

Critical Issues in Dental Hygiene

A Review of the Ethics of Patient-Based Licensure Examinations

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ABSTRACT

Purpose Concerns regarding the ethical justification for the use of single-encounter, procedure-based examinations on live patients for the licensure of dental hygienists and dentists in the United States persists despite decades of debate and publication on the subject. The purpose of this literature review was to summarize the specific ethical concerns and quantify recommendations in favor or against this examination methodology.

Methods A population, intervention, control or comparison, outcome (PICO) question was developed to review the topic as follows: "For individuals receiving dental care as part of determination of candidates for competency and readiness for licensure, do patient-based licensure examinations, as compared to other assessment methods, violate or infringe upon ethical principles or ethical standards for health care or society?" An electronic search was performed in three databases: PubMed/Medline, Scopus, and Embase. Key search terms and Medical Subject Headings (MeSH) included the following: ethics, clinical, competence, dental, dental hygiene, dentistry, education, licensure, live patient, and practice.

Results Ethical concerns about the use of patient examinations have been published in the professional literature for over 35 years. Of the 29 selected or endpoint articles identified, 27 articles cited one or more ethical concerns relating to single-encounter patient-based examinations while 20 articles recommended the elimination of this type of examination with an additional 6 articles citing elimination as an option in resolving the ethical issues regarding this type of licensure examination.

Conclusion The literature holds a predominant, prevailing professional opinion that single-encounter, procedure-based examinations on live patients presents significant ethical concerns and should be eliminated as a method in initial dental hygiene and dental licensure. The literature also suggests that state dental boards should initiate corrective regulatory or legislative actions to expeditiously end recognition of live patient examinations in their licensure processes.

Keywords clinical licensure examinations, live patient examinations, dental hygiene licensure, dental licensure, ethics

NDHRA priority area, **Professional development: Evaluation** (educational models).

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INTRODUCTION

The dental profession includes the practice domains of dentistry and dental hygiene. It is the only health profession that uses patient-based examinations, sometimes termed “live-patient examinations”, as part of the process for initial licensure of candidates graduating from dental and dental hygiene educational programs.¹ The use of this type of examination dates back to the late 1800s and early 1900s when dental training was poorly developed, non-standardized, and largely based on the apprenticeship model. Most training programs at that time were proprietary, not affiliated with universities or medical colleges, and not yet subject to accreditation standards or structured review.² To better regulate the licensing of individuals emerging from these dissimilar training programs, state dental boards deployed patient-based clinical exams to test the clinical skills of new graduates. Since that time, the profession and its educational programs have markedly progressed. For example, dental and dental hygiene educational institutions must now satisfy national accreditation standards overseen by the Commission on Dental Accreditation (CODA) and that include a rigorous review of methods used by institutions to ensure the demonstration of clinical competency by students prior to graduation.¹ In parallel, a variety of new, validated assessment methods have emerged to test clinical competency that do not require the participation of patients as test subjects; these methods include Objective Structured Clinical Examination (OSCE's) and portfolio reviews.¹ While an increasing number of individual states have shifted their licensure approaches towards these new processes and methods, patient-based examinations for initial licensure continue to be required or recognized within the dental statutes and regulations of the majority of the United States (US).

Patient-based examinations for initial licensure in dentistry are more accurately described as “*single encounter, procedure-based examinations on patients in the initial licensing of dental hygienists and dentists.*” They are one-time, “single shot”, high stakes examinations in which candidates perform clinical procedures on individuals exhibiting certain oral conditions or diseases. For dental

hygiene, these examinations may require non-surgical manipulation of gingival and dental tissues during the therapeutic removal of supragingival and subgingival calculus. Patients serving as test subjects for dental examinations must exhibit the type or classification of dental caries and periodontitis set by the examination and some of the related procedures are surgical involving irreversible techniques such as tooth preparation, i.e. “drilling” into the tooth structure. The examinations are coordinated by a third-party regional testing agency designated by the dental board or commission in the state where the candidate seeks licensure. The examiners are dentists or dental hygienists who are appointed members of or consultants to the regional testing agency, and in many states, state dental board members may also serve in this role. These examinations are conducted during the final year of education and typically utilize the clinical facilities of dental schools or dental hygiene programs through a limited contractual agreement.

Over the past half-century, many members of the dental and dental hygiene community have expressed concerns about the continuation of the patient-based licensure examination.³ These concerns are comprehensively addressed in the 2018 report by the Task Force on Assessment of Readiness for Practice (TARP), an effort undertaken and endorsed by three major dental organizations: the American Dental Association (ADA), the American Dental Education Association (ADEA) and the American Student Dental Association (ASDA).³ One major concern regarding patient-based licensure examinations is about the validity and reliability of the methodology to measure clinical competency and readiness of candidates for practice. Validity refers to the ability of a test to measure a defined characteristic (such as clinical competency) while reliability refers to a test's ability to repeatedly or consistently measure that characteristic as through multiple, successive challenges (or retakes) of the test. The other major concern centers on the ethics of the methodology and the ethical dilemmas that arise from the construction

and delivery of this type of examination. The major ethical concerns that have been voiced about patient-based licensure examinations are summarized in Table I. Common to these ethical considerations is the basic concern that patients should not be used in health care credentialing where the specific goal is to

identify provider incompetency as reflected through substandard care and therein carrying the possibility of irreversible harm. The availability of alternative forms of competency assessment not requiring patient participation has amplified this debate.³

Table I. Summary of major ethical concerns that have been voiced about patient-based licensure examinations

Ethical Concern	Additional Explanation and Context
The examination represents a clinical trial or experiment, not patient-centered care.	The examination construct contravenes aspects of the traditional doctor-patient relationship. Therefore, individuals on whom clinical procedures are performed are not "patients" per se but "test subjects". Therefore, the rules and safeguards about clinical trials, e.g., IRB review and approval, should apply.
Inappropriate methods used to recruit patients/test subjects.	Patients/test subjects with specific oral disease entities identified by candidates/test-takers candidates through recruitment fairs or intermediary professional brokers. Test-subjects are often compensated by test-takers to receive treatment counter to the norms of the doctor-patient relationship. Test subjects are not truly "patients"
Deficiencies in methods used to gain informed consent from patients/test subjects.	Patients/test subjects are not informed to the extent expected in a clinical trial or test. Informed consent is navigated by the candidate/test-taker and not examination administrators, therein increasing the possibility of inadequacies in the process and/or coercion to participate.
Unethical or unprofessional behavior by candidates/test-takers resulting from the high-stakes nature of the examination.	Candidates/test-takers place the health and safety of the patient/test subject at a lower priority than passing the examination.
The performance of irreversible dental surgical procedures by yet-unlicensed candidates/providers in test environments where independence is a required feature and clinical supervision or oversight by examiners is limited.	Concerns regarding the protection of the patient/test subject.
Rigid exam requirements lead to the provision of clinical procedures out of sequence with a contemporary treatment plan and contrary to optimal care.	Based on test specifications, the provision of less-urgent prescribed care while urgent needs are delayed or ignored for the examination. In addition, instances where the prescribed therapy may not meet the current standard of care.
Deficiencies in the availability of follow-up care when clinical procedures are delivered during the examination lead to unfavorable sequelae.	Follow-up care was not provided by examination personnel. Patients/test subjects are required to seek such care elsewhere.

Ethical concerns have been articulated by practitioners, candidates, students, educators, and community groups. Four of the dental professions' largest associations have active resolutions calling for an end to patient-based examinations.⁴⁻⁸ In 2018, the Coalition for Modernizing Dental Licensure (CMDL), was co-founded by the American Dental Association (ADA), the American Dental Education Association (ADEA) and the American Student Dental Association (ASDA).⁹ As of 2024, the CMDL has grown to include 130 supporting partners which include the American Dental Hygienists' Association (ADHA), 52 dental or dental hygiene schools, 53 state dental or dental hygiene associations, 18 dental specialty/other associations and several nondental-related advocacy groups. One of the CMDL's two primary goals is the elimination of single-encounter, procedure-based patient examinations through the adoption of alternative competency assessment methods.^{9,10} Recognizing that a formal literature review specific to the ethics of the patient-based examination methodology has not been conducted, the CMDL commissioned this review to better understand and quantify the extent of the ethical concerns. In this review of the literature, the results are presented along with recommendations for further action based on the findings.

METHODS

The initial step in the literature search process focus was to formulate a population, intervention, control or comparison, outcome (PICO) question. The following question guided the review process: "For individuals receiving dental care as part of determination of candidates for competency and readiness for licensure, do patient-based licensure examinations, as compared to other assessment methods, violate or infringe upon ethical principles or ethical standards for health care or society?"

An electronic search was performed in three databases: PubMed/Medline, Scopus, and Embase. The search terms, including Medical Subject Headings (MeSH) included the following: ethics, clinical, competence, dental, dental hygiene, dentistry,

education, licensure, live patient, and practice. Standard Boolean operator terms were used to create different search term combinations to maximize the identification of potential articles. Duplicate articles across the three databases or with non-English titles were deleted (excluded) from further consideration.

The remaining articles underwent two review cycles. Cycle #1 consisted of a high-level review of all sourced articles by one investigator/author (RLMN). Articles with titles and abstracts (if available) that did not appear to hold any relationship to the PICO question were excluded. The reference lists of remaining articles, if available, were scanned to identify additional articles with possible relevance to the PICO question. Full-text versions of the resultant group were then sought by the ADA Library staff either through online databases, search engines, or by inter-library loan. Articles, where a full-text version could not be secured, were excluded from further consideration.

Cycle #2 involved a detailed, structured review of secured full-text articles by both investigators/authors (KEM and RLMN). A survey instrument outlining the inclusion criteria and other analysis items pertinent to the PICO question was developed to facilitate and standardize the review. Inclusion criteria were that an article addressed the PICO question, devoted at least 400 words to the topic of ethical considerations relating to patient-based examinations for initial licensure, and was or appeared to be peer-reviewed. Because the literature on this topic was found to be predominantly opinion-based, ranging from expert opinion to individual opinion, a strategy was developed to assign articles to two categories: *Objective/Referenced* representing manuscripts with greater scientific construct/style and with five (5) or more references (Subset A), and *Subjective/Narrative* which were narrative in style and with four (4) or fewer references (Subset B).

The analysis of selected articles included the following determinations: 1) Did the article express an ethical concern about patient-based examinations?; 2) If so, was the expressed concern(s) related to the patient/test subject, the candidate or the protection of the

public in general?; 3) Could an expressed concern be categorized as related to one or more of the ethical principles of nonmaleficence, justice, beneficence and autonomy; 4) Were any expressed concerns referenced or linked to the codes of ethics of health care or other organizations?; 5) Did the authors recommend continuation of, change in or elimination of the patient-based examination methodology?

Evidence weights were not assigned to the categories. Selected articles were independently reviewed by the authors (KEM and RLMN) and when disagreement in any analysis item occurred, the authors conferred and reached a consensus.

RESULTS

The electronic search yielded 382 unique articles. Cycle #1 review identified 112 “possibly relevant” articles; full-text versions were secured for 102 (93.6%) of these. Twenty-nine articles (25.9%) were selected in Cycle #2.¹¹⁻³⁹ The selected articles are shown in chronological order along with a summary of outcomes related to the analyses described in the methods (Table II). Figures 1-3 summarize the remaining outcomes and graphically represent some data previously shown in Table II.

A publication from 1985, in the form of a debate, was identified as the earliest article expressing an ethical concern or related commentary regarding patient-based licensure examinations.¹¹ The most recent publication was published in 2022 and provided a perspective from the dental hygiene profession.³⁹ The twenty-nine articles were distributed as follows: one during the period 1980-1989; seven during 1990-1999; eleven during 2000-2009; nine during 2010-2019; and one during 2020-2024.

The greatest number of selected articles were published in the *Journal of Dental Education* (n=12), followed in frequency of publication by the *Journal of the American College of Dentists* (n=7), the *Journal of the American Dental Association* (n=5), *General Dentistry* (n=2), the *Journal of the California Dental Association* (n=1), the *Journal of the Michigan Dental Association* (n=1) and *Texas Dental Journal* (n=1).

Amongst the selected articles, 17 were categorized as *Objective/Referenced* and 12 as *Subjective/Narrative*. Ethical issues or concerns with the patient-based examination methodology were described in 27 of the articles^{11-19,21-23,25-39} with 2 articles asserting an absence of ethical issues (Table II, Figure 3).^{20,24} As shown in Figure 3, impingement on the ethical principles of beneficence, autonomy, justice, and non-maleficence was asserted across this group of articles. Ethical concerns were most frequently referenced to the safety and welfare of patients, but some articles also expressed ethics-related concerns for candidates taking the examination and for the public in general. A recommendation for the elimination of patient-based licensure examinations was made in majority of the articles (n=20) (Figure 2).^{13, 15-19, 21-23, 26-30, 32-34, 36, 38-39} Six articles were unique in presentation with narratives based either on the results of surveys or a point/counterpoint debate structure; mixed or contrasting-opinion recommendations on continuation or elimination of patient-based examinations were made in this group of articles.^{11,12,14,25,31,37} Three articles recommended the continuation of the patient-based method either with no change or some operational modifications.^{20,24,35}

Relative to the 20 articles recommending the elimination of patient-based licensure examination, the majority (n=17, 85%) asserted that this methodology did not comply with the ADA's *Principles of Ethics and Code of Professional Conduct* document.⁴⁰

DISCUSSION

One of the challenges in designing this literature review was the knowledge that an effective search strategy on the topic of the ethical implications of patient-based dental licensure examinations would detect a large range and quality of articles. It was anticipated that publications would span a breadth of form and rigor, ranging from traditional manuscripts addressing the topic in a dedicated, comprehensive manner, to others where it was a secondary or even lesser focus, to expressions of individual opinion in the form of editorials, short letters, or statements. To assist and focus the review process, a PICO question

Table II. Summary of articles selected for review in chronological order (n=29)

Manuscript (Title/Authors)	Year of Publication	Subset Designation		Ethical Concern Expressed		Concerns Expressed for		
		A	B	Yes	No	Patient	Candidate	Public
Allen D, et al. Debate: the use of patients in clinical board examinations	1985		X	X		X	X	X
Kennedy J, et al. The emerging dialogue of regional boards and the dental deans	1990	X		X		X	X	
Buchanan RN Problems related to the use of human subjects in clinical evaluation/responsibility for follow-up care	1991		X	X		X	X	X
Hasegawa TK, Matthews M Dental clinical examining board dilemma	1995	X		X		X	X	X
Chiodo GT, Tolle SW An ethics perspective on licensure by state board examinations	1996	X		X		X	X	X
Gray EJ Examining the exam	1996		X	X		X		
Meskin LH Dental licensure revisited	1996		X	X		X	X	X
Feil P, et al. Knowledge of ethical lapses and other experiences on clinical licensure examinations	1999	X		X		X	X	X
Meskin LH The perfect patient	2000		X	X		X	X	
Cole JR, Maitland RI A response from the American Association of Dental Examiners	2002		X		X			
Formicola AJ, et al. Banning live patients as test subjects on licensing examinations	2002	X		X		X	X	X
Hasegawa TK Ethical issues of performing invasive/irreversible dental treatment for purposes of licensure	2002	X		X		X	X	

Table II. Summary of articles selected for review in chronological order (n=29) continued

Manuscript (Title/Authors)	Year of Publication	Subset Designation		Ethical Concern Expressed		Concerns Expressed for		
		A	B	Yes	No	Patient	Candidate	Public
Jenson LE Is it ethical to involve patients in state board examinations?	2002	X		X		X	X	X
Pattalochi RE Patients on clinical boards: an examiner's perspective	2002		X		X			
Conley JF Harboring some ethical dilemmas	2003		X	X		X	X	
Lasky RE, Shub JL Dental licensure reaches a crossroads: the rationale and method for reform	2003	X		X		X	X	X
Ranney RR, et al. A survey of deans and ADEA activities on dental licensure issues	2003	X		X		X	X	
Oh TW Clinical licensure exams: the unruly gatekeepers	2005		X	X		X	X	X
Gerrow JD, et al. An analysis of the contribution of a patient-based component to a clinical licensure examination	2006	X		X		X	X	X
Meru M The hidden curriculum and my three wishes	2010		X	X		X	X	X
Conrad HJ, Mills EA Dental students choosing licensure path give more consideration to career flexibility rather than ethical dilemmas	2011	X		X		X	X	X
Lantzy MJ, et al. The ethics of live patient use in dental hygiene clinical licensure examinations: a national survey	2012	X		X		X	X	X
Roucka TM, Donate-Bartfield E What's wrong with this picture?	2013		X	X		X	X	X

Table II. Summary of articles selected for review in chronological order (n=29) continued

Manuscript (Title/Authors)	Year of Publication	Subset Designation		Ethical Concern Expressed		Concerns Expressed for		
		A	B	Yes	No	Patient	Candidate	Public
Friedrichsen SW Moving toward 21st-century clinical licensure examinations in dentistry	2016	X		X		X		
Gambacorta JE, et al. The Buffalo model: shifting the focus of clinical licensure exams in dentistry to address ethical concerns regarding patient care	2016	X		X		X	X	
Mills EA Non-patient-based clinical licensure examination for dentistry in Minnesota	2016	X		X		X	X	X
Chu T-MG, et al. Should live patient licensing examinations in dentistry be discontinued? Two viewpoints	2018	X		X		X	X	X
Scarbrough AR Ethics of using live patients for licensing board examinations	2018		X	X		X	X	
Poliki P, et al. A comparison of manikin and live patient-based dental hygienist clinical licensing exam	2022	X		X		X		
Total		17	12	27	2	27	24	17

was formulated to guide the search strategy which included the definition of inclusion criteria and other analysis items. Care was taken to be as inclusive as possible in the selection of endpoint articles while excluding items that did not sufficiently address the central topic. Importantly, the strategy facilitated the recognition of two subsets of articles, *Objective/Referenced* (Subset A) representing manuscripts with greater scientific or academic construct/style, and *Subjective/Narrative* (Subset B) which were more opinion-based, supported by few or no references, etc., yet providing sufficiently structured input and reflection to warrant consideration.

The two inclusion criteria that proved most challenging to satisfy were that an article a) specifically addressed the PICO question and b) devoted at minimum of 400 words (e.g., 2-4 paragraphs), indicative of sufficient focus on the topic of ethics and patient-based licensure examinations. In addition, determining whether the articles had been peer-reviewed often proved elusive, especially for editorials and invited submissions; articles where uncertainty existed were not immediately excluded but remained in consideration for selection.

This review of the literature revealed that significant ethical concerns have existed about patient-based

Figure 1. Frequency of ethical concerns and related principles cited (n=29)

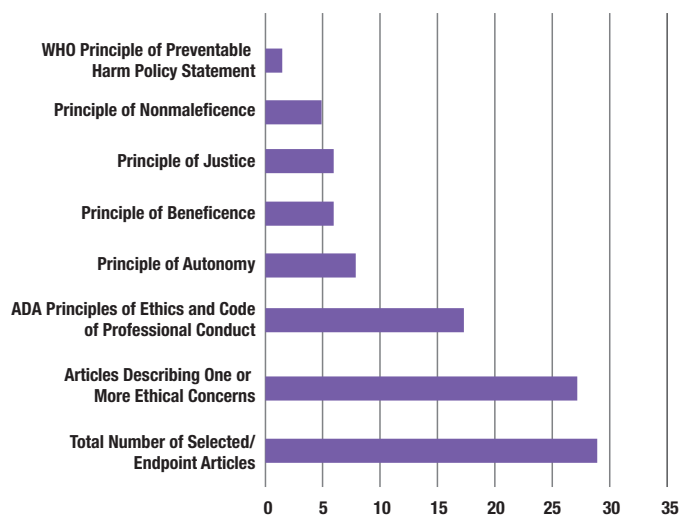
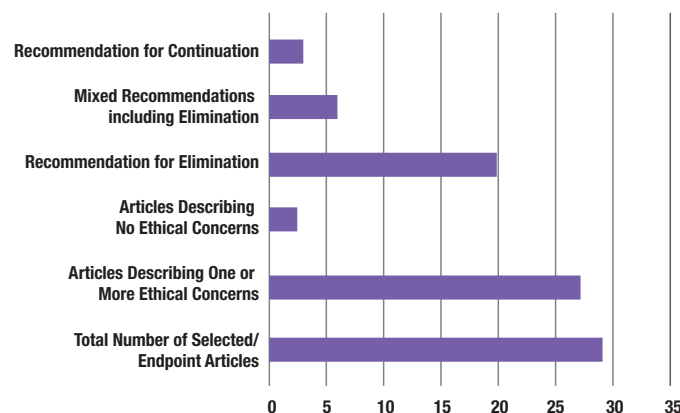
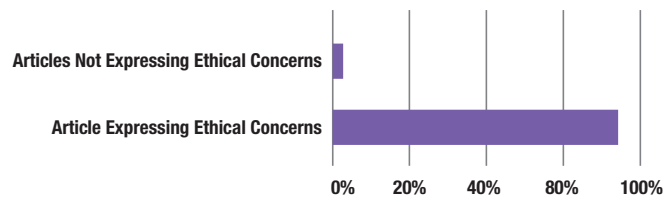


Figure 2. Articles citing an ethical concern(s) and recommendations for continuation or elimination of traditional patient-based dental licensure examinations (n=29)



licensure examinations both for dentistry and dental hygiene since at least 1985.¹¹ The first article was a 1985 debate in the *Journal of the American Dental Association* in which four contributors offered contrasting viewpoints on the subject.¹¹ This is noteworthy as the 1926 Gies Report is often cited as the first such report; this review found that the concerns in the Gies Report were about fairness and validity of the examination process rather than ethical issues; consequently, the Gies Report did not fulfill the inclusion criteria for this literature review.²

Figure 3. Frequency of ethical concern(s) and recommendations for continuation or elimination of traditional patient-based dental licensure examinations (n=29)



There are several salient points within the data displayed in Table II and Figures 1-3 that extend beyond the outcomes reported in the results. The inclusion/exclusion process identified seventeen articles in the Objective/Referenced category compared with twelve in the Subjective/Narrative category. The difference between these two categorical groups was sometimes striking, with articles in the former category generally having a stronger scientific and analytical character and those on the latter category tending to be more conversational in style and based on opinion rather than supporting evidence. The two articles that did not note any ethical issues with patient-based examinations were in the Subjective/Narrative category. Most articles that did report ethical concerns linked these concerns not only to the patient/test subject but also to the test candidate and/or the public-at-large. Authors of the articles in the Objective/Referenced category that expressed an ethical concern about patient-based examinations and the general public most frequently based the concern on the reported low validity and reliability of these examinations in assessing clinical competency and therein the questionable effectiveness of this methodology in protecting the public.

As shown in Figure 1, all four major principles of health care ethics were referenced across the twenty-seven articles where ethical concern was expressed. Autonomy, or the duty of the dental provider to respect a patient's right to self-determination and confidentiality, was the principle most frequently cited. Also cited were the principles of beneficence (do good, where the provider has the duty to promote the patient's welfare), justice (the duty to treat people fairly)

and nonmaleficence (do no harm). Consistent with this reporting, the ethics reference most frequently cited was the ADA Principles of Ethics and Code of Professional Conduct.⁴⁰

This review found a paucity of support for the continuance of patient-based examinations (Figure 2). This reasoning extended beyond the frequency of expression that ethical problems were associated with this type of examination (Figure 3). A secondary reasoning was that this type of examination was no longer necessary due to the emergence and increasing acceptance of alternative forms of competency assessment not requiring that patients serve as test subjects. The three alternative assessment methods with the greatest current recognition by states are manikin-based simulations, objective-structured clinical examinations (OSCE), and portfolio review.¹⁰ In addition, several states recognize completion of a one-year postgraduate residency training, or PGY-1, as an experiential alternative to a licensure examination.¹⁰ The COVID-19 pandemic accelerated these changes across the US as the delivery of patient-based examinations became difficult. During the pandemic period, over 40 states modified their regulations to recognize one or more of these alternative methods. Relative to dental/dentist licensure, as of June 1, 2024, 49 of the 50 US states, along with the District of Columbia, have changed their licensure rules to permanently recognize one or more alternative pathways that do not include or require the completion of a patient patient-based examination.¹⁰ Only one state, Delaware, continues this singular requirement.¹⁰

This literature review provides additional context at a time when significant reflection is occurring within the dental professions on the process of licensure to practice. The formation of the CMDL illustrates that many in the dental professions believe that significant improvements are necessary and possible.⁹ The four major associations representing the dental professions share resolutions calling for an end to patient-based licensure examinations.⁴⁻⁸ The following are pertinent excerpts from these policies and resolutions:

American Dental Association, current policies (1954-2023) state the “elimination of patients in the clinical licensure examination process is strongly supported to address ethical concerns, including those identified in the ADA Council on Ethics, Bylaws and Judicial Affairs statement entitled Ethical Considerations When Using Patients in the Examination Process (Reports 2008:103). State dental societies and dental boards are urged to work toward acceptance of valid and reliable clinical assessments that do not require single-encounter performance of procedures on patients.”⁴

American Dental Hygienists' Association, policy statement (2018, #1S-18/1-08) states that the “ADHA supports elimination of the patient procedure-based, single encounter clinical examination for candidates who are graduates of Commission on Dental Accreditation (CODA) accredited dental hygiene programs and who are eligible to take the National Board Dental Hygiene Examination.”⁸

American Dental Education Association, House of Delegates Resolution 5H-2014 “recommends the elimination of the human subject/patient-based components of clinical licensure examinations and the adoption of an alternative and validated process for the clinical assessment of candidates for licensure.”⁷

American Student Dental Association policy number L-1 “recommends elimination of patient-based examinations for initial dental licensure.”⁶

These resolutions align with and reinforce the recommendations made within the majority of articles in this literature review. The articles present compelling ethical reasoning for the elimination of traditional patient-based examinations by all states. Further, the development of alternative assessment methods, now recognized and employed by a number of state dental boards appear to have rendered patient-based examination unnecessary and obsolete. Beyond the ethical imperative, there is evidence that some of these alternative assessment methods have greater validity in differentiating between competent and incompetent

candidates furthering the need to sunset patient-based examinations in favor of newer, improved, and ethically sound methods.³

This literature review and its findings should be of interest and importance to state dental boards and related regulatory agencies overseeing professional licensure. The availability of alternative methods to assess competency and readiness for practice points to the very serious question of whether patient-based licensure examinations should be permitted to continue either as part of a required or possible pathway in any state. The authors of the many articles in this literature review advocating for cessation of this licensure methodology would undoubtedly suggest the time has come for all states to take this corrective action.

How might this be accomplished? First, as previously described, it is important to recognize that substantial progress has been made over the past decade toward reducing the recognition of patient-based examinations and their active use in licensure.¹⁰ Relative to dental/dentist licensure, of the 49 states that offer alternative licensure pathways, 36 states no longer actively describe or promote alternatives that require the completion of patient-based examinations. However, even with these changes, only one state, Connecticut, to date, has changed its statutes to prohibit the use of this method in initial dental licensure. Fourteen state dental boards (Alaska, Delaware, Georgia, Louisiana, Mississippi, Missouri, Montana, North Carolina, Oklahoma, South Dakota, Tennessee, Texas, Wisconsin, and Wyoming) continue to function under statutory or regulatory provisions specifying that a single-encounter, procedure-based patient examination is required for dental licensure. One state (Delaware) continues to grant initial dental licensure only upon the completion of a patient-based examination.

The national movement toward acceptance of alternative assessment methods for initial licensure has been slower, overall, in dental hygiene. A notable exception is the recent change in California where graduates of CODA-accredited and Dental Hygiene Board of California (DHBC)-approved programs may

gain licensure based on program completion and are no longer required to take a clinical examination. However, many states continue to retain the requirement of a patient-based licensure examination. One might conclude, therefore, that patient-based examinations are far from retired and vacant from the landscape of dental and dental hygiene licensure. For this to be achieved, the following steps appear necessary: 1) States where statutes or regulations still exist that require candidates to pass patient-based examination for dental/dental hygiene licensure take prompt legislative or related action to eliminate this requirement in favor of alternative assessment strategies, and 2) All state dental boards, in consideration of future graduates, prohibit the use of, or otherwise cease recognition of, licensure processes that require the completion of single-encounter, procedure-based patient examinations. These actions would allow state dental boards to review and update their licensure processes to ensure compliance with prevailing ethical standards and employ the most valid and reliable methods available. The result will be a better served and protected public and allow the dental and dental hygiene professions to better exemplify the ethical standards to which they aspire.

CONCLUSION

The debate in the literature regarding ethical concerns about examinations for initial licensure requiring the use or participation of patients as subjects within the examination format has existed at least since 1985. Only a small number of publications in the professional literature found an absence of ethical issues with patient-based examinations for licensure and justification for their continued use. The dominant opinion identified in the literature reviewed is that the patient-based examination methodology presents authentic and deeply problematic ethical issues for patients, candidates, the public, and the profession. A strong majority of publications propose that the ethical problems inherent in patient-based examinations justify an immediate cessation of their use and that these examinations should be replaced with valid, reliable, and ethical alternative methods of assessment that are now available and in use.

DISCLOSURES

The authors report no potential competing interests.

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REFERENCES

1. Institute of Medicine (US) Committee on the Future of Dental Education. Dental education at the crossroads: Challenges and change. Field MJ, editor. Washington (DC): National Academies Press (US); 1995. p. 35-58; p. 228-53.
2. Gies WJ, Pritchett HS. Dental education in the United States and Canada. A report of the Carnegie Foundation for the advancement of teaching. *South Med J.* 1927 Sept;20(9):746.
3. American Dental Education Association. Report of the task force on assessment of readiness for practice (ADA, ADSA, ADEA) Sept. 2018 [Internet] Washington DC: American Dental Education Association; 2013-24 [cited 2024 Jun 5]. Available from: <https://www.adea.org/tarpreport/>
4. American Dental Association. Current policies 1954-2023 [Internet]. Chicago (IL): American Dental Association; 2024 [cited 2024 Jun 5]. Available from: https://www.ada.org/-/media/project/ada-organization/ada/ada-org/files/about/governance/current_policies.pdf.
5. American Dental Association. Eliminating use of human subjects in board examinations: 64H2000 [Internet]. Chicago (IL): American Dental Association; 2024 [cited 2024 Jun 5]. Available from: https://www.ada.org/-/media/project/ada-organization/ada/ada-org/files/about/governance/current_policies.pdf.
6. American Student Dental Association. Policy Number L-1 Initial Licensure Pathways [Internet]. Chicago (IL): American Student Dental Association; 2024 [cited 2024 Jun 5]. Available from: <https://www.asdanet.org/about-asda/leaders-and-governance/current-statements-of-position-or-policy/dental-education-administration/statement-on-policy/L-1>
7. American Dental Education Association. Proceedings of the 2014 ADEA House of Delegates. *J Dent Educ.* 2014 Jul;78(7):965-79.
8. American Dental Hygienists' Association. Policy statement 1S-18/1-08 [Internet]. Chicago (IL): American Dental Hygienists' Association; 2023 [cited 2023 Mar 1]. Available from: https://www.adha.org/wp-content/uploads/2024/03/ADHA_Policy_Manual-FY23.pdf
9. Coalition for Modernizing Dental Licensure. Modernizing dental licensure [Internet]. Chicago (IL): Coalition for Modernizing Dental Licensure; 2024 [cited 2024 Jun 5]. Available from: <https://dentallicensure.org>.
10. Coalition for Modernizing Dental Licensure. Licensure Map [Internet]. Chicago (IL): Coalition for Modernizing Dental Licensure; 2024 [cited 2024 Jun 5]. Available from: <https://www.dentallicensure.org/licensure-map>.
11. Allen D, Reynolds RJ, Bridgeman R, et al. The use of live patients in clinical board examinations: The debate. *J Am Dent Assoc.* 1985 Feb;110(2):164-70.
12. Kennedy J, Demarais DR, Cartwright CB, et al. Special feature: The emerging dialogue of regional boards and the dental deans. *J Mich Dent Assoc.* 1990; Nov/Dec: 523-46.
13. Buchanan RN. Problems related to the use of human subjects in clinical evaluation/responsibility for follow-up care. *J Dent Educ.* 1991 Dec;55(12):797-801.
14. Hasegawa TK, Matthews M. Dental clinical examining board dilemma. *Tex Dent J.* 1995;112(12):44-46.
15. Chiodo GT, Tolle SW. An ethics perspective on licensure by state board examinations. *Gen Dent.* 1996 Jan-Feb;44(1):18-20, 22, 24-25.
16. Gray EJ. Examining the exam. *J Am Dent Assoc.* 1996 Aug;127(8):1154,1156.

17. Meskin LH. Dental licensure revisited. *J Am Dent Assoc.* 1996 Mar; 127(3): 292-94.
18. Feil P, Meeske J, Fortman J. Knowledge of ethical lapses and other experiences on clinical licensure examinations. *J Dent Educ.* 1999 Jun;63(6):453-58.
19. Meskin LH. The perfect patient. *J Am Dent Assoc.* 2000 Oct;131(10):1394,1396.
20. Cole JR, Maitland RI. A response from the American Association of Dental Examiners. *J Am Coll Dent.* 2002 Spring;69(2):47-49.
21. Formicola AJ, Shub JL, Murphy FJ. Banning live patients as test subjects on licensing examinations. *J Dent Educ.* 2002 May;66(5):605-9; discussion 610-1.
22. Hasegawa TK. Ethical issues of performing invasive/irreversible dental treatment for purposes of licensure. *J Am Coll Dent.* 2002 Spring;69(2):43-6.
23. Jenson LE. Is it ethical to involve patients in state board examinations? *J Am Coll Dent.* 2002 Spring;69(2):39-42.
24. Pattalochi RE. Patients on clinical boards: An examiner's perspective. *J Dent Educ.* 2002 May; 66(5): 600-4.
25. Conley JF. Harboring some ethical dilemmas. *J Calif Dent Assoc.* 2003 Aug;31(8):589-91.
26. Lasky RE, Shub JL. Dental licensure reaches a crossroads: the rationale and method for reform. *J Dent Educ.* 2003 Mar;67(3):295-300.
27. Ranney RR, Haden NK, Weaver RW, Valachovic RW. A survey of deans and ADEA activities on dental licensure issues. *J Dent Educ.* 2003 Oct; 67(10): 1149-60.
28. Oh TW. Clinical licensure exams: The unruly gatekeepers. *J Am Coll Dent.* 2005 Fall;72(3):16-18.
29. Gerrow JD, Murphy HJ, Boyd MA, Scott DA. An analysis of the contribution of a patient-based component to a clinical licensure examination. *J Am Dent Assoc.* 2006 Oct;137(10):1434-9.
30. Meru M. The hidden curriculum and my three wishes. *J Am Coll Dent.* 2010 Fall;77(3):5-9.
31. Conrad HJ, Mills EA. Dental students choosing licensure path give more consideration to career flexibility rather than ethical dilemmas. *J Am Coll Dent.* 2011 Spring;78(1):24-32.
32. Lantzy MJ, Muzzin KB, DeWald JP, et al. The ethics of live patient use in dental hygiene clinical licensure examinations: A national survey. *J Dent Educ.* 2012 Jun;76(6):667-681.
33. Roucka TM, Donate-Bartfield E. What's wrong with this picture? *Gen Dent.* 2013 Aug;61(5):18-21.
34. Friedrichsen SW. Moving toward 21st-century clinical licensure examinations in dentistry. *J Dent Educ.* 2016 Jun;80(6):639-40.
35. Gambacorta JE, Glick M, Anker AE, Shampaine GS. The Buffalo model: Shifting the focus of clinical licensure exams in dentistry to address ethical concerns regarding patient care. *J Dent Educ.* 2016 Jun;80(6):641-7.
36. Mills EA. Non-patient-based clinical licensure examination for dentistry in Minnesota: significance of decision and description of process. *J Dent Educ.* 2016 Jun;80(6):648-51.
37. Chu T-MG, Makhoul NM, Silva DR, et al. Should live patient licensing examinations in dentistry be discontinued? Two viewpoints: Viewpoint 1: Alternative assessment models are not yet viable replacements for live patients in clinical licensure exams and viewpoint 2: ethical and patient care concerns about live patient exams require full acceptance of justifiable alternatives. *J Dent Educ.* 2018 Mar;82(3):246-51.
38. Scarbrough AR. Ethics of using live patients for licensing board examinations. *J Am Dent Assoc.* 2018 Feb;149(2):163-4.
39. Poliki P, Farsi NJ, Zahran S, Bhadila G. A comparison of manikin and live patient-based dental hygienist clinical licensing exam. *J Dent Educ.* 2022 Oct;86(10):1279-84.
40. American Dental Association. ADA principles of ethics and code of professional conduct [Internet]. Chicago (IL): American Dental Association; 2009 [cited 2024 Jun 5]. Available from: https://www.ada.org/about/principles/code-of-ethics?gad_source=1&gclid=EAlalQobChMlZJisi5_FhgMV22pHAR37ygBHEAAYASAAEgIHH_D_BwE.
41. World Health Organization. Patient Safety [Internet]. Geneva: World Health Organization; 2024 [cited 2024 Jun 5]. Available from: <https://www.who.int/teams/integrated-health-services/patient-safety/about>.