An Evaluation of the San Francisco Department of Human Services Welfare Dental Program

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Abstract

Objective: *To evaluate the welfare-to-work San Francisco Personal Assisted Employment Services (PAES) Dental Program.* ***Methods:*** *A cohort of 377 study participants in the novel PAES Dental Program were followed through their baseline examination, rehabilitative dental treatment, follow-up exam, and completion of patient satisfaction survey. A framework of structure, process, and outcome measures was used to evaluate the success of the Dental Program. Chi square test, logistic regression, and paired t-test were used to analyze the levels of participation and satisfaction in the program.* ***Results:*** *Of the 377 study participants, 265 (70%) completed their rehabilitative dental treatment. Those who completed their dental treatment had more missing teeth and fewer decayed teeth at baseline than those who did not complete their treatment. High levels of patient satisfaction were reported for the Dental Program. Ninety-seven percent of 173 respondents felt that they had been treated with respect, 92% were satisfied with the scheduling of their appointments, 91% were satisfied with their Dental Program experience, and 90% felt that their chief complaint had been solved.* ***Conclusion:*** *The PAES Dental Program provided high levels of patient satisfaction for process and outcome measures.*

Key Words: welfare reform, program evaluation, dentistry, dental care

Introduction

In 1996 the federal government enacted The Personal Responsibility and Work Opportunity Reconciliation Act. The statute consolidated several pre-existing welfare programs into a Temporary Assistance to Needy Families Block Grant (TANF). (1,2,3) Annual TANF funding is $16.4 billion, and states have enormous flexibility in spending the TANF fund on programs designed to promote work, responsibility, self-sufficiency, and strengthen families. The San Francisco Department of Human Services (SFDHS) offers the Personal Assisted Employment Services (PAES) program as a TANF benefit directed towards employable, single, indigent adults. PAES participants are not eligible for California's Medicaid program (Medi-Cal) unless they are disabled, and the dental services provided to the medically indigent by the city public health clinics are limited to very basic care.

Both the PAES participants and their welfare social workers recognized that missing and decayed teeth dramatically affected the appearance of some participants, which likely resulted in a negative impression on prospective employers and poor self-esteem for the individuals. Facial attractiveness has been found to affect social attitudes and actions and is important in employment situations (4,5). Additionally, adverse oral health conditions have been found to affect systemic health, quality of life, and economic productivity (6,7,8).

The PAES Dental Program began in 1999 as a collaborative pilot program between the SFDHS and San Francisco Department of Public Health (SFDPH). It is the only program of its kind in the nation. The goal for the Dental Program is to eliminate severe dental problems that pose a barrier to employment and self-sufficiency.

Based on data from a cohort of participants in the PAES Dental Program, the aim of this summative evaluation is to describe the Program's planning and implementation, levels of participation, and patient satisfaction.

Methods

This research project was reviewed and approved by the University of California, San Francisco, and the University of California, Berkeley, Institutional Review Boards. All participants provided signed informed consent prior to entering the study.

The Dental Program is available at no cost to PAES participants who have been working cooperatively with their welfare social worker for at least three months and have either self-identified or been identified by their social worker as needing extraordinary dental services. The Dental Program includes an oral health needs assessment, measurement of the oral health-related quality of life, treatment planning, rehabilitative dental treatment, and quality assurance evaluation (9,10,11).

Chi square test, logistic regression, and paired t-test were used to analyze the levels of participation and satisfaction in the Dental Program. All data entry and analyses were conducted using the JMP Version 4 statistical analysis software from SAS

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Institute Inc., Cary, North Carolina (12). One of the most widely used frameworks for program evaluation is that of Donabedian's structure, process, and outcome measures (13). Structure measures include the equipment, finances, personnel, and logistics involved in the program setting. Process measures refer to the methods employed for the provision of the program's services. Outcome measures are the effects and changes that are a result of the program. This assessment of the PAES Dental Program utilizes Donabedian's framework for the evaluation.

The patient satisfaction survey addressed process measures (telephone interaction, appointment scheduling, waiting time at scheduled appointments, quality of communication) and outcome measures (dental treatment received, Dental Program satisfaction, chief complaint resolution); which were assessed with a four-point Likert scale (does not apply, no, sometimes, yes). The survey also provided an opportunity for narrative comments regarding experiences in the Dental Program.

Results

Structure of the PAES Dental Program facilities and personnel. Dental equipment included a portable dental chair, stationary exam light, air compressor, autoclave, and storage bins. The consulting dentist (SH) managed the Dental Program, screened and interviewed all participants, authorized all treatment, provided case management, performed quality assurance evaluations, and served as an advocate for the participants. The SFDHS provided clerical support, and dental assistance was supplied by the SFDPH. Prescription drugs for pain, anxiety, or infection were provided at no cost to the participant.

Letters were sent to forty-three dentists in San Francisco who were high producers in the Medi-Cal program (treated more than 100 Medi-Cal patients per year), inviting them to participate in the PAES Dental Program provider network. Four private general practitioners, two dental schools, and two city adult dental clinics subsequently joined the network. These dental providers represented seven geographical areas of San Francisco, and were conversant in Asian, Russian, and Spanish languages. Referrals of Dental Program participants could therefore be made according to geographical and language preferences.

Treatment guidelines and orientation. The dental treatment was not intended to be full-mouth reconstruction, but rather rehabilitative in nature, so participants could gain employment and dental insurance benefits, which would subsequently allow more definitive care. Treatment guidelines and a fee schedule based on Medi-Cal reimbursements were established for the rehabilitative dental treatment (Table 1). As an incentive, an additional 10% of the cost of the treatment plan was paid to the treating dentist upon the completion of all work. The consulting dentist provided an orientation meeting for each of the treatment providers to explain the goals of the Dental Program, the nature of the research, the reimbursement procedure, and the rehabilitative treatment guidelines. Each provider was required to sign a memorandum of understanding with the fiscal intermediary. The fiscal intermediary was responsible for processing claims, paying the providers, and providing quarterly financial reports.

Orientation training was also provided for the welfare social workers, and a procedural handbook was developed. The social worker's responsibilities included scheduling the screening appointment with the consulting dentist, and monitoring and remediation of attendance at the treatment appointments. Dental Program participants were required to sign a Dental Service Agreement, which outlined the consequences of missing appointments, the availability of outreach services such as transportation and moral support, the importance of the quality assurance evaluation, and the replacement policy for lost or broken dentures.

Process of the PAES Dental Program. *Enrollment, Screening, and Treatment.* After either self-identifying or being identified by their social worker as needing extraordinary dental services, participants entered the Dental Program through a scheduled screening appointment. The scope and range of what constituted extraordinary dental needs was not clearly defined, therefore referrals were made on the basis of perceived need rather than objective criteria. No tracking was done of self-identified versus social worker-referred participants. An interpreter was provided for non-English speaking participants. At the screening appointment, the participant was examined and interviewed, a treatment plan was developed and authorized for reimbursement, and an appointment was made with a dental treatment provider. Exams were performed by one trained and cali-

TABLE 1
PAES Dental Program services

Services Provided	Services Not Provided
Examination and X-rays	Periodontal Surgery
Prophylaxis	Endodontic Surgery
Periodontal Scaling and Root Planing	Cast Crowns for Molar Teeth
Amalgam and Composite Restorations	Bridges for Molar Teeth
Stainless Steel Crowns for Molar Teeth	Cast Partial Dentures
Porcelain Crowns for Anterior Teeth	Orthodontic Tooth Movement
Bridges for Anterior Teeth	
Bleaching Trays and Nightguards	
Dentures and All-Acrylic Partials	
Endodontic Root Canals	
Oral Surgery	
Nitrous Oxide and Sedation	

brated examiner (SH) using a mouth mirror, explorer, and CPI periodontal probe. No radiographs were exposed and universal precautions were employed for infection control. Toothbrushes, toothpaste, dental floss, and toothbrush covers were distributed to the participants at the baseline examination.

A copy of the treatment authorization was sent to the dental provider and fiscal intermediary. If the treatment plan involved only teeth cleaning and simple restorations, the city dental public health clinics could provide the services at no charge to the Dental Program; otherwise a network of treating dentists provided the rehabilitative dental treatment. As the original treatment plan was formulated without the diagnostic aid of radiographs, the consulting dentist approved additional procedures as needed. Upon completion of the treatment, the treating dentists submitted their bill for reimbursement to the fiscal intermediary. Disbursements were made directly to the dental providers.

Quality assurance. Once the participant completed their dental treatment, they were re-appointed with the consulting dentist at the welfare building for a quality assurance evaluation and patient satisfaction survey. Toothbrush or denture kits were distributed at the quality assurance exam as an incentive for participation.

Access to services. To maximize the convenience and access to the Dental Program, the screening appointment and quality assurance evaluation were conducted in the welfare building, where a storage room had been converted into the dental examination room. Outreach efforts by a SFDHS clerical staff person were aimed at reducing the appointment failure rate. These efforts included a postcard reminder mailed two weeks prior and a telephone reminder the day before the screening appointment. Maps and directions for public transportation to the dental providers were distributed. Transportation to the dental treatment appointment was provided by the SFDHS if the participant expressed dental phobia or required extensive treatment. Dental appointments failed without good cause were viewed as a failed employment plan activity, and subject to sanction such as discontinuance from the PAES program.

TABLE 2
Baseline characteristics of PAES Dental Program participants (N=377)

Demographic or Clinical Variable	Percent
Sex	
Male	71.2
Female	28.8
Age	
Range years	21 – 63
Mean years (SD)	44.8 (7.9)
Race/Ethnicity	
African American	46.4
Caucasian	32.5
Hispanic	10.9
Asian	5.9
Other	4.3
Education	
Less than grade 9	4.5
Less than high school	17.9
High school/GED	30.5
Vocational training	4.3
Some college	34.0
College degree	6.9
Post college degree	1.9
Type of Dwelling	
House/apartment	43.3
Subsidized hotel room	45.5
Shelter	5.9
Half-way house	1.3
Car	1.3
Streets	1.1
Other	1.6
Community Periodontal Index: Maximum Sextant Score	
0 = healthy	0.0
1 = bleeding	0.0
2 = calculus	15.8
3 = periodontal pocket 4 – 5 mm	53.2
4 = periodontal pocket ≥ 6 mm	31.0
Decayed Missing Filled Index*	
Edentulous (missing all teeth)	4.5
Missing any teeth	85.4
Any decayed teeth	84.2
Any filled teeth	75.5
Mean number missing teeth (SD)	7.5 (7.9)
Mean number decayed teeth (SD)	4.5 (4.8)
Mean number filled teeth (SD)	4.8 (4.7)
Treatment Urgency	
1 = No obvious problems	0.5
2 = Mild to moderate problems	36.1
3 = Severe problems	60.5
4 = Emergency problems	2.9

*Third molars and teeth extracted for orthodontic purposes excluded

Outcome of the PAES Dental Program. *Program Participation:* The PAES welfare program was comprised of approximately 2930 welfare recipients during the 18 months that the Dental Program enrolled study participants (1999 – 2001). During this period, 379 recipients were re-

ferred to the Dental Program, and 377 (99.5%) agreed to participate in this study. Study participants were primarily male (71%), African American (46%), high school graduates (77%), and ranged in age from 21 – 63 years old (Table 2). Twenty-six percent rated their general health as either fair or poor, 31% had >6 mm periodontal pocket depths, 85% were missing one or more teeth, 84% had one or more untreated decayed teeth, and 63% had severe or emergency dental treatment urgency.

Of the 377 study participants, 265 (70%) completed their dental treatment, while 54 (14%) were discontinued from either PAES or the Dental Program prior to completing their treatment (Table 3). Fifty-five participants (15%) failed to keep their first and all subsequent dental treatment appointments. Of the 265 participants who completed their dental treatment, 173 (65%) returned their patient satisfaction surveys.

TABLE 3
PAES Dental Program study participation

Study Base	N	Percent
Screened	379	100.0
Study Participants	377	99.5
Completed Treatment	265	70.3
Surveys Returned	173	65.3
Lost to Follow-up	92	34.7
Incomplete Treatment	54	14.3
No Treatment	55	14.6
Deceased	3	0.8

Chi square test and logistic regression were performed using demographic and clinical variables to determine whether any significant differences existed between those who completed their rehabilitative dental treatment versus those who did not, as well as for those who were lost to follow-up. The only significant differences that were found were that those who completed their treatment had more missing teeth (p=0.0108) and fewer decayed teeth (p=0.0109) at baseline than those who did not complete their treatment, which may reflect that missing teeth are associated with a higher perceived need for dental treatment. African Americans were less likely to return their follow-up questionnaires than were Caucasians and other races (p=0.0100). Otherwise, the baseline demographic and clinical profiles showed no significant differences (all p>0.05) between those who completed their treatment versus those who did not, and for those who were lost to follow-up.

Treatment Needs and Costs: All participants were scheduled to receive preventive dental treatment consisting of diagnostic radiographs, exam, and teeth cleaning. In addition, 75% of participants required prosthetic services, 71% needed restorative treatment, 67% required oral surgery, 52% needed scaling and root planing, 21% required endodontic therapy, and 17% needed porcelain crowns. Four percent of participants required all categories of dental services. Seventeen percent of participants required additional treatment after completing their original treatment plans. This additional treatment ranged from a simple adjustment of a new denture to re-treatment of unsatisfactory dental treatment, as determined by the consulting dentist during the quality assurance examination. Seven percent of participants lost or broke their denture or all-acrylic partial denture within a short time of receiving it.
Based on a Medi-Cal fee schedule, the estimated treatment costs ranged from $0 – 5,577 (Table 4). The mean treatment estimate was $1,224 per person. As 30% of participants did not complete their dental treatment, the actual treatment costs for the cohort, ranging between $0 – 4,312, were considerably lower than the estimates, with a mean treatment cost of $818. For those who completed their treatment, the mean actual cost of $1,035 was still significantly lower than the mean estimate of $1,191 (p<0.0001).

The PAES Dental Program had an annual budget of $330,000. Eighty-two percent of the budget was spent on providing rehabilitative dental treatment, 15% was apportioned for salaries, administrative costs required 2%, and 1% was spent on equipment and supplies.

Patient Satisfaction Survey. Overall, high levels of patient satisfaction were reported for the Dental Program (Table 5). Participants were asked about various programmatic process measures on the satisfaction survey. Ninety-seven percent of the 173 respondents felt that they had been treated respectfully by the dental staff, 92% were satisfied with the scheduling of their appointments, 91% felt that the dental procedures had been sufficiently explained to them, 86% were satisfied with their telephone interaction with the dental offices, and 77% never had to wait more than 30 minutes at their scheduled appointments.

Participants were also queried about various outcome measures for the Dental Program. Ninety-one percent of participants were satisfied with their PAES Dental Program experience, 90% felt that their chief complaint had been solved, and 81% were satisfied with the dental treatment that they received.

An open-ended question regarding experiences in the Dental Program revealed that 30% of partici-

TABLE 4
Estimated versus actual treatment costs (N=377)

Treatment Costs	Estimated	Actual*
Range	$0 – 5577	$0 – 4312
Mean	$1224 +/- 701	$818 +/- 778
$0 – 500	12.4%	42.5%
$501 – 1000	29.0%	18.7%
$1001 – 1500	30.6%	19.5%
$1501 – 2000	16.9%	12.1%
$2001 +	11.1%	7.2%

*Includes the 10% bonus incentive

TABLE 5
PAES Dental Program patient satisfaction survey (N=173)

Process Measures	Percent
Treated Respectfully	97
Appointment Scheduling	92
Procedures Explained	91
Telephone Calls	86
Waiting Time < 30 Minutes	77
Outcome Measures	
Dental Program Satisfaction	91
Chief Complaint Solved	90
Dental Treatment Satisfaction	81
Further Treatment Required	17
Lost/Broken Appliance	7
Narrative Comments	
Treatment:	
Negative Comment	30.1
Positive Comment	24.8
Dentist:	
Negative Comment	9.2
Positive Comment	40.5
Dental Program:	
Negative Comment	1.2
Positive Comment	15.6
No Comments	19.6
Multiple Comments	34.7

pants had some negative comment about the treatment that they received (Table 5). Often these comments would be in regard to some adjustment that was needed for new dentures. Nine percent of participants had some negative comment about the dentist who rendered the rehabilitative dental treatment, and the services of one dentist were dropped in response to a pattern of these negative comments. Twenty-five percent of participants gave positive comments about the treatment that they had received, 40% had something positive to say about the dentist who treated them, and 16% had positive comments about the Dental Program.

Discussion

Nationally, 58% of community-based health centers offer dental services. (14) The Healthy People 2010 objective is for 75% of these centers, including migrant and homeless health centers, to have an oral health component (15). By providing a dental facility within the welfare building, the PAES Dental Program increased the access to care for low income and unemployed adults. The Dental Program began as a one-year pilot study through the collaborative efforts of the San Francisco Departments of Human Services and Public Health. The Dental Program has proven so successful, that it is entering its fifth year of funding, and is now being supported by the City of San Francisco Mayor's budget. The portable dental equipment has been replaced with a functional operatory, including a digital x-ray machine. Thus the capabilities of the Dental Program have now been extended to the provision of preventive dental services.

The Dental Program was evaluated by a definitive protocol (13). However in this population, some of the evaluative components were difficult to implement. All Dental Program participants were required to sign a Dental Service Agreement, which stipulated that a quality assurance examination would be performed at the welfare dental facility upon the completion of the rehabilitative dental treatment. In addition, when asked at the baseline exam whether they would be willing to participate in a quality assurance evaluation, 100% of participants replied in the affirmative. Yet the response to scheduling the follow-up exams proved to be so poor, that the assistance of the welfare social workers had to be enlisted to obtain the patient satisfaction surveys. It was not possible to train and calibrate the social workers on administering the questionnaires, and no tracking was done regarding which questionnaires were self-administered versus which received help from the social worker. In their analysis of the effect of literacy on health survey measurements, Al-Tayyib *et al.* found that self-administered questionnaires required not only literacy, but also forms-literacy, or the ability to implement survey instructions and select consistent responses. [16] Since only 22% of this study population had less than a high school education, and less than 5% of the follow-up surveys contained errors such as circling more than one answer or omitting a question, it is not likely that information bias was introduced by the follow-up questionnaires being self-administered.

For those participants who completed their dental treatment, the actual mean treatment cost of $1,035 was significantly lower than the estimated mean treatment cost of $1,191 ($p<0.0001$). Since the actual mean cost included the 10% bonus incentive while the estimated mean cost did not, this difference becomes more pronounced. As all participants received treatment plans at baseline, and the treating dentists were required to obtain approval from the consulting dentist before altering those treatment plans, it was expected that the actual treatment costs would be in closer agreement with the estimated costs for those participants who completed their treatment. Any discrepancy due to failure to obtain approval for modification of the treatment plan was expected to result in higher actual costs than the estimates, since the treatment estimates were developed without the diagnostic aid of x-rays. The significantly lower actual mean treatment cost may indicate a need for a random audit of the patient records from both the treating dentists and the fiscal intermediary to determine whether the treatment prescribed was rendered and/or subsequently reimbursed.

The PAES Dental Program offers a unique opportunity for the delivery of community-based prevention efforts. Future directions for the Dental Program could be to improve the oral health literacy of the welfare recipients by providing culturally competent messages about oral hygiene, fluoride, and access to early treatment of oral diseases. This message of health literacy could be extended to issues of tobacco cessation, moderation of alcohol use, and nutrition guidelines; which would not only improve oral health, but also encourage healthier lifestyles.

The recently released National Call to Action to Promote Oral Health proposes to reduce oral disease and disability by replicating programs that have proven their effectiveness

(17). The PAES Dental Program provided high levels of patient participation, with 84% completing some or all of their dental treatment; patient satisfaction, with 91% satisfied with their Dental Program experience; and 82% of the budget was spent on the provision of dental treatment. Although the high level of satisfaction with the Dental Program could reflect a reluctance on behalf of the participants to jeopardize their only access to dental services, 30% of participants were sufficiently confident to voice some negative comment regarding their treatment. The PAES Dental Program model can be implemented in welfare programs throughout the nation, and has been used to form the framework for a new community-based dental clinic for the homeless and HIV-positive residents of San Francisco at the Tom Waddell Center. Due to budget shortfalls, the State of California periodically considers abolishing adult dental Medi-Cal services. If that happens, the PAES Dental Program could become one of the last sources of adult dental services for low-income and unemployed residents of California.

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