Volunteerism among Dental Hygienists: The Relationship between a Practice Act Incentive, Behaviors, Perceptions and Motivational Orientations

Sandra D. Wilkie, RDH, MS; JoAnn R. Gurenlian, RDH, MS, PhD; Jacqueline J. Freudenthal, RDH, MHE

Abstract

Purpose: Thirteen states in the nation authorize dental hygienists to satisfy re-licensure requirements in part, by performing pro bono oral health services in lieu of participating in continuing education courses This study compared registered dental hygienists' donations of time and professional expertise, perceptions of volunteerism and motivational orientations as they practice in both the presence and absence of a practice act statute intended to incentivize volunteerism.

Methods: Volunteer behaviors, perceptions and motivational orientations of a non probability sample of 316 dental hygienists actively licensed by the states of Idaho or Utah, were assessed using an online survey which included the Self Determination Theory General Causality Orientations Scale (GCOS). Survey Monkey results were analyzed using Mann Whitney U tests, Chi-Square analysis and an Independent Samples t-test at the 0.05 level of significance.

Results: No statistically significant differences were found between dental hygienists' volunteer behaviors, perceptions of volunteerism or scores on the GCOS Autonomy and Impersonal subscales in the 2 states studied. Statistical analysis of dental hygienists' mean scores on the GCOS measure of Controlled motivational orientation yielded a significant difference ($p=0.001$) among Utah and Idaho dental hygienists.

Conclusion: Dental hygienists require evidence based practice statutes and regulations that keep pace with the need to provide universal access to comprehensive oral care. Additional research is required to determine the effectiveness of legislation intended to encourage registered dental hygienists' altruistic expressions. Dental hygienists are frequently unaware of opportunities to volunteer their services and how state practice act regulations impact those opportunities.

Keywords: volunteerism, dental hygienists, practice acts, motivations, incentives, self determination theory, general causality orientations scale

This study supports the NDHRA priority area, **Health Services Research:** Identify how public policies impact the delivery, utilization, and access to oral health care services.

Introduction

The failure of the nation's infrastructures to satisfy the oral health needs of isolated, underprivileged or impaired populations is well documented.[1-7] In response to these needs, many state dental boards have organized volunteer systems and ratified practice act provisions that encourage dentists and dental hygienists to provide services to disadvantaged and underserved populations within their communities.[6-17] Some licensing boards have relaxed or suspended direct supervision requirements allowing oral health professionals unencumbered access to needy populations.[11-14] In other regions, state officials offer reduced or no cost volunteer licenses to dentists and dental hygienists willing to provide charitable care to underserved populations in qualified locations.[8,11-13,16] A few states also provide liability insurance and legal protection for dental professionals when they volunteer.[17]

In select states, providing pro bono care or freely presenting oral health education to indigent or critical need populations through nonprofit agencies and organizations are options for satisfying the continuing education requirements necessary for oral health professionals to demonstrate continued professional competence.[9,13,14,16,18,19] Under these circumstances, dentists and dental hygienists can apply their professional expertise while benefiting those in need. Cultural competence is enhanced when services are provided to diverse populations in nontraditional settings. In this sense, volunteering in a professional capacity closely parallels the outcomes of academic service learning.[20]

Of the states requiring continuing education as a condition to maintain a license to practice dental hygiene, thirteen presently recognize specified volunteer activities as a suitable alternative to educational course work.[9,10] Arizona, Delaware, Florida, Georgia,

Idaho, Illinois, Minnesota, Nevada, Ohio, Oklahoma, Oregon, South Dakota and West Virginia, all afford dental hygienists the option of performing a specified number of volunteer hours per licensing cycle to satisfy between 1 to 10 hours of the requisite number of continuing education hours.[9] To alleviate deficiencies in the existing health care system, it is important for state professional licensing boards to understand exactly how and to what extent, authority can be used to successfully engage dental hygienists in community service activities. Despite extensive exploration of this subject area, the phenomenon of volunteerism has been understudied in populations comprised specifically of dental hygienists. There is limited understanding of the factors which contribute to the decision of dental hygienists to volunteer professional services to the disadvantaged and underserved. A solitary investigation designed to evaluate this populations' views of mandatory requirements for community service was conducted by Bhayat et al among South African oral hygienists.[21] They concluded, stringent mandates can engender negative attitudes toward humanitarian service, and ultimately be counterproductive to their intended purpose.[21] Similar outcomes were reached by comparable investigations, conducted among populations other than dental hygienists.[21-26] Researchers have found community service mandates can engender negative attitudes toward humanitarian service and ultimately be counterproductive to the intended purpose.[21-26] Legislation designed to effectively promote volunteerism, must ensure "volunteers" have the individual freedom to decide when, where and how long the service will continue.[21-25]

According to the Self-Determination Theory (SDT) of human motivation and behavior, the ideal environment for responsible behaviors such as volunteering to take root and flourish, are those that ensure autonomy while allowing for the interaction of both intrinsic and extrinsic influences.[26,27] In addition to addressing both intrinsic and extrinsic motivations, the constructs of SDT account for the role external forces and social contexts play in facilitating desirable and responsible behaviors such as volunteering.[26-31]

The basic premise of SDT is that human beings are naturally prone to intrinsic or autonomous motivation and self-regulation which are the sources of personal creativity, accountability, well-being and lasting change.[30-32] Depending upon one's unique response to various environmental factors, an individual's motivational orientation may be controlled to various degrees by external forces.[27] Deci and Ryan consider people dominated by extrinsic rewards, punishments or the expectations of others to have controlled motivational orientations.[33] Others feel ineffective, even helpless or are simply content to maintain the status quo.[30-33] In terms of SDT, such individuals are amotivated and have an impersonal motivational orientation.[33] The instrument designed by Deci and Ryan to measure these subscales of personal motivation is the General Causality Orientations Scale (GCOS).[30-33]

If dental hygienists are predominantly motivated by intrinsic forces to provide pro bono services, it is possible that an occupational licensing provision intended to ignite and fuel volunteer activity amongst this population may actually extinguish existing intrinsic or internal motivations for prosocial behaviors.[27] Conversely, for dental hygienists who respond to external incentives or who are amotivated, a state authorized benefit may kindle personal desires to provide volunteer service.[27]

Volunteering is a complex prosocial phenomenon that defies simple classification. For the purposes of this research, volunteerism was defined as: dental hygienists choosing to provide educational or therapeutic methods to prevent or treat oral diseases and promote oral health "in recognition of a need, with an attitude of social responsibility and without concern for monetary profit, going beyond one's basic obligations."[34,35]

The individuals identified as being most likely to volunteer are middle aged, female, college graduates, who earn above average levels of income.[36-38] As the demographic profile of a volunteer is compared to the group characteristics of dental hygienists, it is clear, these oral health professionals possess both the personal assets and resources that enable them to volunteer.[39] An early investigation of prosocial practices conducted among graduates of the University of Iowa's dental hygiene program, Hunter found 57% of this population rendered some type of volunteer service annually.[40] Marsh's 2011 exploration of volunteerism among licensed New York dental hygienists determined 57.4% of dental hygienists volunteered in a professional capacity at least annually.[35] Based upon data for the year 2010, only 26.3% of the general population in the U.S. volunteers.[41] According to the 2007 American Dental Hygienists' Association (ADHA) survey, 45.2% of dental hygienists report involvement in some type of volunteer activity related to the profession.[39] Although the volunteer rate is considerably higher than that of the overall population, almost half of the dental hygienists in this country do not volunteer.[39]

The implications of permitting dental hygienists to satisfy re-licensure requirements by performing donated oral health services have not been investigated. While crediting or "rewarding" oral health professionals with continuing education hours for the performance of prosocial acts seems to be an ideal strategy to sustain and improve the rate of volunteerism, there is no empirical support for this arrangement. This research compared the donations of time and professional expertise, perceptions of volunteerism and motivational orientations of dental hygienists when they

volunteer professional services in both the presence and absence of a practice act statute intended to incentivize volunteerism.

Methods and Materials

Upon approval from the Idaho State Human Subjects Committee a quasi-experimental, non-equivalent control group design was used to test the null hypotheses of no differences in the dependent variables of volunteer hours performed; individual perceptions of volunteerism; and, dominant motivational orientations among dental hygienists. The target population was 3,717 registered dental hygienists from 2 neighboring geographical locations, with very similar environmental, economic and demographic characteristics. The major distinguishing feature was a difference in state regulation of continuing education requirements and volunteer hours.

Forty-eight states in the nation require continuing education as a condition for professional license renewal.[10] The state of Utah is 1 of 35 that does not currently recognize volunteer activities as an indication of continued competence.[9] Alternatively, Idaho accepts volunteer service as a form of continuing education.9 Registered dental hygienists endorsed by the states of Utah and Idaho were also selected as the cohorts for this research because in a state by state comparison of volunteer rates, these 2 regions were ranked proportionally, first and second highest in the nation.[41]

With the support of both state dental hygiene professional associations, information procured from the state licensing boards, emails, text messages and postcards were sent to actively licensed dental hygienists in Utah and Idaho. These communications invited them to participate, presented the purpose of the study and outlined procedures for accessing and completing an online survey. The software, SurveyMonkey® was used to document participant consent and collect the information required to address the research questions.

The online survey was comprised of a combination of numerical, close-ended questions and semantic differential rating scales. The survey features were designed to assess the population's descriptive characteristics, volunteer behaviors perceptions of volunteering.

The content and face validity of these aspects were substantiated by specific literature citations.[23,36,42-51] The SDT General Causality Orientations Scale (GCOS) was used to assess the strength of 3 distinct motivational orientations among the study population.[33] Twelve items presented hypothetical sketches and provided 3 possible reactions to each situation described. The 3 subscales for each measure corresponded to an Autonomy, Controlled or an Impersonal Motivational Orientation. The stability and reliability of the research instrument was evaluated using test-retest reliability and a coefficient of 0.83 was achieved. At the conclusion of the 5-week survey period, the data collected was exported from SurveyMonkey®, quantified and statistically tested with a significance level of 0.05.

Results

Four hundred and twenty-eight (11.5%) dental hygienists actively licensed by the states of Utah and Idaho responded to the survey. Of the total number of survey respondents, 316 participants provided usable study data.

The majority of respondents were female, between the ages of 21 to 40 years with dependents. Two-thirds of the study participants were licensed to practice in Utah while one-third were licensed in Idaho. The plurality of respondents worked part-time, had between 1 to 9 years of professional practice experience and attained a baccalaureate or graduate degree. Almost two-thirds of the respondents were not members of the American Dental Hygienists' Association. Nearly half (45.2%) of the dental hygienists surveyed were uncertain if time spent volunteering professional services was an option for satisfying some of the continuing education hours required for professional licensure renewal.

The inclinations of registered dental hygienists to volunteer in a professional capacity appear in Table I. Although Utah dental hygienists seemed somewhat more willing to volunteer services to underserved populations when compared to Idaho dental hygienists, Mann Whitney-U analysis of this dimension revealed no statistically significant difference in the willingness of dental hygienists to volunteer.

Study participants were asked how many hours were typically spent providing pro bono oral health services each year. As evidenced in Table I, dental hygienists in the state of Utah volunteered in a professional capacity a mean of 51.9 hours annually and in the state of Idaho 15.4 hours annually. Comparing the pro bono hours of professional dental hygiene service in the most recent twelve-month period, the mean number for those licensed by the state of Utah was 20.4 hours. For those licensed by the state of Idaho the number was 17.8 hours. Mann Whitney U tests were conducted on both measures of time spent volunteering in a professional capacity. The results revealed no statistically significant difference in the number of hours volunteered in a professional capacity when the practice occurred in a state where volunteer service is sanctioned by the dental licensing board as compared to when they practice occurred in a state that does not permit

Table I: Inclinations to Volunteer and Pro bono Hours

		Inclinations to Volunteer	Pro bono Hours Annually	Pro bono Hours This Year
Idaho	Mean	4.2	15.4	17.8
	Median	4.00	6.00	5.00
	Standard Deviation	-	23.757	59.695
	N	108	108	109
	Mean Rank	152.70	160.68	162.88
Utah	Mean	4.3	51.9	20.4
	Median	4.00	5.00	5.00
	Standard Deviation	-	243.753	66.039
	N	206	206	206
	Mean Rank	160.01	155.83	155.42
Total	Mean	4.2	39.4	19.5
	Median	4.00	5.50	5.00
	Standard Deviation	-	198.517	63.831
	N	314	314	315
Test Statistic	Mann-Whitney U	10606.00	10781.00	10695.00
	p	0.457	0.651	0.482

some measure of volunteer service to satisfy re-licensure requirements.

A summary of dental hygienists' attitudes regarding the importance of volunteerism as well as the significance of certain personal, motivational, and situational antecedents of volunteer behaviors appear in Table II. According to this table, dental hygienists in both states strongly affirmed the importance of volunteerism as a means of meeting unmet oral health needs or improving access to oral health care. Both Utah and Idaho dental hygienists categorically acknowledged the opportunity to serve within local communities was a personally meaningful, positive, intrinsically rewarding experience and promoted a positive public perception of the profession. Disagreement with extrinsically rewarding dental hygienists for prosocial efforts was a prevailing theme among all respondents. Utah dental hygienists indicated slightly stronger agreements for the statement, 'Practice act requirements for the direct or general supervision of dental hygiene functions are a deterrent to dental hygienists volunteering in a professional capacity.' Mann Whitney U analysis of the mean ranks of disagreement or agreement with statements relative to volunteerism revealed no statistically significant difference between dental hygienists licensed in the 2 states of interest.

The survey instrument asked dental hygienists to select the factor most likely to prevent volunteering professional services. Over 80% identified time constraints due to family, work or school obligations as the main obstacle to involvement in volunteerism. The remaining respondents (18.9 %) indicated a lack of volunteer opportunities as the leading cause of non-participation in oral health service activities. Chi Square analysis of the nominal data collected revealed views of barriers to volunteerism were not significantly different between dental hygienists licensed by the states of Utah and Idaho.

Of the factors most likely to incite dental hygienists to participate in oral health service activities, 44.1% of respondents identified credit hours to satisfy state professional licensing requirements as the most motivating factor. State licensing endorsements were cross tabulated with data identified motivating factors: a sense of personal satisfaction, opportunities for professional development, social networking opportunities, community approval or recognition and credit hours to satisfy state professional licensing. Chi Square analysis of this nominal data revealed dental hygienists licensed by the states of Idaho and Utah did not have significantly different perceptions of the factors most likely to incite volunteer behaviors.

Study participants were asked to consider the reasons dental hygienists might volunteer in a professional capacity. As shown in Table III, more dental hygienists in the state of Idaho as compared to the state of Utah, felt the opportunities to learn something new and earn credit hours to satisfy licensing requirements were extremely important motives for providing pro bono services. Idaho dental hygienists also had higher rankings with regard

Table II: Personal Opinions of Volunteerism

Volunteerism	State Endorsement	n	Mean	Median	Mean Rank
Promotes a Positive Public Perception of the Profession	Idaho	108	4.5	5.00	164.17
	Utah	207	4.4	5.00	154.78
	Total	315	4.4	5.00	
Should be Extrinsically Rewarded	Idaho	108	2.4	2.00	166.49
	Utah	207	2.3	2.00	153.57
	Total	315	2.4	2.00	
Requirements for Direct or General Supervision Hinder	Idaho	109	3.5	4.00	147.64
	Utah	207	3.7	4.00	164.22
	Total	316	3.6	4.00	
A Reward In and of Itself	Idaho	109	4.4	5.00	167.54
	Utah	206	4.3	4.00	152.95
	Total	315	4.4	4.00	
Meets Unmet Oral Health Needs	Idaho	109	4.2	4.00	165.24
	Utah	206	4.1	4.00	154.95
	Total	315	4.1	4.00	
A Positive Experience	Idaho	109	4.4	5.00	159.18
	Utah	207	4.5	5.00	158.14
	Total	316	4.5	5.00	
Personally Meaningful/ Satisfying	Idaho	109	4.5	5.00	160.06
	Utah	206	4.5	5.00	156.91
	Total	315	4.5	5.00	

Volunteerism	Mann-Whitney U Test	p
Promotes a Positive Public Perception of the Profession	10512.00	0.324
Should be Extrinsically Rewarded	10261.500	0.209
Requirements for Direct or General Supervision Hinder	10097.500	0.109
A Reward In and of Itself	10187.500	0.134
Meets Unmet Oral Health Needs	10546.500	0.305
A Positive Experience	11207.00	0.913
Personally Meaningful/Satisfying	11003.00	0.741

to volunteerism being a societal obligation and a competency requirement, expectation or option. Alternatively, more Utah dental hygienists viewed the opportunities to meet new people, enhance one's resume and find a meaningful use of discretionary time as extremely important reasons to volunteer. Mann Whitney U analysis of the mean ranks of the importance of statements concerning the causes of volunteerism revealed there was no statistically significant difference between dental hygienists licensed in these 2 states.

The SDT GCOS was used to assess the strength of 3 distinct motivational orientations among the study population.[33] Differences in the sample sizes for the comparisons occurred between the 3 subscales as not every study participant completed all survey items in this section.

Group statistics for the GCOS data set were calculated and Table IV provides the results of this statistical analysis. Although the measures of Autonomy, Controlled and Impersonal Motivational Orientations were ordinal in nature, the overall scores of these subscales were the sum of 12, 7-point Likert scales. Therefore, the GCOS scores were treated as continuous variables and a parametric independent samples t test was used in the comparison of the mean GCOS scores of respondents.

Prior to conducting the independent samples t test, to ensure the 2 variances on each subscale

Table III: Reasons for Volunteering

Volunteering	State Endorsement	N	Mean	Median	Mean Rank
An Opportunity to Learn Something New	Idaho	108	3.8	4.00	159.56
	Utah	207	3.7	4.00	157.19
	Total	315	3.7	4.00	
An Opportunity to Earn Credit Hours to Satisfy Professional Licensing Requirements	Idaho	109	3.9	4.00	163.56
	Utah	206	3.8	4.00	155.06
	Total	315	3.8	4.00	
An Oral Health Professional's Obligation to Society	Idaho	109	3.7	4.00	165.33
	Utah	207	3.6	4.00	154.90
	Total	316	3.6	4.00	
A Moral Obligation	Idaho	108	3.6	4.00	156.66
	Utah	205	3.6	4.00	157.18
	Total	313	3.6	4.00	
An Opportunity to Meet New People	Idaho	108	3.8	4.00	150.78
	Utah	206	3.9	4.00	161.02
	Total	314	3.9	4.00	
Increases Access to Oral Health Care	Idaho	109	4.5	5.00	154.91
	Utah	204	4.5	5.00	158.12
	Total	313	4.5	5.00	
An Opportunity to Enhance One's Resume	Idaho	109	3.8	4.00	149.85
	Utah	206	3.9	4.00	162.31
	Total	315	3.9	4.00	
A Meaningful Use of Discretionary Time	Idaho	108	3.6	4.00	148.81
	Utah	207	3.9	4.00	162.80
	Total	315	3.8	4.00	
A Requirement, Expectation or Option of Employers, Schools or Licensing Boards	Idaho	109	3.3	3.00	160.15
	Utah	207	3.2	3.00	157.63
	Total	316	3.2	3.00	

Volunteering	Mann Whitney-U Test	p
An Opportunity to Learn Something New	11009.500	0.812
An Opportunity to Earn Credit Hours to Satisfy Professional Licensing Requirements	10620.500	0.400
An Oral Health Professional's Obligation to Society	10537.000	0.311
A Moral Obligation	11033.000	0.959
An Opportunity to Meet New People	10398.500	0.302
Increases Access to Oral Health Care	10890.000	0.727
An Opportunity to Enhance One's Resume	10339.000	0.216
A Meaningful Use of Discretionary Time	10185.000	0.171
A Requirement, Expectation or Option of Employers, Schools or Licensing Boards	11101.500	0.806

were equal, the data was subjected to Levene's Test for Equality. In each instance, the resulting p value was greater than the critical value (0.05). Therefore, equal variances were assumed for all 3 GCOs subscales. The t statistic and degrees of freedom were also calculated for each subscale. Table IV shows there was no statistically significant difference in the average GCOS scores for Autonomy

Table IV: Motivational Orientations

GCOS	State Endorsement	n	Mean	Standard Deviation
Autonomy	Idaho	103	67.5	8.63516
	Utah	200	66.2	9.34977
	Total	303		
Controlled	Idaho	103	46.7	8.62872
	Utah	201	50.0	7.74241
	Total	304		
Impersonal	Idaho	103	37.1	9.50470
	Utah	201	37.7	9.95291
	Total	304		

	Levene's Test for Equality of Variances		t-test for Equality of Means	
	F	p	t	df
Autonomy	0.852	0.357	1.190	301
Controlled	1.065	0.303	-3.348	302
Impersonal	0.348	0.556	-0.492	302

	Independent Samples t-test for Equality of Means		
	p	Mean Difference	Standard Error Difference
Autonomy	0.235	1.31544	1.10533
Controlled	0.001	-3.26687	0.97580
Impersonal	0.623	-0.58499	1.18800

and Impersonal subscale measures between dental hygienists endorsed by the states of interest. However, there was a statistically significant difference in the measure of Controlled Motivational Orientation. Dental hygienists licensed by the state of Utah scored higher on this dimension of motivation in comparison to dental hygienists licensed by the state of Idaho.

Discussion

The study participants presented a demographic profile very much like the descriptions of dental hygiene populations in the literature.[21,35,39,40] Nonetheless, since this was a nonrandom sample survey data cannot be generalized beyond the target population. In addition to sampling error, this study was impacted by the bias of non-response error. The 11.5% response rate was below average. The failure of participants to be actively licensed to practice dental hygiene in Idaho or Utah and to provide responses in each section of the survey further reduced the size of the study sample. Despite these inherent research biases, 316 subjects provided valuable data to enhance understandings of volunteerism.[47-50] The results of this study were contrary to initial expectations of volunteer behaviors. Since dental hygienists licensed by the state of Idaho have the benefit of performing pro bono service in lieu of a portion of required continuing education hours, it was assumed they would perform a comparatively higher number of service hours. However, the dental hygienists of Utah volunteered more often and many respondents from Idaho were unaware of volunteerism as a continuing education opportunity. .

Nearly half (45.2%) of both the Utah and Idaho dental hygienists surveyed, were uncertain if time spent volunteering professional services was an option for satisfying some of the continuing education hours required to renew the license to practice. This outcome suggests when dental hygienists are unaware or do not have a clear understanding of the details of state practice acts, amendments intended to encourage volunteerism may have little to no bearing on the actual number of volunteer hours performed.

Further explanation of the pattern of a nonsignificant difference, is that practitioners licensed by the state of Idaho simply might not perceive the substitution of volunteer hours for continuing education hours to be a meaningful or personally beneficial incentive. Some comparative research has shown altruistic inclinations to volunteer or internal feelings of civic responsibility can be suppressed in the presence of extrinsic incentives or the external regulation of prosocial behaviors.[21,23,25,43,51-53]

The lack of no significant differences in dental

hygienists' perceptions of volunteerism were also unexpected. Both Utah and Idaho dental hygienists rated the opportunity to earn credit hours to satisfy professional licensing requirements as an important reason to volunteer. Nevertheless, there was consensus that pro bono hours performed as a requirement, expectation or option to prove competency was neither an unimportant nor an important reason for volunteering.

Utah and Idaho dental hygienists strongly agreed volunteering was 'a reward in and of itself 'as well as a positive, personally meaningful and satisfying experience. The majority disagreed with dental hygienists being extrinsically rewarded or compensated in any way for volunteer efforts. Yet, when asked which factor would most likely encourage volunteerism, 44.1% of Utah and Idaho dental hygienists selected "credit hours to satisfy state licensing requirements." Only 29.6% chose the response option: "a sense of personal satisfaction."

While these inconsistencies could be attributed to biases in the research, they support the literary findings. Although individuals may report altruistic feelings or intrinsic factors are the impetus of prosocial intentions and behaviors, a willingness to volunteer may also be influenced by egoistical feelings activated by extrinsic forces.[26,42,51,52,54] SDT suggests a synergy between intrinsic and extrinsic factors must be encouraged if effective responsible human behavior is to be successfully stimulated.[30] According to the results of this study, while dental hygienists strongly identified with intrinsic factors as the motivations of prosocial behaviors and disapproved of rewarding or compensating dental hygienists for acts of volunteerism, respondents demonstrated support of external incentives.

The results of the GCOS portion of the survey instrument revealed the dominant Motivational Orientation among dental hygienists in both Utah and Idaho was Autonomy. This result suggests dental hygienists in the 2 states of interest respond to "aspects of the environment that simulate intrinsic motivation, tend to display greater self-initiation, seek activities that are interesting and challenging and take greater responsibility for his or her own behavior."[33] Therefore, simply increasing awareness of oral health needs and how practitioners can meet the needs, may be enough to encourage volunteerism in this population.

The only statistically significant difference between the 2 groups examined, were scores on the GCOS subscale of Controlled Motivational Orientation. Dental hygienists licensed by the state of Utah scored higher on this dimension of motivation when compared to dental hygienists licensed in Idaho. This result may reflect differences in supervision requirements between the 2 states. In this exploration of volunteerism more than 60% of the survey respondents agreed or strongly agreed, practice act requirements for the direct or general supervision of professional functions were a deterrent to dental hygienists volunteering in a professional capacity. In addition to requirements for ongoing education and training, another dental practice act provision of particular consequence to the volunteering practices of dental hygienists are state directives related to practice supervision.[55,56] Utah is a state where dental hygienists practice under general supervision requirements.[57] Oral hygiene services are only permitted when patients have been examined and treatment is prescribed by a licensed dentist.[57] When encumbered by direct or general supervision requirements, dental hygienists must rely on the good will of dentists to support efforts to provide pro bono care. Direct and general supervision requirements may also create restrictions as to when, how and where dental hygienists provide community service.[6,11-16]

Alternatively, practice acts stipulating direct access are much more conducive to dental hygienists volunteering professional services.[55,56] Presently, over half of the states in the nation, including the state of Idaho, permit dental hygienists direct access to some degree.[55,56,58] Direct access provisions allow dental hygienists' to "initiate treatment based on his or her assessment of patient's needs without the specific authorization of a dentist, treat the patient without the presence of a dentist, and … maintain a provider-patient relationship."[56]

According to SDT, general supervision constraints would frustrate a dental hygienist's need for autonomy.[28,32] Such practice provisions orient dental hygienists to external control of behaviors, which could intrude on intrinsic motivations to provide community service.[21,23,25,43,51-53] Because such practice provisions discourage rather than encourage self-determination, dental hygienists subject to this influence may feel there are fewer opportunities to volunteer. Ultimately practitioners may become less involved in volunteering in a professional capacity. Conversely, direct access regulations are social factors with the potential to increase dental hygienists' intrinsic motivations for volunteerism.

Conclusion

The lack of significant difference in the number of volunteer hours between licensed hygienists in Utah and Idaho should not be construed to mean legislation related to the substitution of pro bono hours for continuing education hours fails to affect the volunteer practices of dental hygienists. Additional research is required to make realistic determinations as to the effectiveness of such legislation. This investiga-

tion contributes to the body of knowledge regarding volunteerism in society and accentuates the need for additional explorations of the extent to which practice act regulations encourage or discourage dental hygienists' altruistic decisions and actions.

Legislators and members of professional licensing boards should consider dominant motivational orientations of dental hygienists as they compose and ratify policies intended to mobilize this population to provide charitable oral health assessments, care and education. To address the current oral health care crisis in this country, dental hygienists are in need of evidence based practice statutes and regulations that keep pace with the objective of universal access to comprehensive oral care.

Sandra D. Wilkie, RDH, MS, is a Dental Hygienist at Roseman University of Health Sciences, College of Dental Medicine. JoAnn R. Gurenlian, RDH, MS, PhD is a Professor and Graduate Program Director in the Department of Dental Hygiene at Idaho State University. Jacqueline J. Freudenthal, RDH, MHE, is an Associate Professor, Department of Dental Hygiene, Idaho State University.

Acknowledgments

We gratefully acknowledge the Idaho and Utah Dental Hygienists' Associations, Idaho State University graduate students, staff, and faculty members, who provided invaluable support and assistance with this research. In particular, we recognize the vital contributions of statistician, Dr. Teri S. Peterson, and Graduate Faculty Representative, Dr. Chris Sanford. We also express our sincere appreciation to the registered dental hygienists who participated in this research.

References

1. Health, United States, 2011. U.S. Department of Health and Human Services. 2010.
2. Oral Health in America: A Report of the Surgeon General, chapter 1. U.S. Public Health Service. 2000.
3. National Call to Action to Promote Oral Health. U.S. Department of Health and Human Services, Public Health Service, National Institutes of Health, National Institute of Dental and Craniofacial Research. 2003.
4. 2020 Topics & objectives. Oral health. Overview. U.S. Department of Health and Human Services. 2012.
5. Oral health. Preventing cavities, gum disease, tooth loss, and oral cancers at a glance 2011. Chronic Disease Prevention and Health Promotion. Centers for Disease Control and Prevention. 2011.
6. Access to Care. Office of Student Affairs. American Dental Association [Internet]. 2010 [cited 2012 November 2]. Available from: http://www.ada.org/section/educationAndCareers/pdfs/access_to_care_infopak-2010.pdf
7. Dental hygiene. Focus on advancing the profession. American Dental Hygienists' Association [Internet]. 2005 [cited 2012 November 2]. Available from: http://www.adha.org/downloads/ADHA_Focus_Report.pdf
8. Gehshan S, Snyder A. Why public policy matters in improving access to dental care. *Dent Clin North Am*. 2009;53(3):573-589.
9. States Requiring Continuing Education for License Renewal. American Dental Hygienists' Association [Internet]. 2009 [cited 2013 October 24]. Available from: http://www.adha.org/resources-docs/7512_CE_Requirements_by_State.pdf
10. Facts About the Dental Hygiene Workforce in the United States. American Dental Hygienists' Association [Internet]. 2012 [cited 2013 October 24]. Available from: http://www.adha.org/resources-docs/75118_Facts_About_the_Dental_Hygiene_Workforce.pdf
11. American Dental Hygienists' Association. Stateline. *Access*. 2012;26(5):10.
12. American Dental Hygienists' Association. Stateline. *Access*. 2012;26(4):10-15.
13. American Dental Hygienists' Association. Stateline. *Access*. 2005;19(8):37-38.
14. American Dental Hygienists' Association. Stateline. *Access*. 2008;22(6):14-15.
15. American Dental Hygienists' Association. Stateline. *Access*. 2003;17(3):40.

16. American Dental Hygienists' Association. Stateline. *Access*. 2009;23(6):27.

17. Geletko KW, Beitsch LM, Lundberg M, Brooks RG. Reducing the impact of the health care access crisis through volunteerism: A means, not an end. *Am J Public Health*. 2009;99(7):1166-1169.

18. Law and rules. Ohio State Dental Board [Internet]. 2011 [cited 2013 January 9] Available from: http://www.dental.ohio.gov/pdfs/2011dpa.pdf

19. Other continuing education guidelines. Clinical-volunteer services. Continuing education. South Dakota State Board of Dentistry [Internet]. 2010 [cited 2013 January 9] Available from: https://www.sdboardofdentistry.com/licensure/continuingEducation.asp

20. Lautar CJ, Miller FY. Service-learning and dental hygiene: A literature review. *J Dent Hyg*. 2007;81(3):1-10.

21. Bhayat A, Yengopal V, Rudolph MJ, Naidoo U, Vayej A. Attitudes of South African oral hygienists towards compulsory community service. *Int J Dent Hyg*. 2008;6:8-12.

22. Metz E, Youniss J. A demonstration that school-based required service does not deter-but heightens-volunteerism. *Pol Sci Politics*. 2003;36:281-286.

23. Planty M, Bozik R, Regnier B. Helping because you have to or helping because you want to? Sustaining participation in service work from adolescence through young adulthood. *Youth Soc*. 2006;38(2):177-202.

24. Sobus MS. Mandating community service: Psychological implications of requiring prosocial behavior. *Law Psych Rev*. 1995;153:1-19.

25. Stukas AA, Snyder M, Clary EG. The effects of "mandatory volunteerism" on intentions to volunteer. *PsychSci*. 1999;10(59):59-64.

26. Shye S. The motivation to volunteer. A systemic quality of life theory. *Soc Indic Res*. 2010;98(2):183-200.

27. Ryan RM, Deci EL. Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *Am Psychol*. 2000;55(1):68-78.

28. Deci EL, Ryan RM. Intrinsic motivation and self-determination in human behavior. Plenum Press. New York, NY. 1985.

29. Deci EL, Ryan RM. Motivation, personality, and development within embedded social contexts: An overview of self-determination theory. In: R.M. Ryan (eds). The Oxford Handbook of Human Motivation. p 85-107.

30. Deci EL, Ryan RM. Self-determination theory: A macrotheory of human motivation, development, and health. *Can Psych*. 2008;49(3):182-185.

31. Deci EL, Flaste, R. Why we do what we do: The dynamics of personal autonomy. GP. Putnam's Sons. New York, NY. 1995.

32. Deci EL, Ryan RM. The general causality orientations scale: Self-determination in personality. *J Res Pers*. 1985;19:109-134.

33. University of Rochester. Self-determination theory. An approach to human motivation and personality. Questionnaires. The General Causality Orientations Scale. GCOS [Internet]. 2012 [cited 2012 November 2]. Available from: http://selfdeterminationtheory.org/questionnaires/10-questionnaires/46

34. Ellis SJ, Noyes KH. By the people, a history of Americans as volunteers. San Francisco, CA: Jossey-Bass Publishers. 1990. p 4.

35. Marsh LA. Dental hygienist attitudes toward willingness to volunteer care for the underserved population (Doctoral dissertation). Available from: ProQuest dissertations and theses database. 2011. (UMI No. 3451011).

36. Bussell H, Forbes D. Understanding the volunteer market: The what, where, who and why of volunteering. *Int J Nonprof Voluntary Sec Market*. 2002;7(3):244-57.

37. Brown E. The scope of volunteer activity and public service. *Law Contemp Probl*. 1999;62(4):17-42.

38. Volunteering in the United States-2011. U.S. Department of Labor Bureau of Labor Statistics. 2012.

39. Survey of dental hygienists in the United States. Executive summary. American Dental Hygienists' Association [Internet]. 2007 [cited 2012 November 2]. Available from: https://www.adha.org/resources-docs/7117_ADHA_Environmental_Scan.pdf

40. Hunter EL. Volunteerism of dental hygienists. *Dent Hyg*. 1978;52:535-540.

41. Volunteering in America. Corporation for National Community Service [Internet]. 2012 [cited 2012 November 2]. Available from: http://www.volunteeringinameri, ca.gov/rankings.cfm

42. Finkelstein MA. Intrinsic vs. extrinsic motivational orientations and the volunteer process. *Pers Individ Dif*. 2009;46:653-658.

43. Goette L, Stutzer A, Frey, BM. Prosocial motivation and blood donations: A survey of the empirical literature. *Transfus Med Hemother*. 2010;37(3):149-154.

44. Lacetera N, Macis M, Slonim R. Will there be blood? Incentives and substitution effects in prosocial behavior. *Economics Working Paper Series*. 2010;1-49.

45. Sundeen RA, Raskoff S, Garcia MC. Differences in perceived barriers to volunteering to formal organizations: Lack of time versus lack of interest. *Nonprofit Manag Leadersh*. 2007;17(3):279-300.

46. Brown E. The scope of volunteer activity and public service. *Law Contemp Probl*. 1999;62(4):17-42.

47. Esmond J, Dunlop P. Developing the volunteer motivation inventory to assess the underlying motivational drives of volunteers in Western Australia. CLAN WA Inc. [Internet]. 2004 [cited 2012 November 2]. Available from: http://biggestdifference.com/morevolunteers/resources/MotivationFinalReport.pdf

48. Clary EG, Snyder M. The motivations to volunteer: Theoretical and practical considerations. *Curr Dir Psychol Sci*. 1999;8(5):156-159.

49. Mowen JC, Sujan H. Volunteer Behavior: A hierarchal model approach for investigating its trait and functional motive antecedents. *J Consum Psychol*. 2005;15(2):170-182.

50. Hall MH. Measurement issues in surveys of giving and volunteering and strategies applied in the design of Canada's national survey of giving, volunteering, and participating. *NVSQ*. 2001;30(3):515-526.

51. Ariely D, Bracha A, Meier S. Doing good or doing well? Image motivation and monetary incentives in behaving prosocially. *Am Econ Rev*. 2009;99(1):1-17.

52. Frey BS, Oberholzer-Gee F. The cost of price incentives: An empirical analysis of motivation crowding-out. *Am Econ Rev*. 1997;87(4):746-755.

53. Frey BS, Goette L. Does pay motivate volunteers? Institute for Empirical Research in Economics, University of Zurich, Working Paper Series ISSN 1424-0459 [Internet]. 1999 [cited 2012 November 2]. Available from: http://fex-dev2.ethz.ch/eserv/eth:25512/eth-25512-01.pdf

54. Mannino C, Snyder M, Omoto A. Why do people get involved? Motivations for volunteerism and other forms of action. In: Dunning D, ed. Social motivation. New York, NY. Taylor & Francis Publishing. 2011. p. 127-146.

55. Dental hygiene practice act overview: Permitted functions and supervision levels by state. American Dental Hygienists' Association [Internet]. 2013 [cited 2013 October 24] Available from: http://www.adha.org/resources-docs/7511_Permitted_Services_Supervision_Levels_by_State.pdf

56. Direct access states. American Dental Hygienists' Association [Internet]. 2013 [cited 2013 October 24]. Available from: http://www.adha.org/resources-docs/7513_Direct_Access_to_Care_from_DH.pdfAmerican

57. Dentists and dental hygienist practice act. Division of Occupational and Professional Licensing. Utah.gov [Internet]. 2012 [cited 2013 January 4]. Available from: https://secure.utah.gov/datarequest/professionals/requestExemption.html

58. Administrative rules. Statues and administrative rules. Idaho State Board of Dentistry [Internet]. [cited 2013 January 4]. Available from: http://isbd.idaho.gov/rules.htm