

Use of Recommended Communication Techniques by Maryland Dental Hygienists

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Introduction

The oral health of Americans depends in large part on the effective transfer of research results to appropriate user groups – health providers, policy makers, other scientists and, most importantly, the public.^{1,2} Dental hygienists play a critical role in educating patients about their oral health and self care.³ The use of basic recommended communication techniques by health professionals has been shown to increase patient compliance. Thus, it is important that health care providers use recommended communication techniques to transfer or share the most current preventive information available with their patients.⁴

The challenge of providing adequate and appropriate communication in the patient-provider education process is more critical than ever as many individuals lack basic health literacy skills. According to the National Assessment of Adult Literacy (NAAL), over 36% of Americans aged 16 years and older have very limited health literacy.⁵ Those at highest risk for low levels of health literacy include those who also are at greatest risk for oral health problems: the poor, minorities and people age 65 and older.⁶⁻⁸ These and other factors such as being geographically remote from access to care pose enormous challenges for both patients and providers, and the array of skills required by both the individual patient and the health care provider to overcome these challenges is complex.⁹

Patient adherence to prevention and treatment regimens and patient outcomes are clearly linked to provider-patient communication.¹⁰ Health care providers can increase oral health literacy and improve health outcomes by providing current knowledge and skills for their patients in a manner that

enhances understanding and appropriate use of such information.¹¹⁻¹³ A lack of understanding and inappropriate or unexpected responses on the part of the patient may be misinterpreted by the health care provider as noncompliance rather than a health literacy problem that must be addressed.¹⁴ A case in point is dental caries prevention. Dental caries can no longer be considered inevitable because measures are available to prevent or control this infectious disease. Simply put, we know how to prevent or control dental caries.¹⁵ Yet a large portion of the public, especially those in lower income groups, are afflicted with this disease.^{16,17} The gaps between

Abstract

Purpose: The purpose of this study was to determine dental hygienists' use of recommended techniques to communicate science-based information for intervention and prevention of oral disease.

Methods: A 30-item survey containing 18 communication techniques representing 5 domains including 7 basic skills were mailed to a random sample of 1,258 Maryland dental hygienists to determine their use of recommended communication techniques.

Results: The response rate was 43% (n=540). Nearly all were females (98%) and 58% practiced in solo settings. About half of respondents used 6 of the 18 techniques routinely. Approximately three-quarters of respondents reported they rarely or never used 3 of the 7 basic recommended techniques. Only one basic technique (use of simple language) was used by over 90%. Respondents who had taken a communications course other than in dental hygiene school were significantly more likely to use communication techniques on a routine basis than those who had not (p<0.01).

Conclusion: Dental hygienists and their patients would benefit from using the recommended communication tools and techniques to address individual patient needs. To improve oral health outcomes, dental hygiene education must strengthen health literacy knowledge and communication skills in dental hygiene education programs and through continuing education courses for practicing hygienists.

Keywords: dental hygienists, recommended communication techniques, health literacy, health communication and dental health education

This study supports the NDHRA priority area, **Health Promotion/ Disease Prevention:** Assess strategies for effective communication between the dental hygienist and client.

Table I: Healthy People 2020 – Topic Area: Health Communication and Health IT – Selected Objectives

HC/HIT-1: (Developmental) Improve the health literacy of the population.	
HC/HIT-1.1	Increase the proportion of persons who report their health care provider always gave them easy-to-understand instructions about what to do to take care of their illness or health condition.
HC/HIT-1.2	Increase the proportion of persons who report their health care provider always asked them to describe how they will follow the instructions.
HC/HIT-1.3	Increase the proportion of persons who report their health care providers' office always offered help in filling out a form.
HC/HIT-2: Increase the proportion of persons who report that their health care providers have satisfactory communication skills.	
HC/HIT-2.1	Increase the proportion of persons who report that their health care provider always listened carefully to them.
HC/HIT-2.2	Increase the proportion of persons who report that their health care provider always explained things so they could understand them.
HC/HIT-2.3	Increase the proportion of persons who report that their health care provider always showed respect for what they had to say.
HC/HIT-2.4	Increase the proportion of persons who report that their health care provider always spent enough time with them.
HC/HIT-3: Increase the proportion of persons who report that their health care providers always involved them in decisions about their health care as much as they wanted.	
HC/HIT-4: (Developmental) Increase the proportion of patients whose doctor recommends personalized health information resources to help them manage their health.	

how Americans' rate their children's oral health and both their own and their children's actual behavior clearly illustrate the communication challenge.¹⁸

Healthy People 2020 identified several objectives specifically addressing communication skills of health care providers (Table I). The first 2 main goals are particularly relevant: improve the health literacy of the population, and increase the proportion of persons reporting that their health care providers have satisfactory communication skills.¹⁹ The related objectives are from the patient's perspective. The objectives for the first goal aim to increase the proportions of persons who report that their health care provider gave instructions they could understand and also confirmed their understanding. For the second goal, the objectives aim to increase those persons who report that their health care provider always listened carefully, explained things so they could understand, showed respect and spent enough time with them.

Essential communication skills for health care providers have been studied and reported. Skills include avoiding medical/dental jargon, using common words and paying attention to signs indicating that the patient understands, among others. Using patient-centered strategies such as being aware of the patient's state of mind and taking time to listen to the patient can increase patient understanding and compliance.²⁰ Other strategies that increase

communication effectiveness, particularly for a low literacy audience, include using short and simple statements, listening, giving visual cues, presenting information in small increments, and asking patients to repeat instructions.^{2,20}

To address some of these skills, an action plan for dentistry, Health Literacy in Dentistry Action Plan 2010–2015, was created by the American Dental Association.²¹ The plan has 5 strategic goals:

1. Training and education to change perceptions of oral health
2. Advocacy to overcome barriers by replicating effective programs and proven efforts
3. Research to build the science base and accelerate science transfer
4. Dental practice to increase oral health workforce diversity, capacity and flexibility
5. Build and maintain coalitions to increase collaborations

One objective specifies that all current and future health care workers, dentists, dental hygienists, dental assistants and students of each discipline, should have education that includes the principles of effective communication and the use of plain language in practice.

The knowledge and communication approach that dental hygienists use with their patients is the key

to their patients adopting recommended oral health behaviors. The importance of dental hygienists in patient education and disease prevention is widely accepted, and evidence-based practice is supported by proponents of dental hygiene.^{22,23} Yet there are few studies that investigate hygienists' knowledge, opinions and practice in these areas. Studies have shown that dental hygienists need to place greater emphasis on patient education about how individual behaviors can prevent dental caries as well as on the importance of public policy decisions on issues such as community water fluoridation. Although the hygienists' knowledge of the benefits of fluoride use and water fluoridation is relatively high, studies have shown they do not emphasize patient education on these topics, and only 32% of patients recalled being told about the benefits of fluoride.^{24,25} Dental hygienists tend to use traditional health education strategies, such as conducting advising sessions or handing out pamphlets.²⁶ However, traditional educational methods are not always effective in changing knowledge or behavior.²⁷ Building a trustful relationship with patients was identified as important in the prevention and treatment of periodontal disease.²⁸ For the education provided by dental hygienists to be effective in influencing patient behavior, patients must be able to understand and use the information that they are given.^{6,29}

Dental hygienists have a significant role in the prevention of dental diseases by preventing the onset of the disease, recognizing it at early stages and providing patient education that encourages individuals to take an active role in preventing diseases and maintaining their oral health.^{24,30} Thus, there is a gap between what the evidence has shown to be effective in preventing dental caries and what the public actually understands and practices with regard to this evidence. Dental hygienists are essential communicators in bridging that gap.¹ A study to understand the use of communication techniques by dental hygienists was undertaken as part of an overall investigation to enhance oral health literacy in Maryland.

Methods and Materials

A self-administered questionnaire including items on communication techniques was used in this cross sectional descriptive study of Maryland dental hygienists. The Institutional Review Board at the University of Maryland approved the study.

In May, June and July of 2010, data was collected by a mail survey to a random sample of 1,259 dental hygienists generated from a membership list provided by the Maryland Dental Hygienists' Association (MDHA). Eighteen items on recommended com-

munication techniques used on a routine basis were included in a 30 item questionnaire designed to also elicit the respondent's knowledge and practice pertaining to dental caries prevention. The findings in this report are limited to the questions concerning hygienists' use of communication techniques.

The items on communication were adapted from Rozier et al, and based on techniques recommended by the American Medical Association.^{4,20} The 18 questions that are grouped into 5 domains are shown in Figure 1. The 7 basic techniques comprise the first 2 domains (interpersonal communication and teach back method). Respondents were asked how often they used the 18 communication techniques in a typical workweek using a Likert-type scale of 5 options: always, most of the time, occasionally, rarely and never. For each technique they were asked whether they thought the technique was effective using a yes, no or don't know response. The instrument was pilot-tested among 6 practicing dental hygienists; it was then revised and printed in a format that could be returned without an envelope. Participation in the study was voluntary and passive consent to participate was given by completing and returning the survey. Three attempts were made to reach dental hygienists and request their response.

The first mailing consisted of the full survey instrument with a cover letter signed by the president of the MDHA. Three weeks after the first mailing, a second complete mailing was sent with a modified cover letter from the president. Approximately 3 weeks after the second mailing, a postal card, also signed by the MDHA president, was mailed to remind the dental hygienist that we had not yet received the completed survey. We also asked the MDHA to send an email reminder to all dental hygienists urging them to respond to the survey as soon as possible.

Data Analysis

The outcome variable for analysis of the communication techniques was a count of the routine use of the 18 communication techniques. For the purpose of analysis, we also extracted 7 out of the 18 communication techniques as a separate outcome variable. Similar to Rozier et al, we defined routine use as use most of the time or always versus never, rarely or occasionally.⁴ We also asked respondents if they had ever assessed their office or clinic facilities and procedures to determine how user-friendly it is for patients. In addition, we asked if they were interested in attending a course on communication skills.

The data was analyzed using SPSS version v18. Statistical analyses included descriptive statistics (frequencies and percentages), cross tabulation and

Figure 1: Five Domains and Items

Interpersonal communications*
<ul style="list-style-type: none"> • Limit number of concepts presented at a time to 2 to 3 • Ask patients whether they would like a family member or friend to accompany them in the discussion • Draw pictures or use printed illustrations • Speak slowly • Use simple language
Teach-Back Method*
<ul style="list-style-type: none"> • Ask patients to repeat back information or instructions • Ask patients to tell you what they will do at home to follow instructions
Patient-Friendly Materials and Aids
<ul style="list-style-type: none"> • Use video or DVD • Hand out printed materials • Use models or x-rays to explain
Assistance
<ul style="list-style-type: none"> • Underline key points on print materials • Follow-up with patients by telephone to check understanding and adherence • Read instructions out loud • Ask other office staff to follow-up with patients for post-care instructions • Write or print out instructions
Patient-Friendly Practice
<ul style="list-style-type: none"> • Ask patients what they can accomplish in connection with their oral hygiene • Refer patients to the Internet or other sources of information • Use a translator or interpreter when needed

*Basic Communication Techniques

chi square statistic. For the chi square test, the associations were examined between all demographic variables and the mean use of variables. Analysis of variance (ANOVA) of the selected predictor variables (demographics and the characteristics) were used as the independent variables and the dependent variable of the mean number of communication techniques used routinely. Ordinary least squares regression analysis of the selected predictor variables (demographics and practice characteristics) were used as the independent variables and the count of communication techniques routinely used in a week as the dependent variable. Because of the exploratory nature of the survey, the p-values were selected at 3 levels, $p < 0.10$, $p < 0.05$ and $p < 0.01$.

Results

Sample Results and Characteristics

Of the 1,259 surveys sent, 579 were returned for a response rate of 46%. Of these, 540 were usable responses giving an effective response rate of 43%. Nearly all respondents were females (98%), most were White (83%), more than half practiced in a solo practice setting (58%) and about one-third were in group practices (35%). Approximately one-quarter

graduated from their dental hygiene program in each of the previous 3 decades, and one-quarter graduated before 1980 (27%) (Table II). When asked what percent of their child patients had private insurance, the average response was 70%, while the average percent having Medicaid patients in their practice was 11%. The majority (66%) reported having taken a communication course other than that taught in their dental hygiene training.

Descriptive Results for Communication Techniques Used

The 18 items regarding the communication techniques regularly used are grouped into 5 domains: interpersonal communication, teach back, patient-friendly materials and aids, assistance and patient-friendly practice.⁴ The percentage distribution for each of the 5 possible responses to each item is shown in Table III. The first 7 techniques included in the first 2 domains are considered to be basic skills that every health provider should use routinely. The mean response score for the routine use of each technique and domain are displayed in Figure 2.

The frequency of use varied considerably across the 18 techniques and 5 domains. Dental hygienists

Table II: Dental Hygienists' Characteristics

Characteristic	n	Percentage
Year of Graduation		
1958–1979	144	27.38
1980–1989	131	24.90
1990–1999	116	22.05
2000–2009	135	25.67
Practice Setting		
Solo Practice	306	57.84
Group Practice	189	35.30
All other	34	6.43
Occupation		
Private Practice	492	92.83
All other	38	7.17
Race/Ethnicity		
White	451	83.36
Black	34	6.28
All other	56	10.35
Gender		
Female	521	97.93
Male	11	2.07
Type of dental insurance of child patients		
Medicaid/SCHIP	464	11.0*
Private Insurance	488	70.0*
Out of Pocket	483	21.0*
Ever taken a communication course		
Yes	350	65.79
No	182	34.21

*Average percentage

reported routinely using an average of 6.95 of the 18 techniques and 3.71 of the 7 basic techniques during a typical work week. About 14% of respondents used 10 or more of the 18 techniques and 26% used 4 or more of the 7 basic techniques. Less than 5% used all 7 basic techniques. Only one basic technique (use simple language) was used routinely by nearly all respondents.

Table IV presents the results from the bivariate analysis of the routine use of communication techniques by provider and practice characteristics. For provider characteristics, there was a significant relationship between race and the routine use of 18 techniques ($p < 0.01$). The average routine use of the 18 techniques was greater for non-White (mean=7.96) than White providers (mean=6.76). The average use of the 18 techniques was greater for dental hygienists born in foreign countries than U.S. born dental hygienists (7.78 vs. 6.95, $p < 0.10$). Dental hygienists who had taken a communication course used the 18 techniques more than those who had not had a communication course (7.28 vs. 6.31, $p < 0.001$).

Figure 2: Percentage of Dental Hygienists Routinely Using Each Communication Technique, According to Domain

Communication Technique	Percentage
Interpersonal Communications*	52.49**
<ul style="list-style-type: none"> Limit number of concepts presented at a time (2 to 3) Ask patients whether they would like a family member or friend to accompany them in the discussion 	86.82
<ul style="list-style-type: none"> Draw pictures or use printed illustrations Speak slowly Use simple language 	14.34
Teach back method*	34.00**
<ul style="list-style-type: none"> Ask patients to repeat back information or instructions Ask patients to tell you what they will do at home to follow instructions 	31.37
Patient-friendly materials and aids	77.44
<ul style="list-style-type: none"> Use video or DVD Hand out printed materials Use models or x-rays to example 	96.99
Assistance	23.94**
<ul style="list-style-type: none"> Underline key points on print materials Follow-up with patients by telephone to check understanding and adherence Read instructions out loud Ask other office staff to follow-up with patients for post-care instructions Write or print out instructions 	22.08
Patient-friendly practice	45.95
<ul style="list-style-type: none"> Ask patients what they can accomplish in connection with their oral health Refer patients to the internet or other sources of information Use a translator or interpreter when needed 	43.48**

*Basic communication technique

**Domain average

The average use of the 18 techniques was greater for those who assessed their procedures and facility to determine how user-friendly it is for patients than those who did not (7.84 vs. 6.14, $p < 0.001$). Of the 5 practice characteristics variables, the only significant variable was the percent of child patients covered by Medicaid ($p < 0.05$). The mean number of the 18 techniques was the highest (9.28) for dental hygienists with 26 to 50% of child patients who were insured with Medicaid.

For the use of the 7 basic techniques, the average use was higher for dental hygienists who had taken a communication course than those who had

Table III: Percent Distribution of Techniques Used Routinely by the Dental Hygienists in the Sample

Domain and Item	n	Percent Distribution					Mean Score**
		Always	Most of the Time	Occasionally	Rarely	Never	
Interpersonal Communications*							
• Limit number of concepts presented at a time (2 to 3)	516	27.52	59.30	9.69	2.71	0.75	3.10
• Ask patients whether they would like a family member or friend to accompany them in the discussion	530	4.15	10.19	31.32	28.49	25.85	1.38
• Draw pictures or use printed illustrations	526	10.65	20.72	37.64	20.53	10.46	2.01
• Speak slowly	532	21.99	55.45	18.80	3.01	0.75	2.95
• Use simple language	532	53.38	43.61	2.44	0.56	-	3.50
Teach back method*							
• Ask patients to repeat back information or instructions	530	5.09	16.98	35.09	30.94	11.89	1.72
• Ask patients to tell you what they will do at home to follow instructions	531	15.25	30.70	31.45	16.01	6.59	2.32
Patient-friendly materials and aids							
• Use video or DVD	530	3.40	5.28	13.96	18.68	58.68	0.76
• Hand out printed materials	523	16.83	31.55	40.54	8.99	2.10	2.52
• Use models or x-rays to example	530	25.66	47.74	22.08	3.21	1.32	2.93
Assistance							
• Underline key points on print materials	528	10.42	13.07	27.46	28.98	20.08	1.65
• Follow-up with patients by telephone to check understanding and adherence	530	1.51	3.21	18.49	33.21	43.58	0.85
• Read instructions out loud	525	21.14	24.38	24.98	15.81	13.71	2.23
• Ask other office staff to follow-up with patients for post-care instructions	530	4.91	9.25	23.21	33.58	29.06	1.27
• Write or print out instructions	528	10.23	21.59	41.48	17.61	9.09	2.06
Patient-friendly practice							
• Ask patients what they can accomplish in connection with their oral health	527	8.16	22.01	29.79	23.72	16.32	1.82
• Refer patients to the internet or other sources of information	530	5.09	12.08	41.32	27.92	13.58	1.67
• Use a translator or interpreter when needed	529	17.77	12.29	19.47	24.76	25.71	1.72

*Basic communication technique

**Mean score on a 5 point Likert Scale (0=never to 4=always)

not taken a communication course (3.83 vs. 3.46, $p < 0.01$). Those who assessed their offices for user friendliness routinely used 7 techniques more than those who did not assess their office (4.00 vs. 3.43, $p < 0.001$). Of the 5 practice characteristics variables, the only significant variable was primary occupation ($p < 0.10$). The mean number of communication techniques routinely used was higher for dental hygienists who reported "other" as their primary occupation than those whose primary occupation was private practice ($p < 0.10$).

Table V shows responses of hygienists' beliefs about the effectiveness of the communication tech-

niques. Most responses were distributed between the yes and don't know categories, with relatively few selecting no. For 5 of the techniques more than half the hygienists reported they did not know whether the techniques were effective and for another 4 techniques more than one-third of dental hygienists reported they did not know if the techniques were effective.

Table VI presents the results from the multiple regression analysis with the communication techniques as the dependent variable. The results generally confirmed some of the associations that were observed in the bivariate analysis. The average number of

Table IV: Bivariate Analysis of Predictor Variables and Mean Number of Communication Techniques used Routinely

Variable	18 communication techniques (n=524)			Seven basic communication techniques (n=524)	
	Sample size (Number, %)+	Mean number of techniques used	Analysis of variance (p value)	Mean number of techniques used	Analysis of variance (p value)
Provider characteristics					
Year of graduation					
• 1958 to 1979	143 (27.3)	7.02	0.935	3.84	0.405
• 1980 to 1989	131 (25.0)	6.79		3.74	
• 1990 to 1999	115 (22.0)	7.01		3.65	
• 2000 to 2009	153 (25.8)	6.87		3.56	
Race/Ethnicity					
• White	449 (84.2)	6.76	0.008***	3.68	0.272
• Black	34 (6.4)	8.24		3.68	
• All other	50 (9.4)	7.78		4.02	
Sex					
• Female	519 (97.9)	6.91	0.024**	3.69	0.009***
• Male	11 (2.1)	9.18		4.81	
Country of origin					
• U.S.	492 (92.3)	6.95	0.098*	3.69	0.312
• Other	41 (7.7)	7.78		3.92	
Had communications course					
• No	182 (34.3)	6.31	0.00014***	3.46	0.004***
• Yes	348 (65.7)	7.28		3.83	
Assessed office					
• No	279 (53.4)	6.14	0.0001***	3.43	0.0001***
• Yes	244 (46.7)	7.84		4.00	
Practice characteristics					
Percent of child patients with Medicaid					
• 0 to 25%	401 (87.2)	6.78	0.033**	3.63	0.128
• 26 to 50%	14 (3.0)	9.28		4.42	
• 51 to 75%	13 (2.8)	7.07		3.46	
• 76 to 100%	32 (7.0)	7.47		3.93	
Percent of child patients 6 months to 2 years					
• 0 to 25%	469 (98.0)	6.91	0.772	3.67	0.885
• 26 to 50%	10 (2.1)	6.60		3.60	
Percent of child patients 3 to 6 years					
• 0 to 25%	276 (55.5)	7.00	0.714	3.66	0.586
• 26 to 50%	221 (44.5)	6.90		3.73	
Primary occupation					
• Private practice	490 (92.8)	6.90	0.194	3.68	0.075*
• Other	38 (7.2)	7.63		4.11	
Practice setting					
• Solo practice	305 (57.9)	6.93	0.737	3.67	0.264
• Group Private Practice	188 (35.7)	6.90		3.70	
• Other	34 (6.5)	7.38		4.08	

+The sample size for each variable might not be equal to the overall sample size due to missing values

*p<0.10

**p<0.05

***p<0.01

Table V: Percentage Distribution of Participants, According to Beliefs About Effectiveness of Communication Technique

Domain and Item	n	Response (percentage)		
		Yes	No	Do not know
Interpersonal Communications*				
• Limit number of concepts presented at a time (2 to 3)	409	87.0	1.5	11.5
• Ask patients whether they would like a family member or friend to accompany them in the discussion	385	52.7	4.4	42.9
• Draw pictures or use printed illustrations	393	67.9	4.1	28.0
• Speak slowly	418	83.3	1.9	14.8
• Use simple language	416	92.6	0.2	7.2
Teach back method*				
• Ask patients to repeat back information or instructions	409	54.5	5.1	40.3
• Ask patients to tell you what they will do at home to follow instructions	405	60.0	5.7	34.3
Patient-friendly materials and aids				
• Use video or DVD	364	29.1	6.9	64.0
• Hand out printed materials	398	63.3	3.8	32.9
• Use models or x-rays to example	407	91.0	1.0	8.1
Assistance				
• Underline key points on print materials	392	42.6	6.1	51.3
• Follow-up with patients by telephone to check understanding and adherence	372	33.3	7.8	58.9
• Read instructions out loud	394	57.6	5.8	36.6
• Ask other office staff to follow-up with patients for post-care instructions	377	36.6	9.0	54.4
• Write or print out instructions	401	63.8	2.2	33.9
Patient-friendly practice				
• Ask patients what they can accomplish in connection with their oral health	379	51.5	4.8	43.8
• Refer patients to the internet or other sources of information	392	37.5	4.5	57.9
• Use a translator or interpreter when needed	379	67.3	2.6	30.1

*Basic communication techniques

routinely used 18 techniques was higher for non-White compared to White, but not for the 7 basic techniques. The number of the 18 techniques and 7 basic techniques was lower for those who did not assess their procedures and facility to determine how user-friendly it is for patients than those who did. Those who had a communication course outside of their basic dental hygiene training were more likely than those who did not have such a course to routinely use either 18 techniques or 7 basic techniques ($p < 0.001$).

Discussion

Routine Use of Communication Techniques

This investigation is one of the first to report dental hygienists' use of these recommended communication techniques. The routine use of communica-

tion techniques by dental hygienists varied greatly. A national survey supported by the ADA and reported by Horowitz et al using similar questions to those used in this study found that nearly 10% of dental hygienists asked patients to repeat instructions (teach back) and 31% reported they asked their patients to tell them what they would do at home to follow instructions.³¹ In contrast, 22% of dental hygienists in the current study reported routine use of teach back and 46% asked their patients to tell them what they would do at home to follow instructions.

Dental hygienists in the current study reported using an average of 6.95 of the 18 techniques and 3.71 of the 7 basic techniques. These averages are similar to dentists in a national survey which averaged 7.1 for 18 techniques and 3.1 for the 7 basic techniques.⁴ Most (97%) reported using simple

Table VI: Ordinary Least Squares Regression Results of Predictor Variables on Number of Communication Techniques Routinely Used in a Week

Variable	18 Communication Techniques (n=541)		Seven Basic Communication Techniques (n=541)	
	Coefficient (Standard Error)	p-value	Coefficient (Standard Error)	p-value
Year of Graduation				
• 1958–1979 vs. 2000–2009	0.15 (0.400)	0.710	0.40 (0.480)	0.400
• 1980–1989 vs. 2000–2009	0.08 (0.410)	0.840	-0.10 (0.490)	0.840
• 1990–1999 vs. 2000–2009	0.13 (0.420)	0.750	-0.10 (0.51)	0.840
Race/Ethnicity				
• Black vs. White	1.47 (0.590)	0.010	-0.68 (0.710)	0.340
• Other vs. White	1.02 (0.490)	0.040	0.67 (0.600)	0.270
Sex				
• Female vs. Male	-2.27 (1.010)	0.020	-2.76 (1.210)	0.023**
Country of Origin				
• Other vs. U.S.	0.90 (0.540)	0.100	1.43 (0.650)	0.03**
Occupation				
• Other vs. Private Practice	0.73 (0.56)	0.190	0.43 (0.240)	0.07*
Assessed Office				
• No vs. Yes	-1.71 (0.280)	<0.0001	-0.57 (0.121)	<0.0001***
Communication course				
• No vs. Yes	-0.97 (0.300)	0.001	-1.25 (0.360)	0.001***

*p<0.10
 **p<0.05
 ***p<0.01

language, 1 of the techniques in the interpersonal communications domain. Just a third of dental hygienists reported using teach back methods, which is recommended for universal use with patients by health literacy experts. In contrast, in the national survey of dentists nearly 20 reported using this technique.⁴ Teach back methods require that the provider ask the patient to repeat back what he/she has said to determine understanding on the part of the patient.⁹ In a study of health care providers practicing in federally qualified health centers, Schlichting et al found that those providers who had training in health literacy were more likely to use teach-back methods.³²

Factors Affecting Use of Communication Techniques

Several important factors influenced the use of the 18 communication techniques. Dental hygienists who had taken a communications course other than in dental hygiene school clearly used more of the 18 communication techniques. A related factor was those who assessed their offices for user friendliness also used more of the 18 techniques

than those who had not. These findings lend strong support for including communications courses as required curriculum in schools of dental hygiene and as options for continuing education by dental hygiene associations and dental hygiene programs.

The mean number of 18 techniques used by hygienists was most strongly influenced by the average percentage of Medicaid patients in their respective practice. This finding might reflect the hygienists' perception of just how much Medicaid patients need skills and understanding and thus use more communication techniques to help them understand.

For the 7 basic techniques, having had a communications course and assessing their practice for user friendliness were major factors in an increased use of communications techniques. The fact that dental hygienists who practice in "other than private practice," in other words, such as public health clinics and hospitals, also used more of the 7 basic techniques than did those in private practice is not surprising because many Medicaid and other low socio-economic status patients likely seek care in these facilities.

A patient health literacy assessment in a dental hygiene program found that a significant number of patients had marginal literacy skills indicating a need for attention to health literacy in the curriculum.³³ Although tools and techniques are available to assist health care providers, their use by dental hygienists is not known. For example, Health Literacy, Universal Precautions Toolkit has been produced by the Agency for Health Care and Quality, and dental hygienists and their patients would benefit from adapting these to their practices.^{34,35} Intervention studies are needed to determine which specific adaptations are most useful in various practice settings with different patients.

Study Limitations

While the response rate (43%) was similar to other health care provider surveys and is reasonably good for a mail survey for health providers,³⁶ the generalizability may be limited. Selection bias is possible in that the responses of the survey participants may not reflect the views of non-responders. Providers who returned the survey were likely to be more interested in the topic than those who did not. Further, the validity of the participants' assessment of their communication also may be questioned given that direct observation could more accurately determine the type and quality of dentist-patient communication. Despite these limitations, this study provides us with excellent baseline information upon which to develop and implement educational interventions and policies in Maryland.

Dental hygienists can incorporate the routine use of recommended communication techniques if they have the knowledge, understanding and skills. In undergraduate education programs it is important that dental hygiene students receive appropriate

training by educators with communication expertise and that their clinical experiences include skills training and evaluation in the use of recommended communication techniques. Continuing education courses can address these gaps for practicing dental hygienists.

Conclusion

The purpose of this study was to determine the use of recommended communication techniques by Maryland dental hygienists. The results were similar to other studies that dictate a need for attention to communication skills in undergraduate curriculum and post-graduate continuing education offerings. Improved communication techniques can reduce the gaps in patient understanding and increase the likelihood of adequate and appropriate patient self-care leading to improved oral health outcomes.

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