Title

Rollout of the Oral Health Literacy Toolkit in California: A Mixed-Methods Analysis

Journal

Journal of the California Dental Association, 50(11)

ISSN

1043-2256

Authors

Hao, Christine YW

Sokal-Gutierrez, Karen

Ivey, Susan L

et al.

Publication Date

2022-11-01

DOI

10.1080/19424396.2022.12224361

Peer reviewed

Journal of the California Dental Association

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/ucda20

Rollout of the Oral Health Literacy Toolkit in California: A Mixed-Methods Analysis

Christine Y.W. Hao, Karen Sokal-Gutierrez, Susan L. Ivey & Kristin S. Hoeft

To cite this article: Christine Y.W. Hao, Karen Sokal-Gutierrez, Susan L. Ivey & Kristin S. Hoeft (2022) Rollout of the Oral Health Literacy Toolkit in California: A Mixed-Methods Analysis, Journal of the California Dental Association, 50:11, 671-681, DOI: 10.1080/19424396.2022.12224361

To link to this article: https://doi.org/10.1080/19424396.2022.12224361

Published online: 31 Jan 2023.

CDA JOURNAL, VOL 50, N°11

Rollout of the Oral Health Literacy Toolkit in California: A Mixed-Methods Analysis

Christine Y.W. Hao, DMD, MPH; Karen Sokal-Gutierrez, MD, MPH; Susan L. Ivey, MD, MHSA; and Kristin S. Hoeft, PhD, MPH

ABSTRACT

Background: Formative assessment of the rollout process of the California Oral Health Literacy (OHL) toolkit uses a mixed-methods approach. The OHL toolkit is an educational resource for dental professionals to improve communication with patients. This study was intended to obtain user feedback and suggestions for improvement.

Methods: This mixed-methods assessment of the OHL toolkit rollout included anonymous post-training surveys distributed at regional dental societies in California and 1:1 interviews with dental champions who would work with the research team on toolkit rollout. Anonymous and deidentified data were analyzed using R and Dedoose.

Results: From surveys (n = 37), the OHL toolkit components of highest interest to respondents were teach-back, increasing health literacy awareness among staff and learning to use plain language communication. Perceived implementation barriers were time constraints, insufficient staffing and a need for more training on communication techniques. Impressions, implementation prospects and recommendations for the OHL toolkit were obtained from qualitative interviews (n = 6). Overall, participants had positive impressions of the training presentation, OHL toolkit and implementation prospects.

Conclusion: This study identified interest areas and implementation barriers, data that can be used to further improve the OHL toolkit and reduce barriers faced by practitioners. Further assessments at clinician and patient levels will be helpful for outcomes evaluation.

Practical implications: The OHL toolkit is perceived positively by dental practitioners in California. Facilitators and barriers identified by dental providers and champions can be addressed through changes to the OHL toolkit and training. Rollout at the national level is being considered.

Keywords: Oral health, program evaluation, public health, California, United States

CDA JOURNAL, VOL 50, N°11

AUTHORS

Christine Y.W. Hao, DMD, MPH, began her MPH-dental public health journey in the joint University of California, Berkeley-University of California, San Francisco program in summer 2021. She is currently a dental public health resident at UCSF. As part of her MPH program, Dr. Hao completed a specialty area in maternal, child and adolescent health and earned a certificate in health management.
Conflict of Interest Disclosure: None reported.

Karen Sokal-Gutierrez, MD, MPH, is a clinical professor at the University of California, Berkeley, School of Public Health and a fellow of the American Academy of Pediatrics. She is a physician with training in pediatrics, preventive medicine and public health and has worked as a clinic physician, public health program administrator, child health policy consultant and an educator.
Conflict of Interest Disclosure: None reported.

Susan L. Ivey, MD, MHSA, is an adjunct professor in the University of California, Berkeley, School of Public Health and the director of research at Health Research for Action, an affiliated center of UCB's School of Public Health. She has been conducting health disparities and health services research for over 20 years.
Conflict of Interest Disclosure: None reported.

Kristin Hoeft, PhD, MPH, is an assistant professor in the division of oral epidemiology and dental public health at the University of California, San Francisco, School of Dentistry. She has worked in dental public health since 2006, working as part of the Center to Address Children's Oral Health (CAN DO) and the California Oral Health Technical Assistance Center (COHTAC).
Conflict of Interest Disclosure: None reported.

The burden of oral diseases is experienced globally and is accompanied by frequent disparities among low-income and low-literacy populations. This is particularly concerning considering that oral health is fundamental to general health and connected to all life and social functions.[1,2] In "Oral Health in America: A Report of the Surgeon General," oral diseases are described as a "silent epidemic" that disproportionately affects vulnerable populations including ethnic minorities, the elderly and children from lower socioeconomic backgrounds.[3] Two decades later, as described in Oral Health in America, a follow-up to the surgeon general's report, disparities in oral health status continue to exist.[4] With consideration to strategies in oral health promotion and population health improvement, the significant role of oral health literacy (OHL) is highlighted in the report.[4]

Individual health literacy is defined as "the degree to which individuals have the ability to find, understand and use information and services to inform health-related decisions and actions for themselves and others."[5] OHL also includes aspects of care processes pertaining to the oral environment.[2,6] The consequences of low health literacy are significant. Individuals with lower health literacy are less likely to utilize preventive care and are more likely to utilize emergency care.[4,7] Further, among individuals with lower OHL, poorer periodontal health was observed.[8] Low oral health knowledge is also associated with a lower perceived oral health-related quality of life.[9] Among individuals who did not have a dental visit in the past year, their OHL was found to be lower.[10]

Recent conceptions of health literacy have expanded from perceptions of health literacy as an individual characteristic to a recognition that communication occurs between multiple people within an organizational setting. Healthy People 2030 defines organizational health literacy as "the degree to which organizations equitably enable individuals to find, understand and use information and services to inform health-related decisions and actions for themselves and others."[5] This expansion in health literacy definition recognizes the important role that providers and organizations can play in communicating health information to patients, regardless of an individual's health literacy level.

The emphasis on OHL improvement among providers and patients resonates at state and national levels. The American Dental Association established its National Oral Health Literacy Advisory Committee (NOHLAC) for Health Literacy in Dentistry to advance provider and patient OHL.[11] A key part of that committee's action plan has been the development of an OHL toolkit for dental professionals. Other dental professional and oral health organizations have also set goals to advance OHL.[11] In collaboration, an OHL toolkit was developed by the California Department of Public Health Office of Oral Health (CDPH-OOH) and the University of California, Berkeley, School of Public Health's Health Research for Action (HRA) center.[12] The overall goal of the OHL toolkit is to increase OHL among providers and, by interactional influence, to increase OHL among patients and caregivers.[12,13]

The OHL toolkit consists of five major components: OHL in Practice, a guide book with communication strategies for oral health care providers; the practice assessment checklist, a tool for identification of OHL strengths and opportunities within a dental practice; the teach-back resource guide; the "Going to the Dentist" patient brochure; and the OHL action plan, a worksheet for setting OHL goals in practice. The

toolkit incorporates multiple strategies to create patient-friendly environments and improve provider-patient communication, thereby increasing patient understanding and participation in their care. The OHL toolkit is available to download free of charge from the California Oral Health Technical Assistance Center.[14]

Although OHL interventions by care providers have been shown to positively influence recipients' oral health knowledge and skills,[15,16] it is important to anticipate potential provider and patient barriers with respect to success. Among providers, perceived barriers include insufficient training in OHL in a professional setting and limited chairside time.[17] Among patients, limited literacy skills are a barrier to achieving OHL.[18] Common to both, clear communication is critical in improving OHL.[17]

This study evaluates the OHL toolkit rollout at dental societies in California. Specific objectives are: 1) Evaluate initial feedback from dental society participants on the OHL toolkit training, including impressions of the training and the OHL toolkit and perceived opportunities and barriers for implementation at their practices; 2) interview six dental champions who are also trainers at dental society presentations and collect qualitative data on the OHL toolkit impressions and implementation opportunities and barriers; and 3) identify focus areas for future programs and materials improvement using data collected.

Methods

The activities described are part of formative assessments for the rollout process of the OHL toolkit. The OHL toolkit training workshops, consisting of presentations with background about OHL and detailed information on toolkit components, were conducted at regional dental societies and local oral health programs (LOHPs). Post-training surveys were created for the workshops. Trainings at LOHPs were not assessed as part of this study; this study and methods here pertain only to the activities conducted with dental providers at dental societies.

Two main assessment modalities were used:

- Quantitative assessment that consisted of anonymous post-training surveys at local dental society meetings. Surveys were inputted into Qualtrics survey software and survey links were provided both during and after presentations to dental providers.
- As a qualitative element, 1:1 semi-structured interviews were conducted with the dental champions. Dental champions are California general and pediatric dentists who already had an interest and/or experience in OHL and who were willing to take on the role of leaders in the OHL improvement process by agreeing to participate in an initial training and then partner with HRA staff to deliver trainings. The terminology "champion" was designated for their role as point persons and leaders in implementing components of the OHL toolkit in their respective organizations or practices as well as demonstrating OHL toolkit utilization to other dentists through dental society trainings.[19] The champions received a modest stipend for their participation.

It is important to anticipate potential provider and patient barriers with respect to success.

Prior to initiating interviews, verbal informed consent was obtained. Interviews were conducted virtually on Zoom and were audio recorded, transcribed verbatim and deidentified prior to analysis using Dedoose.[20] Content analysis was used to examine interview data for common themes around implementation and training for the champion role these dentists would undertake.

Self-certification by the principal investigator indicated this project was a program evaluation and not considered human-subjects research; therefore, a separate IRB review was not required.

OHL Toolkit Trainings at Dental Societies

The OHL toolkit trainings were delivered via Zoom presentations at local dental societies, with presenter pairings of dental champions with HRA staff with OHL expertise. The presentations ranged from 60 to 120 minutes and consisted of a core 60-minute presentation used for all presentations. Where time allowed, additional information and practice activities were included. Session length was determined by the respective dental societies' meeting time constraints. Presenter calibration was not performed. All dental champions, however, attended an OHL toolkit "dental champion" workshop hosted by HRA on Jan. 26, 2022, where detailed information on individual toolkit components was collectively reviewed. They observed the training materials and format, and all used the same standard-base training slide deck with some tailoring for extended-length trainings and for champions to discuss personalized implementation in their own practice.

TABLE 1

Summary of Dental Society Post-Training Survey Respondent Demographics and Practice Information

Description	Respondents % (N)
Current Role	
Dental hygienist	46 (17)
Dentist	41 (15)
Dental assistant	5 (2)
Office manager	3 (1)
Dental director	3 (1)
Other	3 (1)
Years in Current Role	
< 5 years	3 (1)
5 – < 10 years	14 (5)
10 – < 20 years	35 (13)
20+ years	49 (18)
Practice Type	
Private practice	73 (27)
Federally qualified health center (FQHC)	16 (6)
Private practice and FQHC	3 (1)
Other	8 (3)
Medi-Cal Acceptance	
Yes	11 (4)
No	70 (26)
N/A	19 (7)
Race/Ethnicity	
Asian	16 (6)
Black or African American	11 (4)
Hispanic or Latino	14 (5)
White or Caucasian	49 (18)
All Others*	12 (4)
Gender	
Female	81 (30)
Male	19 (7)

Summary of dental society post-training survey respondent demographics and practice information. *Responses were aggregated to avoid cell size of one.

OHL Toolkit Post-Training Surveys

An anonymous post-training survey link was distributed to attendees during and at the end of OHL toolkit presentations by dental societies in California. Upon opening the survey link, an informative paragraph describing the purpose of the survey and intended data usage was presented to respondents **(APPENDIX 2)**. The survey had 12 questions and covered basic demographic information, role and years in clinic, clinic type, impressions of the presentation and toolkit, components of interest and implementation barriers **(APPENDIX 2)**. Survey questions were reviewed by the co-authors for face and content validity. Surveys were hosted on UC Berkeley Qualtrics XM,[21] and data analysis was performed using R (version 4.1.2).[22,23]

Results

Quantitative Analysis

From trainings held Feb. 8, 16 and 17, 2022, at three dental societies with a total of 124 attendees consisting of dental practitioners and office staff members, 37 responses from post-training surveys were collected. Survey data collection began Feb. 8, 2022, and ended March 4, 2022, when no new responses were recorded for the next 30 days.[24] The interquartile range for survey completion time was approximately two to three minutes.

TABLE 1 is a summary of respondents' demographics and practice information including current role, years in current role, practice type, Medi-Cal (Medicaid) insurance acceptance, race/ethnicity and gender. Forty-one percent of respondents were dentists and 46% were dental hygienists; 84% of respondents had 10 or more years of experience; 73% of respondents were part of private practices and 16% were part of a federally qualified health center (FQHC); a majority of practices (70%) did not accept Medi-Cal; the highest three proportions of race/ethnic groups were white or Caucasian (49%), Asian (16%) and Hispanic or Latino (14%).

Feedback on the toolkit presentation, impression of the toolkit, toolkit components of interest and potential implementation barriers were identified and summarized. Over 90% of respondents "strongly agree" or "somewhat agree" that the presentation was well-organized and that the presenter was knowledgeable; over 80% of respondents "strongly agreed" or "somewhat agreed" to have

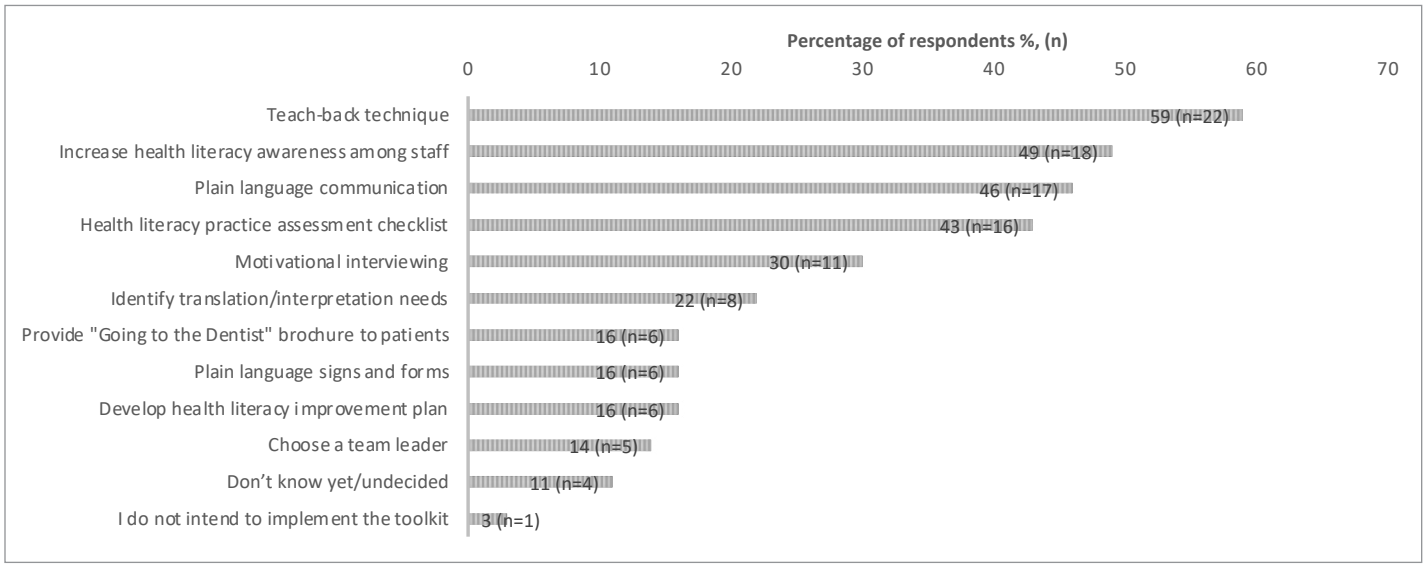

FIGURE 1. Toolkit components most likely to be utilized.

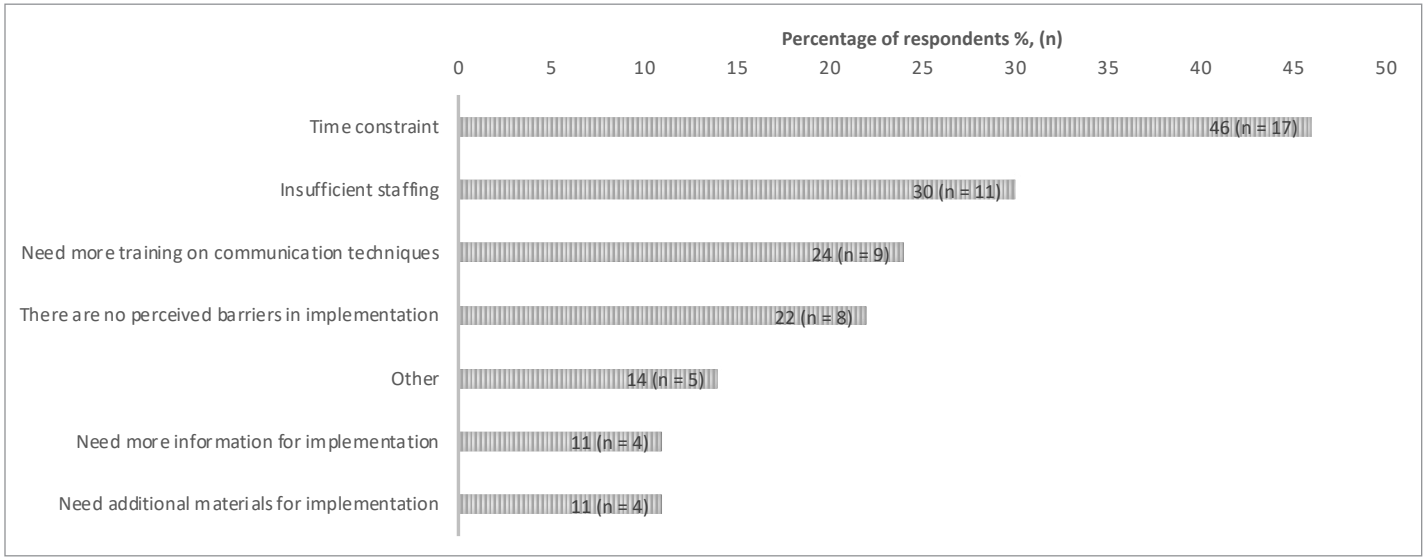

FIGURE 2. Potential toolkit implementation barriers.

increased understanding of OHL and that the training was a good investment of time. A lower but substantial proportion (67%) of respondents indicated they were "extremely likely" or "somewhat likely" to take on toolkit implementation, but 54% felt they needed more information to use the OHL toolkit.

Survey respondents also indicated toolkit components they were most likely to utilize. The top five components of interest (% respondents, n) were the teach-back technique (59%, n = 22) (teach-back assesses patient understanding of their oral health conditions and recommended actions to take), increased health literacy awareness among staff (49%, n = 18), plain language communication (46%, n = 17), the health literacy practice assessment checklist (43%, n = 16) and motivational interviewing (30%, n = 11) (**FIGURE 1**).

The top toolkit implementation barriers (% respondents, n) were time constraint (46%, n = 17), insufficient staffing (30%, n = 11) and the need for more training on communication techniques (24%, n = 9) (**FIGURE 2**).

Qualitative Analysis

Semi-structured 1:1 interviews were conducted with the dental champions from Jan. 10, 2022, to Jan. 22, 2022. Among the dental champions, 83%

TABLE 2

Summary of Presentation Feedback, Toolkit Impression and Implementation Prospects

Feedback/impression	Extremely likely/ strongly agree % (n)	Somewhat likely/ somewhat agree % (n)	Neither likely nor unlikely/ neither agree nor disagree % (n)	Somewhat unlikely/ somewhat disagree % (n)	Extremely unlikely/ strongly disagree % (n)	N/A % (n)
Likelihood of toolkit implementation	32 (12)	35 (13)	22 (8)	3 (1)	8 (3)	–
Presentation was well-organized	86 (32)	8 (3)	3 (1)	3 (1)	0	–
Presenter is knowledgeable	84 (31)	11 (4)	3 (1)	0	0	3 (1)
I have an increased understanding of OHL	65 (24)	22 (8)	11 (4)	0	0	3 (1)
The training was a good investment of my time	59 (22)	24 (9)	11 (4)	0	3 (1)	3 (1)
Information from training is useful in my work	51 (19)	27 (10)	14 (5)	5 (2)	0	3 (1)
I need more information to be able to use toolkit	22 (8)	32 (12)	24 (9)	8 (3)	11 (4)	3 (1)

(n = 5) were pediatric dentists and 17% (n = 1) were general dentists; 50% (n = 3) were associated with an FQHC or academic clinics and 50% (n = 3) were associated with private practice.

Interview results with the dental champions are organized into key themes and summarized with representative quotes in **TABLE 3**.

Key themes are:

- Providers have varied OHL skills.
- Priority areas for OHL improvement are identified.
- Impression of the toolkit was mostly positive.
- Suggestions for the toolkit.

The five toolkit components of highest interest level are also compared directly with communication and behavior modification strategies that are used by the dental champions (**TABLE 4**).

Discussion

Improving patient and provider OHL has emerged as an important priority of the American Dental Association and other oral health organizations.[11] Improved OHL is critical to reduce dental disease and increase preventive care.[4] Because dental professionals have a key responsibility to communicate well with patients to improve their OHL and the ability to adopt positive oral health behaviors, provider communication training is essential.[11,12] The California OHL toolkit and associated trainings are intended to advance providers' OHL skills and, by extension, patients' OHL abilities.[12] This study was intended to provide initial feedback and recommendations in the first phase of the OHL toolkit rollout.

Data from quantitative and qualitative aspects were analyzed and results were contrasted. The overall impression of the toolkit rollout at dental societies was positive with positive implementation prospects (**TABLE 2**). The dental champions also perceived the toolkit mostly positively and provided suggestions for improvements (**TABLE 3**).

The top five toolkit components of interest were the teach-back technique, increased health literacy awareness among staff, plain-language communication, the health literacy practice assessment checklist and motivational interviewing (**FIGURE 1**). This was compared with interview results on communication and behavior modification techniques utilized by the dental champions (**TABLE 4**). A complete overlap between survey and interview results was observed; this alignment indicates the dental champions are well-positioned as peer educators for the toolkit training sessions at dental societies.

Upon identification of the toolkit components of interest, adjustments can be made to increase uptake and/or implementation. These results can be combined with specific recommendations from dental champions (**TABLE 3**) such as including more graphics, providing laminated physical copies or offering patient-facing materials at a lower literacy level and in different languages.

From post-training surveys, the top three perceived barriers in toolkit implementation were time constraint, insufficient staffing and the need for more training on communication techniques (**FIGURE 2**). A significant overlap in barriers was observed in a three-way comparison among survey results, interview results and current literature **(APPENDIX 1)**. Barriers identified by the dental champions included time constraint and lack of incentives or reimbursement. In a previous formative study by Tseng et al.[17] prior to creation of the toolkit, barriers to promoting OHL among dental providers

TABLE 3

Summary of Key Themes From Interviews With Dental Champions

Theme 1: Provider OHL skills vary		
Low OHL skills	**Varying OHL skills**	**High OHL skills**
"Oh, we have a lot to improve." "I guess I'll be generous. I think that we have room for improvement, as we all do. You know the term practice means that you should be continually improving."	"They [OHL skills] vary and it's something that we're constantly reevaluating to make sure we're not bringing our own biases into our appointments."	"I feel like in our office, because I've made such an emphasis on it and I've given lunch-and-learns to my staff, that we're actually pretty well-equipped to do that [implement the toolkit]. But I kind of realize I may be an outlier because this has been what I've devoted much of my career towards."
Theme 2: Priority areas for OHL improvement are identified		
• "I'd say from a pediatric standpoint I think it's really important to have a lot of visuals and signs that are easy to read. Always keeping it simple, and I think that just plays a role for children to read and understand things but also for families and parents too." • "Well, I'm always going to be a stickler for the interpreting services. One: Having that signage at the front of the office, systems to coordinate your visits. Second one would be actually using tools for the language and then the third one's probably teach-back." • "I would say I think most providers need to understand the basics of best practices when you talk about health literacy. You know the basics, in pedo-land we do tell-show-do, which is similar to teach-back."		
Theme 3: Impression of toolkit format and content is mostly positive		
• "I think it's laid out very clearly in terms of which pages are for short-term goals and long-term goals. So I think it's easy to understand and the pictures and the colors and layout is, overall, nice and easy to read." • "It looks great on paper, and it'd be nice to see how it's actually implemented. I'm very curious about implementation." • "It's actually a pretty fantastic toolkit. It's there to help bring some of these tools into practices that either don't have them in existence or don't have them in existence fully."		
Theme 4: Suggestions for the toolkit		
• "Maybe more graphics, it's too wordy." • "If we receive the toolkit as more of like how we receive our CPR materials with laminated sheets, or a little kit of cards that are very well packaged, ... that would be more engaging for the providers in the clinic and it's easier to share." • "Having more [patient-facing] information at a lower literacy level in different languages ... pamphlets or information cards readily available that are easy for the eye. Meaning lots of visuals, also in a language they can understand. Very few wording unless the wording is necessary."		

in California included inadequate clinical time, limited reimbursement and lack of OHL communication training and OHL proficiency requirements. A recurrence of these themes emphasizes priority areas to address to help dental providers overcome barriers in OHL toolkit implementation particularly in areas of communications training, staffing and reimbursement models.

Information from this study is foundational in advancing the OHL toolkit rollout. To further evaluate the toolkit's effectiveness, subsequent studies on clinical implementation and patient perspectives are necessary. Interventions targeting adults and children continue to provide evidence for the need for OHL improvement. Several studies have shown associations between caregiver health literacy/OHL and the oral health status of children.[25–27] A study by Dudovitz et al.[16] evaluated the effects of an OHL intervention among parents whose children participated in the Head Start program. Participants had diverse backgrounds and initially had increased caries risk. The study showed that an OHL intervention delivered by Head Start staff was successful in improving OHL among parents. Interventional activities included healthy meals for parents, hands-on demonstrations and oral health resources including low OHL books and oral hygiene tools. The study also showed positive changes in oral health knowledge and transfer of oral hygiene influences to the children of participants.

Kaur et al.[15] studied OHL interventions by dental hygienists. The interventions

TABLE 4

Comparison Between Interview and Survey Results Showing Communication and Behavior Modification Strategies From Dental Champions and Top Five Toolkit Components of Interest

Communication and behavior modification strategies in use by dental champions (from interviews)	Top five OHL toolkit components most likely to utilize (from survey)
• Teach-back • Increase health literacy awareness among staff • Clear (plain) language, no jargon • HL practice assessment • Motivational interviewing • Multitasking • Usage of interpretation services • Choose a team leader • Longer/split appointments • Scripting • ... and many more	• Teach-back • Increase health literacy awareness among staff • Plain-language communication • HL practice assessment checklist • Motivational interviewing

APPENDIX 1

Three-Way Comparison of OHL Improvement Barriers Identified in Literature, Dental Champion Interviews and Post-Training Surveys

Tseng et al.[17] Barriers to promote OHL among dental providers in California	Top five OHL toolkit components most likely to utilize (from survey)	Potential barriers to toolkit implementation, from post-training surveys
• Inadequate clinical time • Limited reimbursement for patient education • Lack of OHL communication training and proficiency requirements • Insufficient high-quality patient education materials • Logistical and financial difficulties in access to interpretation services	• Time constraint • Lack of incentives or reimbursement • Difficult to quantify improvements • Bias and lack of passion in cultural competency	• Time constraint • Insufficient staffing • Need more training on communication techniques

consisted of five elements: A photo-novel written specifically for the target population; the teach-back technique; a concrete action plan made by participants; daily tracking of activities by participants; and monthly follow-ups to reinforce behavior. The interventions resulted in improvement in oral hygiene practices among participants.

Because OHL improvement strategies in the OHL toolkit are similar to interventions utilized in the studies mentioned previously, it is reasonable to anticipate positive OHL improvements among patients upon its implementation. To evaluate OHL impacts, patient-level OHL assessments will be necessary. Some challenges to those assessments are briefly

described here. An ongoing challenge is selection of an appropriate instrument for OHL evaluation among patients. There are several existing instruments with some based on medical or dental vocabulary recognition. The Rapid Estimate of Adult Literacy in Dentistry (REALD) system is based on an individual's ability to recognize a word and read it aloud correctly.[6,15] More recently, OHL evaluations have expanded to include more dimensions such as reading comprehension, decision-making and quantitative skills.[6] There is also increasing effort in assessing functional aspects of OHL. In a study by Sun et al.,[28] an evaluation instrument was developed to assess functional OHL, oral health knowledge, oral health skills and oral health beliefs. Therefore, when assessing OHL, it is important to recognize that different instruments measure various dimensions of OHL.[10] One OHL toolkit-relevant way to evaluate improvement in patient OHL would be to assess before and after a provider uses the teach-back technique, which demonstrates a patient's understanding of their provider's description of their oral health condition and recommended actions to take. Likewise, case studies of the OHL toolkit implementation in dental practices over time would be valuable.

Strengths of the study include the use of mixed methods for formative assessment of implementation and the opportunity to increase sample size as more trainings are conducted. Limitations of this study include a small number of survey participants (n = 37) and risk of bias because the surveys were voluntary. To increase response rate, future survey completion can be linked to the receipt of continuing education credits.

With respect to qualitative interviews with the dental champions, it is important to recognize that five of the six champions were pediatric dentists, therefore findings may not represent perspectives of general dentists. Future research should include more input from general dentists and other dental specialists.

Recommendations

In summary, three specific recommendations are to:

- Adjust toolkit components per feedback, interest level and suggestions.
- Take concrete steps in reducing identified barriers to toolkit implementation.
- Assess toolkit implementation at the clinical level and evaluate effects on patient OHL for a more formal outcomes evaluation.

For Future Students and/or Researchers

Continuing from the three recommendations, multiple approaches are possible. One suggestion is to perform policy analysis on reimbursement models and identify possible reimbursement mechanisms for OHL improvement efforts. Another approach is to evaluate actual uptake/implementation of the OHL toolkit across dental clinics in California. Finally, to examine effects on patient OHL, a comparative study pre- and post-implementation in a sample of practices that plan to implement the OHL toolkit can be considered.

Due to the growing interest in OHL improvement, a nationwide version of the toolkit may also be considered. To facilitate the rollout of a nationwide OHL toolkit, adjustments will be necessary. For example, once a reimbursement model for OHL improvement is established in California, relevant information can be included as reference for other states. In addition to effective interventions and evaluations, multiple stakeholders need to collaborate for OHL improvement; this involves multiple levels of organization including members of the public, health care providers and policymakers. ■

ACKNOWLEDGMENTS

Toolkit development and trainings were funded by the California Department of Public Health Office of Oral Health. We thank study participants and dental societies for their interest in bringing the OHL toolkit trainings to its members and the California Oral Health Technical Assistance Center for hosting the toolkit on its website.

FUNDING

This study was funded by the California Department of Public Health (CDPH) under Contract Number 21-10140.

REFERENCES

1. Centers for Disease Control and Prevention. Basics of Oral Health. Jan. 4, 2021. Accessed April 18, 2022.
2. Ramos-Gomez F, Kinsler J, Askaryar H. Understanding oral health disparities in children as a global public health issue: How dental health professionals can make a difference. *J Public Health Policy* 2020;41(2):114–124. doi:10.1057/s41271-020-00222-5.
3. U.S. Department of Health and Human Services. Oral Health in America: A Report of the Surgeon General. Rockville, Md: U.S. Department of Health and Human Services, National Institute of Dental and Craniofacial, Research, National Institutes of Health; 2000.Accessed April 19, 2022.
4. U.S. Department of Health and Human Services Bethesda, MD: U.S. Department of Health and Human Services, National Institute of Dental and Craniofacial R National Institutes of Health. Oral Health in America: Advances and Challenges. Bethesda, Md and National Institute of Dental and Craniofacial Research; 2021.
5. U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion. Health Literacy in Healthy People 2030 - Healthy People 2030. Accessed April 19, 2022.
6. Dickson-Swift V, Kenny A, Farmer J, Gussy M, Larkins S. Measuring oral health literacy: A scoping review of existing tools. *BMC Oral Health* 2014;14(1):148. doi:10.1186/1472-6831-14-148. PMCID: PMC4417207.
7. Horowitz AM, Kleinman DV. Oral health literacy: A pathway to reducing oral health disparities in Maryland. *J Public Health Dent* 2012 Winter;72 Suppl 1:S26–30. doi:10.1111/j.1752-7325.2012.00316.x.
8. Baskaradoss JK. Relationship between oral health literacy and oral health status. *BMC Oral Health* 2018;18(1):172. doi:10.1186/s12903-018-0640-1. PMCID: PMC6201552.
9. Kwon SR, Lee S, Oyoyo U, et al. Oral health knowledge and oral health related quality of life of older adults. *Clin Exp Dent Res* 2021 Apr;7(2):211–218. doi:10.1002/cre2.350. Epub 2020 Nov 17. PMCID: PMC8019761.
10. Henderson E, Dalawari P, Fitzgerald J, Hinyard L. Association of Oral Health Literacy and Dental Visitation in an Inner-City Emergency Department Population. *Int J Environ Res Public Health* 2018 Aug 15;15(8):1748. doi: 10.3390/ijerph15081748. PMCID: PMC6121363.

APPENDIX 2

Post-Training Survey Questions Distributed at Local Dental Societies

Pre-Survey Information; OHL Toolkit Training Evaluation

Thank you for participating in our OHL Toolkit training. Your feedback is very important in helping us improve future training. We appreciate your time and effort in completing this survey. All information collected is for program evaluation and quality improvement purposes only and will remain anonymous.

If you have questions or would like assistance, please contact Jessica at healthaction@berkeley.edu.

Thank you!

Q1. Which of the following best describes your role?
[Choices: dentist; dental hygienist; dental assistant; office manager; administration; dental director; other – please specify]

Q2. How many years have you been in this role? [numeric entry]

Q3. Which of the following best describes your dental practice?
[select all that apply] [Choices: private practice; federally qualified health centers (FQHC); corporate/group practice; other – please specify]

Q4. [If in Q3, private practice, corporate/group practice or other is selected.] Does your practice accept patients on Medi-Cal Dental? [Yes/No]

Q5. What is your gender?
[Choices: male; female; other; prefer not to answer]

Q6. Which of the following best describes you?
[Choices: American Indian/Alaska Native; Asian; Black or African American; Hispanic or Latino; Native Hawaiian/Other Pacific Islander; white or Caucasian; biracial/multiracial; a race/ethnicity not listed above; prefer not to answer]

Q7. How likely are you to implement component(s) of the toolkit in your practice?
[Choices: extremely unlikely; somewhat unlikely; neither likely nor unlikely; somewhat likely; extremely likely]

Q8. Which, if any, from the following components in the toolkit are you most likely to utilize? Select up to five (5).
[Choices: Health literacy practice assessment checklist; increase health literacy awareness among staff; develop health literacy improvement plan; choose a team leader; plain language signs and forms; plain language communication; identify translation/interpretation needs; teach-back technique; motivational interviewing; provide "Going to the Dentist" brochure to patients; other – please specify; I do not intend to implement the toolkit; don't know yet/undecided]

Q9. If applicable, what are potential barriers in implementing the toolkit? [select all that apply]
[Choices: Need more information for implementation; need additional materials for implementation; need more training on communication techniques; time constraint; insufficient staffing; other – please specify; there are no perceived barriers in implementation]

Q10. For each question, please select the option you most identify with.
[Choices: strongly disagree; somewhat disagree; neither agree nor disagree; somewhat agree; strongly agree]
a) The presentation was well-organized.
b) The presenter is knowledgeable.
c) I have increased understanding in the topic of oral health literacy.
d) The training was a good investment of my time.
e) Information from the training is useful in my work.
f) I need more information to be able to use the toolkit.

Q11. If you have additional questions or comments, please let us know here.

Q12. Please describe one aspect from the presentation that can be improved.

11. Clough SR. American Dental Association: Advancing health literacy within and by the dental profession. *J Calif Dent Assoc* 2020 Aug;48(8):383–387. Accessed Aug. 3, 2022.
12. Neuhauser L, Eleftherion A, Jackson R, et al. Development of the California Oral Health Literacy Toolkit. *J Calif Dent Assoc* 2021 Sep;49(9):587–593.
13. Kumar J, Jackson R. California Department of Public Health. California Oral Health Plan 2018-2028. Published online January 2018. Accessed May 5, 2022.
14. California Oral Health Technical Assistance Center. Oral Health Literacy Toolkit. Accessed April 19, 2022.
15. Kaur N, Kandelman D, Potvin L. Effectiveness of "Safeguard Your Smile," an oral health literacy intervention, on oral hygiene self-care behaviour among Punjabi immigrants: A randomized controlled trial. *Can J Dent Hyg* 2019;53(1):11. PMCID: PMC7533823.
16. Dudovitz R, Teutsch C, Holt K, Herman A. Improving parent oral health literacy in Head Start programs. *J Public Health Dent* 2020;80(2):150–158. doi:10.1111/jphd.12361.
17. Tseng W, Pleasants E, Ivey SL, et al. Barriers and Facilitators to Promoting Oral Health Literacy and Patient Communication among Dental Providers in California. *Int J Environ Res Public Health* 2020 Dec 30;18(1):216. doi: 10.3390/ijerph18010216. PMCID: PMC7795206.
18. Macek MD, Atchison KA, Wells W, Haynes D, Parker RM, Chen H. Did you know Medicare does not usually include a dental benefit? Findings from a multisite investigation of oral health literacy: Medicare does not usually include a dental benefit. *J Public Health Dent* 2017;77(2):95–98. doi:10.1111/jphd.12199. PMCID: PMC5557019.
19. Shaw EK, Howard J, West DR, et al. The role of the champion in primary care change efforts: From the State Networks of Colorado Ambulatory Practices and Partners (SNOCAP). *J Am Board Fam Med* 2012 Sep–Oct;25(5):676–685. doi:10.3122/jabfm.2012.05.110281. PMCID: PMC3535479.
20. Dedoose. Dedoose 9.0.46.
21. Qualtrics. Qualtrics XM. March 2022.
22. R Core Team. R: A language and environment for statistical computing. R Foundation for Statistical Computing: Vienna; 2020.
23. RStudio Team. RStudio: Integrated Development for R. Boston; 2019.
24. Qualtrics. For how long should you accept survey responses? Accessed Aug. 2, 2022.
25. Miller E, Lee JY, DeWalt DA, Vann WF. Impact of caregiver literacy on children's oral health outcomes. *Pediatrics* 2010;126(1):107–114. doi:10.1542/peds.2009-2887. PMCID: PMC2896459.
26. Firmino RT, Ferreira FM, Martins CC, Granville-Garcia AF, Fraiz FC, Paiva SM. Is parental oral health literacy a predictor of children's oral health outcomes? Systematic review of the literature. *Int J Paediatr Dent* 2018;28(5):459–471. doi:10.1111/ipd.12378. Online ahead of print.
27. Bridges SM, Parthasarathy DS, Wong HM, Yiu CKY, Au TK, McGrath CPJ. The relationship between caregiver functional oral health literacy and child oral health status. *Patient Educ Couns* 2014 Mar;94(3):411–416. doi:10.1016/j.pec.2013.10.018.
28. Sun Y, Sun J, Zhao Y, Cheng A, Zhou J. A new comprehensive oral health literacy scale: Development and psychometric evaluation. *BMC Oral Health* 2021 Sep 5;21(1):429. doi:10.1186/s12903-021-01795-7. PMCID: PMC8419934.

THE CORRESPONDING AUTHOR, Christine Y.W. Hao, DMD, can be reached at christinehao@berkeley.edu.