

Oral Health and Views of Patients Receiving Integrated Oral Health in Rural Primary Care

Barbara Overman PhD¹, Christine Cogil DNP^{1*} and Anthony Cahill PhD²

¹Clinical Assistant Professor, University of New Mexico College of Nursing, Albuquerque, New Mexico.

²Center for Development and Disability, Department of Pediatrics, University of New Mexico School of Medicine, Albuquerque, New Mexico.

*Correspondence:

Christine Cogil, Clinical Assistant Professor, University of New Mexico College of Nursing, Albuquerque, New Mexico.

Received: 30 May 2019; Accepted: 26 June 2019

Citation: Barbara Overman, Christine Cogil, Anthony Cahill. Oral Health and Views of Patients Receiving Integrated Oral Health in Rural Primary Care. Oral Health Dental Sci. 2019; 3(2); 1-6.

ABSTRACT

Integrated oral health and primary care services holds substantial potential to reduce oral disease burden and improve overall health among a general population. This descriptive cross-sectional study describes the oral health and views of patients receiving integrated oral health in a general primary care setting serving a rural, underserved Hispanic majority. The purpose was to (1) describe the prevalence of oral disease and risk factors among patients who received integrated oral health in a rural, multicultural primary care clinic in New Mexico, and (2) describe patient views about receiving oral health screening and management in a primary care setting.

Health care providers' assessment revealed a high prevalence of oral disease, primarily dental caries, gingivitis and heavy plaque formation, as well as, use of appliances. In addition, factors resulting in interference with oral care were assessed such as: cognitive or physical disabilities, mental health challenges, tobacco or substance use. Patient self-reported views were very positive indicating that the vast majority of patients gained a greater appreciation for the importance of oral health to their overall health, were satisfied with services and would return to the same setting for care.

Key words

Oral health, Primary care integration, Patient perspectives.

Introduction

Oral disease is preventable, yet widespread in New Mexico, and access to dental care is limited. In the United States, New Mexico ranks 49th for the number of dentists per capita, with 50.8 per 100,000 population well below the U.S. average of 60.0 per 100,000 [1]. To begin addressing limited dental care access in the state, faculty from the University of New Mexico College of Nursing, Department of Dental Medicine, and Center for Development and Disability of the Department of Pediatrics partnered with a rural-serving primary care Federally Qualified Health Center (FQHC) Look-Alike.

The faculty, along with primary care providers, explored development of an integrated primary care oral health delivery model. An interprofessional process of translating and evaluating evidence and practice-based interventions from medicine, nursing, and dentistry was employed to address unmet oral health needs of

children and adults in the state.

The landmark report of the Surgeon General on Oral Health in America in 2000 awakened the nation to the inter-relationship between oral health and overall health in the United States [2]. The distinct separation between the delivery of dental and medical care and insurance coverage has galvanized the separation of oral health from overall health. The Surgeon General set forth a challenge to integrate the two. Such an endeavor requires changes in policy, public and health provider perceptions, and supportive innovation and systems change. Systems change begins with building a supportive public health infrastructure, reducing barriers to oral care, and developing evidence-based strategies that improve oral and overall health. Integrating oral health into established primary care services is one initiative launched by this call to action.

Integrating oral health into primary care services can be accomplished by having primary care medical providers perform oral health examinations or by adding dental health personnel to primary care clinics. Integration includes developing more

formalized and functional referral connections between primary care and dental services. There have been several notable efforts by leadership organizations to provide guidance, frameworks, and change initiative principles for integration of oral health into primary care. The Health Resources and Services Administration (HRSA) published guiding principles for this integration in 2014 [3]; Qualis Health promulgated a delivery framework that identified oral health as an essential component of primary care [4], and the American Academy of Pediatrics incorporated oral health education and assessment tools into standards of practice for well-child services [5]. Additionally, some states have begun initiatives to incorporate oral and medical care into primary care.

Oregon's Coordinated Care Organization stands out as an example of reform in health care delivery systems. Dental care is provided alongside medical and behavioral health in primary care settings. Among the pilot strategies under study in Oregon, a very rural state, is integrating dental hygienist services in primary care clinics and providing enhanced dental care standard for patients with diabetes. Oregon's models of oral health integration will provide potentially useful lessons, particularly for those seeking effective strategies in rural primary care settings.

Rural Oral Health

Historically, those with rural residence are found to have a lower likelihood of receiving dental health checkups than their urban counterparts [6-8]. Rural areas commonly have lower dentist-to-population ratios, making access to a dentist to receive dental care more remote or difficult. Older adults have been less likely to be insured for dental care and less likely to report dental visits within the previous year [8]. more recently, urban versus rural residence was not a primary determinant of receiving oral health services among children in the 2016 National Children's Health Survey or in a 2016 survey of older adults [9].

Delaying dental care and absence of preventive dental visits in rural communities has been found to be associated with social determinants of health, including low educational attainment, African American identity, and risk behaviors, such as smoking [10]. In contrast, having a usual source of medical care was found to increase the odds of having at least one dental check-up per year among rural dwellers [6].

When the oral health of individuals is examined, as defined by the presence of either oral disease or risk factors for oral disease, a high prevalence of chronic oral conditions continues to be present in rural populations. Findings from a rural frontier county in Oregon show that approximately half of patients presenting to primary care typically have dental disease [11]. Poor oral health quality of life was found to be more common among rural than urban residents in a Canadian study [12].

Factors Influencing Primary Care Integration in Rural Settings:

Interprofessional education and "training and support" have been identified as facilitating factors for integrating oral health into primary

care across the world among rural target populations [13]. Neither co-location of pediatric medical and dental services nor geographic location were found to affect the degree of oral health integration for children in FQHC pilot projects in the United States [14].

Patient Views of Oral Health Integrated into Primary Care Settings

The views of patients about receiving oral health within primary care settings have been rarely reported. Although the Surgeon General's report identified a deficit in the area of public advocacy for oral health [15], little emphasis has been placed on examining and publicizing the perspective of patients receiving oral assessment in primary care. In patient-centered care environments, patient views should inform innovative developments and provide a source of data for advocacy related to expanded oral health in primary care.

The majority of the few studies reporting patient satisfaction and receptivity have been in maternal and child health settings. High levels of satisfaction among adolescents in group prenatal care were found in one US study, and levels of receptivity to midwives as providers of oral health exams and education were found in an Australian study. In pediatric health care, patient satisfaction scores increased markedly when dental hygiene services were integrated into well-child visits in an innovative school-based health center project [16]. In this same project, attendance at scheduled well-child visits also increased, whereas no-show rates declined.

To date, no reports on patient views or satisfaction concerning oral health integration into primary care in rural clinics have been found in the published literature. The patient perspective from across the lifespan, and particularly among those from rural primary care settings, would enable understanding of the acceptability of integrated services.

Methods

We performed an oral health integration project in a multicultural, rural-serving FQHC Look-Alike. An interprofessional team used an iterative feedback process to develop and implement a set of oral health services. The process used components consistent with the 5 domains of Interprofessional Oral Health Core Clinical Competencies promulgated by HRSA in 2014.

The specific survey objectives were:

Examine patient views about receiving oral health screening and management in a primary care setting, including:

- patient satisfaction,
- influence on patient views about the importance of oral health, and likelihood to return to the primary care setting with a problem.

Describe the prevalence of risk factors for and oral disease among the patients, including:

- patient self-reported behavioral oral health risk factors,
- provider-assessed risk factors, and observable oral pathology on physical examination.

Study Design, Setting, and Sample

This study used a descriptive design to obtain information about patient oral health and views of expanded oral health assessment by primary care providers during the patient's visit to a rural primary care clinic. This project was reviewed and approved by the University of New Mexico Institutional Review Board under HRPO 14-095.

The clinic serves a predominantly exurban and rural catchment area and provides services on a sliding fee scale to those without a source of payment. The county is rural, with 123,000 people in 3,716 square miles. County residents are 49.2% white non-Hispanic, 33% Hispanic, and 13.9% of American Indian origin.

Participants comprised a consecutive sample of primary care patients who were registered at the clinic for a patient encounter where the oral health assessment occurred. Patients were included if they were attending the clinic for any of the following visit types: new patients to the practice, new obstetric patients, patients receiving annual examinations or school physicals, and patients with a diabetes mellitus diagnosis. Those who met these criteria during the study period and provided informed consent were accepted into the study. Patients with other visit types, those unable to read or speak English or Spanish, and those declining informed consent were excluded.

Patients were invited to participate by the front desk personnel or clinic community health workers (CHWs) at the time of the primary care visit registration. If patients expressed interest, they completed a 1-page informed consent form in their preferred language (Spanish or English). CHWs answered patients' questions, and for patients who preferred, the CHWs read the consent form in either Spanish or English. Initially, few patients completed the consent form because some required assistance filling out the form or required more information about the study. Once the reasons were identified, the CHWs began providing a more detailed explanation of the study purpose and assisting those who needed help with form completion.

Data Collection

Data collection took place from April 2014 to April 2016. Clinic medical assistants obtained oral health histories, and primary care providers (physician, certified family nurse practitioners, physician assistants, and certified nurse-midwives) performed the oral examination. After a visit with the primary care provider, the patient received a paper-and-pencil survey to complete regarding his or her experience of having an oral assessment in the primary care setting. If surveys were not completed on the day of the patient encounter, CHWs followed up by phone to facilitate return by mail or in-person collection. The study participant number was determined by patients who could be recruited, consented, and completed the survey during the study period.

Variables and Measurement

Patient Views of Oral Health Services

The survey contained questions about patients' views on the oral

assessment services provided during the primary care encounter, including overall satisfaction with the level of explanation and the oral health assessment and examination itself, the impact on their views of oral health importance, and the likelihood of using primary care-based services again for oral health.

Factors Affecting Oral Health and Risk Status

Medical assistants asked patients about selected historical and behavioral factors impacting oral health risk in the examination room as they awaited their primary care visit. Responses were transcribed onto a data collection tool by the provider or medical assistant. History and assessment based on clinical interview and synthesis with relevant patient presentation were obtained during the encounter by the primary care provider, who recorded the information on the data collection tool.

Patients underwent an examination of the buccal cavity, including the oral mucosa, teeth, and gums, by trained primary care providers during the primary care provider-patient encounter. These selected physical examination findings were recorded on the data collection tool.

Data Management and Analysis Procedures

Paper copies of patient consent forms, surveys, and the oral health risk data collection tool were kept in a locked file cabinet in the office of the clinic executive director. The CHWs placed patient surveys collected from patient homes in locked bags and transported them in locked car trunks back to the clinic. The clinical risk factor data collection tool was transported weekly from the clinical site to the University in a secure manner by a project research assistant. The data were entered into Redcap, the University of New Mexico's Health Insurance Portability and Accountability Act-compliant data entry system and were then analyzed using the Statistical Package for the Social Sciences (SPSS, Chicago, IL).

Associations between demographic or physiologic variables and outcome variables were examined, where appropriate. Nonparametric chi-square statistics were applied to examine associations between variables and associated probabilities (*P* values) that observed differences in responses were due to chance or likely to represent real difference. When calculated, based on the presence of observed difference, *P* values are reported.

Results

Participant Demographics

A total of 143 patients provided responses to the survey. Survey participants were fairly equally balanced by gender and were spread across the lifespan, with the majority being between the ages of 50 and 64 years. The majority of participants reported their zip code of residence as being from the rural town where the clinic is located, and the majority had some form of dental insurance.

As shown in Table 1, survey participants were similar in age and gender distribution to the overall patient population served by this health center during the data collection period. The sample included a somewhat higher proportion of those aged 50 to 64

years and a lower portion of those aged 65 years and older than the overall clinic population.

	Descriptor	n of cases reporting	Sample % (n)	Clinic Population
Gender	female	143	55 (79)	43%
	male		45 (64)	57%
Age Distribution	0 - 17	126	11 (14)	16%
	18 - 34		8 (10)	15%
	35 – 49		13 (16)	17%
	50 - 64		39 (49)	28.%
	65 - 79		27 (34)	19%
	80 +		2 (3)	5%
Residence	Rural	143	69 (99)	68%
	Urban		31 (45)	32%
Dental Insurance	Yes	133	69 (92)	
	No		31(41)	

Table 1: Demographic Characteristics of Participants.

Data were not collected on the ethnicity of participants in the study. Requesting a declaration of ethnicity is known to alienate clinic attendees where the study was performed. Quality assurance data from the clinic revealed that 35% of patients decline to respond or do not declare Hispanic/non-Hispanic ethnicity. Of those who do declare, 61% declare Hispanic/Latino, 11% declare as more than 1 race, and 49% declare as white. Eleven percent of patients who attend the clinic declare that they are best served in a language other than English.

Although ethnicity of participants cannot be reported, it is likely that survey participants have ethnicity similar to that of the overall clinic population.

Participant Oral Health Risks
Self-Reported Dental Health Status and Services Access

Although most participants reported having and using a dental home, almost one-fourth had not seen their dentist within the year, and 40% of participants did not have a dentist they saw for routine preventive care at all. In terms of dental health, one-third of survey participants reported having a dental “cavity” within the past 24 months, and 19% reported that they had teeth removed (Table 2). These data show that the participants experienced both low levels of access to and utilization of dental health care despite substantial dental health morbidity.

Self-Reported Health Behaviors Associated with Oral Health
Participants’ responses to questions on health behaviors suggest that they have knowledge of health behaviors that may improve oral health (Table 2). The majority of participants reported tooth brushing, drinking sugary beverages, and eating sugary and starchy foods at levels associated with good oral health maintenance (Table 2). The likelihood of social desirability bias in answering this set of questions seemed high to both the clinician and research team members, particularly because these responses were given after a visit that included oral health education.

Self reported Dental Health			
Descriptor		Respondents answering	% (n)
Have you seen dentist	No	n=100	39/39
	Yes		61/61
	>1 yr		14/14
	Within 1 yr		12/12
	Within 6 months		35/35
Cavities in past 24 months	None	N=82	59/48
	Yes		34
	Within 6 months		22/18
	7 to 24 months		19/16
Teeth removed	Yes	N=94	19/18
	No		81/76
Self Reported Health Behaviors Associated with Oral Health			
Tooth brushing frequency	2 X per day or more	n=93	62/58
	Once a day		36/33
	< once a day		2/2
Sugary beverage frequency	>3 times daily	n=96	13/12
	Once or twice daily		29/28
	At mealtimes or less		58/55
Sugary starchy food frequency	>3 times daily	n=96	10/10
	Once or twice daily		52/50
	At mealtimes or less		38/36
Frequent vomiting	Yes	n=85	7/6
	No		93/79

Table 2: Participant Self Reported Oral Health Associated Risk Factors.

Clinician-Assessed Factors and Primary Care Provider Oral Examination

Primary care providers assessed the participants for factors known to be associated with poorer oral health status and conducted a brief clinical oral examination that was taught to primary care providers during the project. A remarkably large portion (39%) of participants were found to have patient and situational factors known to be associated with higher levels of dental disease, including cognitive and physical disabilities, drug and alcohol involvement, serious mental illness, and tobacco use (Table 3). Primary care provider oral examinations showed that more than one-third of the participants had signs of dental disease at the clinic visit concurrent with survey completion (Table 3).

Descriptor	n of cases assessment completed	%/n
Factors interfering with oral care†	n=87	39/61
Oral Exam Findings		
Heavy plaque on teeth visible (n=59)	n=59	36/21
Dental caries visible (n=62)	n=62	37/23
Fillings, crowns or retainers visible (n=64)	n=64	56/33

Table 3: Clinician Assessed Oral Health Risks.

Patient Views of Integrated Oral Health Services

Patient views on the oral health services provided during the primary care encounters were positive overall. Patients expressed satisfaction with the assessment, reported an increase in their knowledge, and expressed an increased likelihood of returning to the same primary care setting for oral health assessment. The oral assessments provided during the encounters influenced participant views about the importance of oral health to their overall health. The majority reported “a lot” of influence on their views, whereas only 11% reported no impact. Women were more likely to report the highest level of impact, with 77% of women and 55% of men reporting the highest-level impact (chi-square $P > .025$). The impact of integrated oral health services on patient views was consistent across age groups. Between 61% and 80% of participants in all groups reported experiencing “a lot” of impact (Table 4).

Patient self-report Question	n of respondents	% (n)
Provider impact on views of Oral Health Importance	n=134	
No impact		11 (14)
Some impact		22(30)
A lot of impact		67(90)
Likelihood of Returning to Clinic for Oral Health Problem	n=133	
Would not or probably would not return		
Would or probably would return	n=137	
Somewhat satisfied		37 (28)
Very satisfied		67(87)

Table 4: Patient views of Integrated Oral Health.

A large majority of participants were very satisfied with the integrated oral assessment services that they received. Very high levels of satisfaction were shared and very few were unsatisfied (6%). No differences in reported levels of satisfaction between men and women were found. A large majority of both female (86%) and male (92%) participants indicated that they would or probably would return to this primary care clinic for an oral health concern.

Discussion and Conclusions

This study supports previous findings of a high prevalence of untreated oral disease and a low level of access to dental care, particularly preventive services, among the rural community health center clients who received integrated oral health services during their primary care visits. In addition, behavioral risk factors associated with poor oral health status, as assessed by the medical provider, were present among more than one-third of participating patients. These findings corroborate previous reports of a high background prevalence of oral conditions and oral health behavioral risk factors among rural primary care patients.

This study also found that patients viewed the integrated oral health services they received positively. These findings contribute to filling a gap in knowledge about the patient’s perspective on oral health services provided by their primary care providers.

This study included patients of all ages and adds the views of patients throughout the lifespan to what is known about the patient perspective on integrated oral health. A substantial majority of patients reported that integration increased their knowledge of the effects of oral health on overall health, that they were satisfied with the oral health services during their visit, and that they would likely return to the setting with an oral health problem.

Limitations of this descriptive evaluation study include possible sample selection bias because recruitment of participants met with some resistance in the community primary care setting.

Hesitancy to sign the consent forms and engage in anything that could be perceived as a legal process that could involve tracking is present in this patient population. It could be that those who chose to participate were either more comfortable in medical settings than were those who declined or had a positive predisposition toward receiving oral health services during their visit. Social response bias is also likely present in the patient self-reported oral health behaviors.

Survey completion occurred after a visit that often included education on self-care that can improve oral health. It is possible that patients responded to demonstrate knowledge out of respect for the teach they received in the visit rather than reporting their own practices.

The reliability and validity of medical care provider assessment of oral pathology was not evaluated during this study. The project provided oral examination training to the medical providers who conducted these examinations. This training was provided by experienced dental medicine faculty. There were no systematic reliability checks conducted during the data collection, however. Participating medical providers included nurse practitioners, nurse midwives, medical doctors, and physician assistants, a profile of health professionals typical in New Mexico primary care settings.

Despite the limitations of this study, the survey results from patients who had received integratedoral health education and services as part of their regularly scheduled medical visits conveyed acceptance. The substantial prevalence of oral disease among patients of all ages reinforces the need to integrate oral health care in primary care services. Moving forward with integration efforts has the potential to decrease the burden of untreated oral disease on rural populations.

Acknowledgements

The authors wish to acknowledge the participation of Ms. Amy Pilley, BA, BSN for research assistance, Dr. Peter Jensen, DDS of the Department of Dental Medicine of the University of New Mexico, Mr. Rick Adesso, Executive Director of El Pueblo Health Services, the primary care provider staff, community health workers and medical assistant staff of El Pueblo Health Services and UNM College of Nursing. Additional thanks to Ms. Anne Mattarella of the University of New Mexico for manuscript preparation assistance.

References

1. <https://www.americashealthrankings.org/explore/annual/measure/dentists/state/NM>
2. <https://www.nidcr.nih.gov/sites/default/files/2017-10/hck1ocv.%40www.surgeon.fullrpt.pdf>.
3. Health Resources and Services Administration, U.S. Department of Health and Human Services. Integration of oral health into primary care practice. February 2014.
4. Hummel J, Phillips KE, Holt B, et al. Oral Health: An Essential Component of Primary Care. Seattle, WA: Qualis Health; June 2015.
5. Hagan J, Shaw J, Duncan P eds. Bright Futures: Guidelines for Health Supervision of Infants, Children and Adolescents. 4th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2017.
6. Khan A, Thapa JR, Zhang D. Preventive dental checkups and their association with access to usual source of care among rural and urban adult residents. *Journal of Rural Health*. 2017; 33: 419-426.
7. Vargas CM, Ronzio CR, Hayes KL. Oral health status of children and adolescents by rural residence, United States. *Journal of Rural Health*. 2003;19: 260-268.
8. Vargas CM, Yellowitz JA, Hayes KL. Oral health status of older rural adults in the United States. *Journal of the American Dental Association*. 2003;134: 479-486.
9. Martin JL, Boyd LD, Tapias-Perdigon H, et al. Oral health status of independent older adults in Texas: an observational study comparing urban and rural areas. *Journal of Dental Hygiene*. 2017; 91: 40-47.
10. Ahn S, Burdine JN, Smith ML, et al. Residential rurality and oral health disparities: influences of contextual and individual factors. *Journal of Primary Prevention*. 2011; 32: 29-41.
11. Davis MM, Hilton TJ, Benson S, et al. Unmet dental needs in rural primary care: a clinic, community, and practice-based research network (ORPRN/PROH) collaborative. *Journal of the American Board of Family Medicine*. 2010; 23: 514-522.
12. Gaber A, Galarneau C, Feine JS, et al. Rural-urban disparity in oral health-related quality of life. *Community Dentistry and Oral Epidemiology*. 2018; 46: 132-142.
13. Harnagea H, Lamothe L, Couturier Y, et al. From theoretical concepts to policies and applied programmes: the landscape of integration of oral health in primary care. *BioMed Central Oral Health*. 2018; 18.
14. Bernstein J, Gebel C, Vargas C, et al. Integration of oral health into the well-child visit at Federally Qualified Health Centers: study of 6 clinics, August 2014-March 2015. *Preventing Chronic Disease*. 2016; 3:160066.
15. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2518609/pdf/0980082.pdf>.
16. Heuer S. Family centered care: integrated medical and dental health in primary care. *Journal for Specialists in Pediatric Nursing*. 2007; 12: 61-65.