication.

Ethics approval and consent to participate

This study was approved by the Ethics Review Board of the University Hospital Professor Edgard Santos, Federal University of Bahia (protocol number 1740483), in accordance with Brazilian National Health Council Resolution 466/2012 and the Declaration of Helsinki. Prior to inclusion in the study, all volunteers signed an informed consent form.

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

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Author details

¹School of Medicine, Federal University of Bahia, Praça XV de Novembro, Largo do Terreiro de Jesus s/n, Salvador, Bahia CEP 400260-10, Brazil. ²School of Dentistry, Federal University of Bahia, Salvador, Bahia, Brazil. ³Research Laboratory of Infectious Diseases, Edgard Santos Federal University Hospital, Salvador, Bahia, Brazil.

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