

CONCEPT PAPER: MEDICAID DENTAL BENEFITS FOR ADULTS WITH DIABETES

**ANTONINA CAPURRO, DMD, MPH, MBA
NEVADA STATE DENTAL HEALTH OFFICER
DIVISION OF PUBLIC AND BEHAVIORAL HEALTH, ORAL HEALTH PROGRAM**

Summary

Per the Centers for Disease Control and the Nevada Electronic Death Registry, diabetes is the seventh leading cause of death in the U.S and eighth leading cause of death in Nevada. Currently, the CDC reports that diabetes affects 30.3 million Americans and accounts for 9.4% of the U.S. population. Diabetes is a prominent factor in American mortality, and consequently results in a substantial fiscal impact to the health care system. According to the American Diabetes Association, after accounting for demographic differences the average medical expenditure for those with diabetes was 2.3 time higher than for those without diabetes. In 2017, the total cost of diagnosed diabetes was \$327 billion, direct medical costs was \$237 billion, and reduced productivity resulted in \$90 billion loss. (American Diabetes Association, Economic Cost of Diabetes in the U.S. in 2017, <http://doi.org/10.2337/dci18-0007>)

Furthermore, the American Diabetes Association indicates that type 2 diabetes accounts for 90% to 95% of all diabetes cases. Type 2 diabetes can be managed by factors under the patients control such as improving nutrition, increasing exercise, complying with prescribed medications, and reducing inflammatory responses through oral hygiene. Many Nevada managed care organizations that contract with the Division of Health Care Financing and Policy to oversee healthcare services in Washoe and Clark Counties have instituted diabetes management programs that include education and routine medical exams to improve patient outcomes and reduce medical expenses. Expanding dental care for diabetic patients presents an opportunity to provide more comprehensive diabetes treatment and management. However, maximum benefit of available services will only result from a partnership between the dental benefits administrator (currently Liberty Dental) and the medical managed care organizations (currently Anthem Blue Cross, Health Plan of Nevada, and Silver Summit) to connect diabetic patients to newly available dental services for more comprehensive diabetic care. Currently, an eye exam, HbA1c testing, LDL-C screening, attention for nephropathy, and blood pressure control are included as the required evaluation for comprehensive diabetic care. Proposed legislation should include language that requires communication between the dental benefits administrator and the managed care organizations to provide wrap around services to link patients to care.

While preventive care is not a covered Medicaid service for adults, dental extractions are payable through the current system. Multiple extractions, associated oral infections, and eventual edentulism are not only costly to the Medicaid system, but have far-reaching implications as the nutritional status, mental health, and chronic disease condition of a patient diminish, resulting in higher incidence of hospitalizations and medical expenses. Diabetic patients because of changes in glycemic levels are more susceptible to relatively common oral bacteria and inflammation that leads to aggressive and negative changes in oral tissues and surrounding bone levels. The necessary treatment is periodontal therapy which reduces bacterial burdens, improves the health of the connective tissue around teeth, reduces oral inflammation, and restores longevity to the teeth, improving a person's self-efficacy, ability to ingest nutritionally rich foods, and overall quality of life. However, this service is not a covered benefit under the current Medicaid plan. By including dental prophylaxis benefits for adults with diabetes, the oral

and systemic health of this population will improve, and medical expenses associated with the conditions will decrease.

Under this proposal, diabetic adult patients will receive an initial oral exam focused on evaluating the patient's periodontal health. Based on this determination, a patient will be eligible for either option A which will provide simple cleanings for patients with well controlled glycemic levels and good oral hygiene or patients will be placed in option B for patients with long standing diabetic conditions with poor glycemic control and compromised oral hygiene. It should be noted that these plans also include services (x-rays) that are currently provided to adults enrolled in the Medicaid system.

This results in the following fiscal impacts:

Plan A - \$3,655,090 in State General Fund in the 20-21 biennium

Plan B - \$4,642,840 in State General Fund in the 20-21 biennium

The fiscal analysis is built on the number of diabetic adults in the dental Medicaid system in 2017: 18,932 patients in the fee-for-service system and 29,439 patients in the dental benefits administrator system. This data represents the 14% of Nevada Medicaid's adult population that have received a diagnosis of type 1 or type 2 diabetes.

To date, the Division of Public and Behavioral Health, Oral Health Program (DPBH, OPH) provide clinical expertise to and work collaboratively with the Medicaid dental team within the Division of Health Care Financing and Policy (DHCFP) to oversee dental benefits throughout Nevada. Under this proposal, the DPBH, OPH in conjunction with DHCFP will obtain Centers for Medicare & Medicaid Services (CMS) approval for this expansion, revise the provider billing guide, establish community linkages for referrals between medical and dental providers, create educational intervention for participating Medicaid dentists, develop educational presentations for internal and external stakeholders, and develop an evaluation plan and metrics to track the health outcomes for patients with increased access to dental services.

Overview

The link between oral health and overall health has been well established. Numerous studies have identified the association between the oral bacteria and inflammation in dental diseases and overall systemic illness such as cardiovascular disease and diabetes. Oral health is a snapshot of a person's health status as the quality of oral tissues can lead to early detection of systemic conditions.

One chronic disease that is often first identified through an oral examination is diabetes. There are multiple complications associated with diabetes such as cardiovascular disease, neuropathy, nephropathy, retinopathy, and periodontal disease. Periodontal disease is diagnosed through an oral evaluation and radiographic analysis of the bone level surrounding the teeth. Adults with diabetes are twice as likely to develop periodontal disease when compared to adults without diabetes and those with poorly controlled diabetes (HbA1c >9%) are three times more likely to develop severe periodontitis. (Berkey, D. B. and Scannapieco, F. A., Medical considerations relating to the oral health of older adults. *Special Care in Dentistry*; 2013. 33: 164–176.)

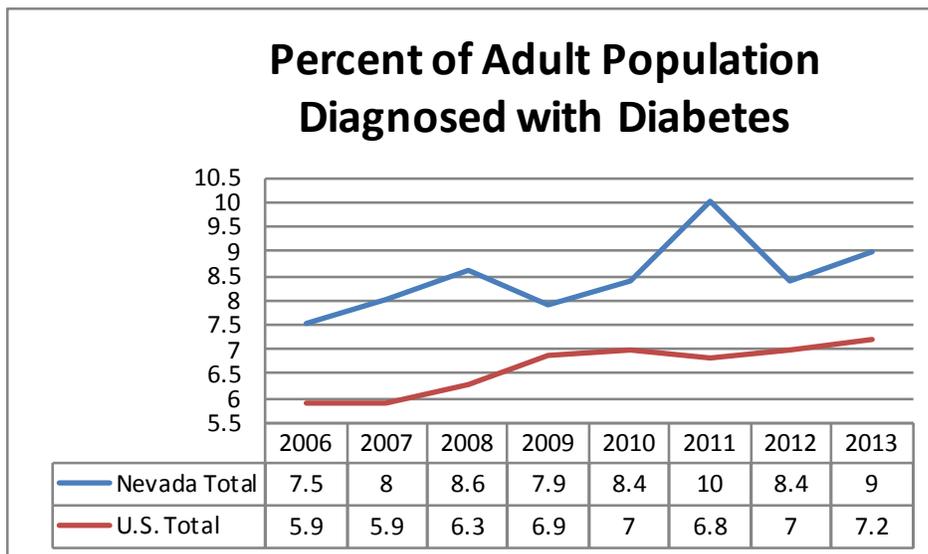
Periodontal disease results in inflammation of the gum tissues, radiographic bone loss leading to mobility of the teeth, and development of pathogenic bacterial biofilms which can lead to infections of the periodontal tissues. If left untreated these conditions will significantly affect a patient's systemic health as inflammatory factors, oral plaques, and bacteria are released into the bloodstream.

Periodontal treatments are offered to pregnant women under Nevada’s Medicaid program as a method to reduce preterm birth by decreasing the proliferation of pathogenic plaque bacteria and the transmission of bacteria via the blood system through inflamed and ulcerated oral tissues. I request an investigation to include adults with diabetes under the dental prophylaxis benefits as the oral and systemic health of this population would benefit significantly and medical costs would decrease as a result of this policy change.

Diabetes and Medicaid

“Periodontal disease is a chronic inflammatory disease and is linked to other serious health risks.” American Academy of Periodontitis

Per the CDC and the Nevada Electronic Death Registry, diabetes is the seventh leading cause of death in the U.S and eighth leading cause of death in Nevada. The below graph compares the percent of adults diagnosed with diabetes in Nevada and in the U.S. overall. Year after year, diabetic adults in Nevada continues to climb. Anything that can be done to control the symptoms and progression of diabetes should be explored.



(Source: Centers for Disease Control and Prevention(2016) and Nevada State Office of Rural Health, 2017)

Based on the most current available data, the prevalence of diabetes, obesity, and physical inactivity are compared to the national averages. While diabetes prevalence is higher in Nevada, obesity prevalence is lower than the national average.

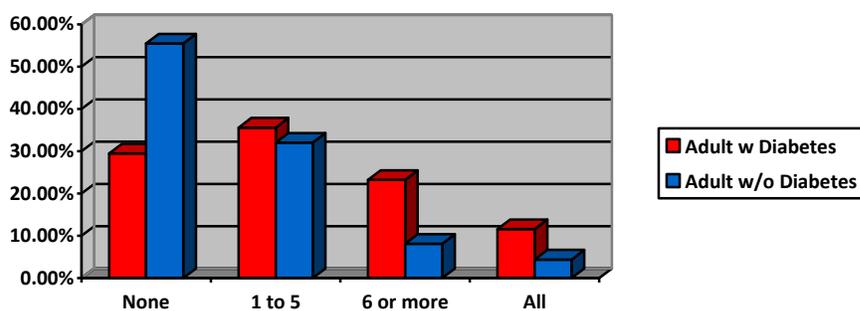
Indicator	Nevada	US
Diabetes prevalence 2013	9.0	7.2
Obesity prevalence 2013	24.6	28.7
Physical inactivity prevalence 2013	21.36	26.1
Tobacco use 2018	16.5	
Excessive drinking 2018	17.6	

Source: Nevada Instant Atlas <https://med.unr.edu/statewide/instant-atlas>. Office of Statewide Initiatives, University of Nevada, Reno School of Medicine (2018).

A large body of research exists regarding the biologic link between diabetes and periodontal disease and supports that chronic hyperglycemia that occurs in diabetes leads to an exaggerated immune-inflammatory response to the oral pathogens that results in rapid and severe destruction of the periodontal tissues. Oral bacteria and plaque cause inflammation that develops into gingivitis and if untreated can lead to destruction of the periodontal tissues and bone loss. In diabetic patients, this normal response is exaggerated by the micro and macrovascular changes that are caused by glycemic changes in the body. Gingivitis can lead to periodontal disease that is clinically determined by evidence of gingival attachment loss, breakdown of periodontal ligament fibers, and resorption of alveolar bone. One condition exacerbates another and compounds available treatment options. Patients may not notice the oral symptoms of their diabetic condition until they experience tooth loss, mobility, and periodontal infections that affect their quality of life, functional ability, nutritional choices, comfort, self-confidence, and social interactions.

Periodontitis or the loss of bone and tissue surrounding the teeth has been denoted the sixth complication of diabetes for both type 1 and type 2 diabetes. The other five complications are retinopathy, neuropathy, nephropathy, cardiovascular disease and peripheral vascular disease. (Loe, H. (1993). Periodontal Disease: The sixth complication of diabetes mellitus. *Diabetes Care*, 16(1), 329-334. doi:10.2337/diacare.16.1.329)

According to the pooled 2012 and 2014 BRFSS, Nevada Adults with diabetes had a higher incidence of tooth extraction due to gum disease. See below chart.



While preventative care is not a covered Medicaid service for adults, dental extractions are payable through the current system. Multiple extractions are not only costly to the Medicaid system but have far reaching implications as the nutritional status, mental health, and chronic disease condition of a patient diminish with oral infections, numerous extractions, and eventual edentulism and result in higher incidence of hospitalizations and medical expenses. Periodontal therapy reduces bacterial burdens, improves the health of the connective tissue around teeth, reduces oral inflammation, curtails pain caused by infection, and restores longevity to the teeth which improves a patient’s self-efficacy, ability to ingest nutritionally rich foods, overall quality of life, and increases the patient’s ability to be a productive member of society.

Periodontal Disease and Diabetes

In non-diabetic patients, periodontitis has been linked to a five times greater increase in HbA1c levels when compared to a baseline patient without periodontitis. (Demmer, R.T., Desvarieux, M., Holtfreter, B., et.al. Periodontal status and A1C change: longitudinal results from the study of health in Pomerania (SHIP). *Diabetes Care*. 2010; 33:1037-1043.)

Patients with Type 2 diabetes were 2.8 times more likely to have periodontal disease defined by clinical attachment loss, and 3.4 times more likely defined by radiographic bone loss. (Kumar, V., Kumar, K., Gafoor, A., Santhosh, V.,

Evaluation of Subgingival Microflora in Diabetic and Nondiabetic Patients. J Contemp Dent Pract. 2012; 13(2): 157-162.)

There is evidence to support periodontal infection/severe periodontitis having an adverse, yet modifiable, effect on glycemic control. (Annals of Periodontology, 2001)

Nevertheless, this relation can be reversed through periodontal treatment. Stewart, et.al demonstrated that following periodontal therapy and removal of gingival inflammation, the glycemic control of type 2 diabetic adults improved as indicated by a decrease in HBA1c levels. (Stewart, J., Wager, K., & Friedlander, A. (2002). The effect of periodontal treatment on glycemic control in patients with type 2 diabetes mellitus. Journal of Clinical Periodontology, 28(4).)

Current Treatment Options for Adults in Nevada Medicaid

Below is a list of dental procedures that are currently provided through Nevada Medicaid to adult patients. There are several unknowns in calculating a final cost that may be associated with an individual diabetic patient. Patients may have all or several teeth extracted in a single year. Depending on the presentation of the patient, several radiographs and several examinations may be performed if the patient visits different offices as symptoms arise.

Dental Procedures Covered for Adults Regardless of Chronic Disease Status		
D0140	Limit Oral Eval Problem Focus	33.24
D0220	Intraoral Periapical First	18.86 (*x)
D0330	Panoramic Image	41.24
D0120	Periodic Oral Evaluation	33.24
D0210	Intraoral Complete Film Series	58.94
D0270	Bitewings-three images	11.79
D4355	Full Mouth Debridement	74.83
D5110	Dentures Complete Maxillary	615.00
D5120	Dentures Complete Mandible	615.00
D5410	Dentures Adjust Cmplt Max	40.99
D5422	Dentures Adjust Cmplt Mand	40.99
D7140	Extraction Erupted Tooth/ECR	45.09 (*x)
D7210	Rem Imp Tooth Remov Soft Tiss-Extraction	87.12(*x)
D7250	Tooth Root Removal	82.00 (*x)
D7310-D7320	Alveoplasty with and without extraction	86.10 to 157.85 (per site or per extraction site)

Proposed Dental Treatments for Adults Diagnosed with Diabetes

Under this proposed bill, periodontal dental services will be provided for diabetic adults that will model the periodontal treatments available to pregnant adult women under the current Medicaid plan. The goal of additional dental treatment is to eliminate oral bacteria and active infection from the periodontal tissues that surround and support the patient's dentition.

As indicated by the below treatment schedule, an oral evaluation that focuses on the health of the gums and surrounding bone levels will provide baseline data and indicate which treatment option is most appropriate based on the patient's oral hygiene and disease status.

For newly diagnosed diabetic patients with good oral hygiene, they will receive treatment in option A which provides adult dental cleaning.

For diabetic patients with layers of calculus that make it difficult to perform an exam, the D4355 (dental debridement) will be needed before an assessment can be completed. The debridement code is currently covered while the periodontal evaluation code is not.

For the general diabetic patient with gum recession and bone loss, they will receive treatment in option B which provides a deep cleaning, maintenance exams, root planning, and sub-gingival curettage.

Depending on the severity of the patient's diabetic status and oral hygiene, limited extractions of hopeless teeth that are periodontally involved beyond the point of osseous surgery or bone grafts may need to be completed. However, extractions would be limited and minimized as the overall goal of periodontal therapy would be to improve the health of the periodontal tissues and save as many teeth as possible.

Diabetic Patient Initial Exam			
D4355	Full mouth debridement	Indicated only if exam is not possible due to excessive calculus	Currently provided to adults
D0180	Comprehensive Periodontal Evaluation	(one unit every 12 months)	New code and rate: \$20
D0210	FMX	(one unit per 36 rolling months)	Currently provided to adults
D0274	Dental Bitewings four films-during recall visits	(one unit per 6 months)	Currently provided to adults
Based on initial Exam (D0180) Either Treatment Plan A or B:			
Treatment Plan A			
D1110	Dental Prophylaxis Adult	(one unit per 6 months)	Current Rate:

			\$49.81
D0120	Periodic Oral Evaluation	(one unit per 6 months)	Currently provided to adults
D0411	HbA1c in-office point of service testing	(one unit per 6 months)	New code and rate: \$20
Treatment Plan B			
	Note: Only 4 <u>total</u> quadrants of either D4341, and/or D4342 should be billed on the date of service. D4341 and D4342 are site specific. This service will be followed by D4910.		
D4341	Periodontal Scaling and root planning—four or more teeth per quad	(4 total quadrants per 36 months of either 4341 and/or 4342) *limit 2 quadrants per day	Current Rate: \$102.91
D4342	Periodontal Scaling and root planning—one to three teeth per quad	(4 total quadrants per 36 months of either 4341 and/or 4342) *limit 2 quadrants per day	Current Rate: \$102.91
D4910	Periodontal Maintenance Procedure	(91 days after D4341 OR D4342 would be available 1 unit per 91 days)	Current Rate: \$40.99
D0411	HbA1c in-office point of service testing	(one unit per 90 days)	New code and rate: \$20

Potential Cost Savings

Exact cost savings for Nevada are difficult to pin point at this time. Nevertheless, by offering prophylaxis treatments to adults with diabetes, Medicaid would save a portion of the expense incurred for adult examinations, x-rays, extractions, and removable prosthesis and use these resources to instead save the patient's dentition through oral hygiene care.

Recent studies have established a link between periodontal services and quantifiable savings in medical care and a reduction in hospital admissions for patients with diabetes. According to a 2012 Cigna study, diabetic patients that received proper periodontal treatment saved the insurance company an average of \$1,292 or 27.6% in annual medical savings. Furthermore, Cigna found that customers that received periodontal services had 67% lower hospital admissions rates and 54% lower emergency room use. (Cigna 2013 National Segment Client Forum).

This study was confirmed by Jeffcoat, M., et al. in 2014 through a study that demonstrated that periodontal treatment in patients with chronic diseases (diabetes, coronary artery disease, and cerebral vascular disease) and pregnancy resulted in decreased medical costs and hospitalizations. In diabetic patients, a 40.2% or \$2,840 decrease in annual medical costs was seen and in pregnant patients, a 73.7% or 2,433 decrease in annual medical costs was demonstrated. (Jeffcoat, M. K., Jeffcoat, R. L., Gladowski, P. A., Bramson, J. B., & Blumm, J. J. (n.d.). Impact of periodontal therapy on general health: evidence from insurance data for five systemic conditions. American Journal of Preventative Medicine 2014; 47(2), 166-174.)

Furthermore, what is increasingly evident is that by reducing adult dental benefits other medical costs increase. In 2009, California Medicaid removed their comprehensive dental benefits for adults which resulted in an increase of 1,800 emergency department visits. (Singhal A, Caplan DJ, Jones MP, Momany ET, Kuthy RA, Buresh CT, Isman R, Damiano PC. Eliminating Medicaid adult dental coverage in California led to increased dental emergency visits and associated costs. Health Aff (Millwood).2015;34(5):749-56)

Policy Goals

The overall goal of the policy is to:

- Proactively implement a strategy that would reduce medical expenses for the adult diabetic population which is currently 9.6% of the Nevada population(<http://stateofobesity.org/diabetes/>)
- Increase population-based services for those with chronic disease such as diabetes
- Create a partnership between physicians and dentists to improve both oral and systemic treatment by focusing coordination of care
- Improve glycemic control and overall health of diabetic patients through periodontal treatments
- Demonstrate that there is a link between periodontal care/maintenance and a reduction in healthcare costs in adults with diabetes.

Support

Healthy People 2020 Goals

- Diabetes-8
“Increase the proportion of persons with diagnosed diabetes who have at least an annual dental examination.” Goal: 61.2% Baseline: 55.6% of the population aged 2 years and over with diagnosed diabetes had been to the dentist in the past year, as reported in 2008.
- Diabetes-15
“Increase the proportion of persons with diagnosed diabetes who receive formal diabetes education.” Goal: 62.5% Baseline: 56.8% of adults aged 18 and over with diagnosed diabetes reported they ever received formal diabetes education in 2008.
- Oral Health-4
“Reduce the proportion of adults who have ever had a permanent tooth extracted because of dental caries or periodontal disease.” Goal: 68.8% Baseline: 76.4% of adults aged 45 to 64 years had ever had a permanent tooth extracted because of dental caries or periodontal disease in 1999-2004

- Oral Health-5
 “Reduce the proportion of adults aged 45 to 74 years with moderate or severe periodontitis.” Goal: 40.8%
 Baseline: 47.5% of adults aged 45 to 74 had moderate or severe periodontitis in 2009-2010

World Dental Federation and International Diabetes Federation

- In 2007, the World Dental Federation and International Diabetes Federation signed a joint declaration to “include prevention of oral disease and promotion of oral health as an essential component of diabetes management.”

I look forward to speaking with you and answering any questions that you may have regarding this proposal. Thank you for your consideration.

References

1. American Academy of Periodontology. (2001). Guideline for Periodontal Therapy. *Journal Periodontal*, 72, 1624-1628. Retrieved from http://www.aapd.org/media/policies_guidelines/e_periotherapy.pdf
2. American Diabetes Association, Economic Cost of Diabetes in the U.S. in 2017, <http://doi.org/10.2337/dci18-0007>
3. Berkey, D. B. and Scannapieco, F. A., Medical considerations relating to the oral health of older adults. *Special Care in Dentistry*; 2013. 33: 164–176
4. Cinar, A. B., & Schou, L. (2014). Health promotion for patients with diabetes: health coaching or formal health education? *International Dental Journal*, 64(1), 20-28. doi:10.1111/idj.12058
5. Demmer, R.T., Desvarieux, M., Holtfreter, B., et.al. Periodontal status and A1C change: longitudinal results from the study of health in Pomerania (SHIP). *Diabetes Care*. 2010; 33:1037-1043.
6. *Diabetes Research and Clinical Practice* , Volume 50 , Issue 1 , 27 - 34
7. Jeffcoat, M. K., Jeffcoat, R. L., Gladowski, P. A., Bramson, J. B., & Blumm, J. J. (n.d.). Impact of periodontal therapy on general health: evidence from insurance data for five systemic conditions. *American Journal of Preventative Medicine* 2014; 47(2), 166-174.)
8. Kumar, V., Kumar, K., Gafoor, A., Santhosh, V., Evaluation of Subgingival Microflora in Diabetic and Nondiabetic Patients. *J Contemp Dent Pract*. 2012; 13(2): 157-162
9. Loe H. Periodontal disease: The sixth complication of diabetes mellitus. *Diabetes Care*. 1993;16:329–34.
10. Moore, P. A., Orchard, T., Guggenheimer, J., & Weyant, R. J. (2000). Diabetes and Oral Health Promotion: A Survey of Disease Prevention Behaviors. *The Journal of the American Dental Association*, 131(9), 1333-1341. doi:10.14219/jada.archive.2000.0388
11. Nevada Instant Atlas <https://med.unr.edu/statewide/instant-atlas>. Office of Statewide Initiatives, University of Nevada, Reno School of Medicine (2018)
12. Sandberg, G. E., Sundberg, H. E., Fjellstrom, C. A., & Wikblad, K. F. (2000). Type 2 diabetes and oral health, a comparison between diabetic and non-diabetic subjects. . *Diabetes Research and Clinical Practice*, 50, 27-34.

13. Ship, J. (October 2003). Diabetes and oral health, an overview. *JADA*,134, 4S-10S.
14. Singhal A, Caplan DJ, Jones MP, Momany ET, Kuthy RA, Buresh CT, Isman R, Damiano PC. Eliminating Medicaid adult dental coverage in California led to increased dental emergency visits and associated costs. *Health Aff (Millwood)*.2015;34(5):749-56
15. Stewart, J., Wager, K., & Friedlander, A. (2002). The effect of periodontal treatment on glycemic control in patients with type 2 diabetes mellitus. *Journal of Clinical Periodontology*, 28(4)
16. Type 2 diabetes and oral health. Sandberg, Gun E et al.
17. U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion. *Healthy People 2020*. Washington, DC: U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion, 2010.