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A dialectical analysis of an art of dental hygiene practice

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Abstract: *Objective:* There has been little in the literature to date that speaks of an art of dental hygiene compared to science. Yet, science, conceived as the findings from research, does not apply itself; it is the knowledge, judgement and skill of practitioners to apply these findings in a particular setting that, at its highest level, informs artful dental hygiene practice. The purpose of this paper is to question whether an art of dental hygiene exists, if it is important, and how it relates to science. *Methods:* The method used in the analysis contained in this paper is a dialectical approach used to examine contrary positions, i.e. whether art exists or does not exist, by outlining the structure of each position and clarifying explicit and implicit similarities and dissimilarities. A framework of conceptualizations of art from nursing has been used to examine dental hygiene literature for evidence of art. *Results:* A preliminary conceptualization, substantiated within dental hygiene, sees the art of dental hygiene as abilities to grasp meaning in client encounters, establish meaningful connections with clients, perform dental hygiene actions skillfully and proficiently, rationally determine courses of dental hygiene action, and conduct dental hygiene practice morally and ethically. *Conclusions:* That an art of dental hygiene exists is not in doubt and the analysis is presented. To understand better how dental hygienists make practice decisions to develop this process to its optimum – the pursuit of perfection and excellence in dental hygiene practice, we must pursue understanding the art of dental hygiene practice.

Key words: dental hygiene art; dental hygiene epistemology; dental hygiene profession; dental hygiene science; dental hygienists; dialectical analysis

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Introduction

In the past two decades, there has been increasing pressure to incorporate evidence-based decision-making into healthcare practice, including that of dental hygiene. Changing legislation for health practitioners that gives greater prominence to the role of continuing competence lends support for continually strengthening the knowledge used for practice. Expanded and more rapid access to information through increased availability of computers and databases in workplaces, coupled with internal and external pressures to provide the best possible services to society, have led to the nearly ubiquitous appearance of evidence-based artefacts. Evidence-based approaches frequently include a focus on hierarchical characterizations based on methodology, with systematic reviews of randomized controlled trials at the top of the virtual methodological pyramid, results from other supposedly lesser forms of research falling below and naturalistic forms frequently invisible. While most dental hygiene practitioners would agree that research results do, and ought to, form an important component of their decision-making in practice, there is little to suggest that knowledge from various forms of research is the only form of knowledge used in practice decisions.

These research-based forms of knowledge are often referred to as science, and often referred to as the foundation or body of knowledge of dental hygiene, commonly in literature that advances notions of professionalism or seeks to advance dental hygiene generally. Basing decisions for practice on forms of knowledge that are the products of positivism privileges this type of knowledge and may seem to suggest that this is the most important or indeed the only form of knowledge necessary for practice. But is this the case? Are products of science the only knowledge used in dental hygiene practice? Much of the literature in dental hygiene does speak of the importance of the science of dental hygiene, although consensus on definitions of the terms science and dental hygiene science is not apparent in the literature and warrants exploration (1–3).

There has been little in the literature to date that speaks of an art of dental hygiene. Periodically, discussions arise among dental hygienists about whether this art exists and what it is. These discussions often do not extend to whether there is a need for it in dental hygiene and rarely make it into print. These discussions suggest that there is interest in this topic from dental hygienists. The purpose of this paper is to consider these questions: to examine whether an art of dental hygiene does exist, to explore whether it is an important component of dental hygiene practice and further to ask how it relates to dental hygiene science. I will begin by describing the science of dental hygiene as it currently exists in the dental hygiene literature, and will consider that science is necessary but not sufficient for good dental hygiene practice. I propose that art, considered broadly, includes the essence of the knowledge used in the application of science into practice, but not only the application of science, and extends to include moral, ethical and experiential knowledge of clinical particulars and dental hygiene in a societal context. I will describe patterns of art in the nursing literature, consider whether these exist in dental hygiene and whether this is an appropriate approach to take. The perspective for this analysis is provided by the works of Joy L. Johnson on the art of nursing (4–8) and indirectly her mentor Dr June Kikuchi, who in turn was influenced by the philosopher Mortimer Adler.

Epistemological assumptions

To allow the reader to make reasonable judgements about the merits of the arguments that I present in this paper, I provide definitions of the terms used and the assumptions or taken for granted beliefs, upon which my arguments are based.

It is assumed that dental hygienist researchers are pursuing the whole truth as they progress in the development of knowledge for dental hygiene practice, with pursuit of the whole truth '…getting to *know* all that is *knowable*' concerning the discipline (9, p. 7). Kikuchi and Simmons (9) equated the pursuit of truth, with the whole truth being the goal, with the pursuit of knowledge. In the pursuit of truth, inconsistencies and incompatibilities must be examined in light of or given the principle of non-contradiction, which holds that whatever is inconsistent or incompatible with existing truths must be false. Progress cannot be made in dental hygiene knowledge if contrary positions exist and remain unaddressed and undisputed (9).

Dental hygiene science has been widely discussed in the literature (1–3, 10, 11) and promoted as the foundation for professional dental hygiene practice, while rarely has the art of dental hygiene been addressed. One implication of this deficiency could be that an art of dental hygiene does not exist. However, reference to art is found explicitly in professional documents, such as mission statements (12), practice standards (13) and codes of ethics (14). Empirical evidence exists that practice knowledge is derived from sources other than, and including, science (15). That art both exists and does not exist is an inconsistency and contradiction that suggests one must be false. An initial assumption of this paper is that the lack of discourse on an art of dental hygiene represents a position that

art does not exist, such that it would not be encouraged or valued in dental hygiene. Whether an art of dental hygiene exists can be considered a controversial issue, in that contradictory positions are present and cannot both be true.

It is assumed that, where art is not explicitly identified in the literature or professional documents, but where abilities, knowledge and characteristics are mentioned that are distinct from science but consistent with conceptions of art as identified by Johnson in the nursing literature (5), these will be considered as implicit evidence of an art of dental hygiene.

Whether an art exists, and a preliminary understanding of what that might be, can be pursued through philosophical inquiry. 'Just as scientific inquiry can yield knowledge about phenomena, philosophic inquiry, if properly pursued, is able to yield knowledge about phenomena' (4, p. 8). Philosophers reflect upon, reason about and judge objects of thought to obtain new knowledge. As with the knowledge produced by other scientists, that new knowledge is subject to future challenge and extension. When these judgements 'are compared against reality and validated as true' (p. 8), philosophical inquiry results in knowledge and not in mere opinion. Johnson (4, citing Adler) distinguished between knowledge and opinion, with knowledge characterized as probable truth that is 'responsible, reliable, well founded and reasonable' (p. 9) and mere opinion as 'irresponsible, unreliable, unfounded and unreasonable' (p. 9).

A further assumption in this paper is its moderate realist perspective, consistent with the works of Johnson (4–8) on which this paper is based, and the works of Kikuchi (9, 16, 17) and the philosopher Adler. The perspective of realism holds that 'reality exists outside and independent of the mind and is knowable' (17, p. 98). Furthermore, the moderate perspective sees truth and reality as more probable than absolute. Kikuchi and Simmons have said '…moderate realism takes the position that, although we view reality differently as a consequence of how we are *nurtured*, we can, nonetheless, attain an objective view of reality which is probably true by testing our various subjective views against reality which common sense tells us exists and is the way it is regardless of how any one of us views it' (18, p. 45).

The method used in the analysis contained in this paper is a dialectical approach developed by Adler and colleagues at the Institute for Philosophical Research in Chicago, and used by Johnson in her analysis of nursing art (5). This method is used to examine controversial positions by outlining and clarifying the structure of each position, followed by 'a process of constructive interpretation' (5, p. 2). The dialectical approach is non-partisan and objective in its treatment of the various positions on an issue, and seeks to clarify similarities and dissimilarities explicit and implicit in the various positions. This approach has value when seeking to identify reference to issues that may be explicitly or implicitly contained within the literature.

To examine a dental hygiene issue through use of nursing literature, as well as dental hygiene literature, raises questions about the appropriateness of this approach. Nursing literature has been used historically in some major dental hygiene works, including those on research and professionalism (1, 2, 19, 20), theory (2, 3, 11) and promotion of dental hygiene as a discipline (10, 21).

For the purposes of this analysis, it is assumed that science exists and is highly valued as the foundation of dental hygiene practice, and that art may or may not exist but is poorly understood and thus not valued for dental hygiene practice. A discussion of the implications of both positions will follow.

Science

An important component of a discipline includes its science and the relationship between science and practice (22). A practice discipline, such as dental hygiene, relies on its science to inform the actions of its practitioners and further, the problems of practice give rise to the questions pursued in the science (3, 21).

Darby (1) has considered science 'to refer to the accumulated body of knowledge of those disciplines which has been established and tested through research' (p. 10). She goes on to say that theory is the basis of science, giving us a view of science for dental hygiene that is theoretically driven and subsequently related to existing knowledge in a cumulative process. She posits that the role of dental hygiene theory is essential to 'a body of knowledge unique to dental hygiene as a science' (p. 12) and that 'Rather than personal intuition, habit or tradition, theory development must serve as a basis for dental hygiene practice, making it scientific and less ritualistic' (p. 12). This suggests a view of knowledge for practice that is derived from theoretically driven research and distinct from other forms of knowing that are experiential and intuitive, and omits moral and ethical knowing. Darby acknowledges that theories are often drawn from practice and must serve dental hygiene practice, a view that links science to practice and to research.

Walsh (3) also describes science as a distinct body of knowledge that is 'the theoretical basis of practice' (p. 12). She too views the science of dental hygiene as theoretically driven and validated and refined through research. She links this distinct body of knowledge, and its relationship to the practice of

practitioners, to an emerging discipline of dental hygiene. She also links science to art when she states '…dental hygiene needs to articulate the knowledge domain of dental hygiene science that underlies the art of dental hygiene practice' (p. 12).

These conceptualizations of science as theory-driven suggest an association with deductive rather than inductive methods, an ontological view probably associated with dental hygiene's origins within dentistry. Dental hygiene did not emerge on its own in direct response to an emerging need in society, but rather was created by dentistry, initially to work with children, using knowledge from dentistry which has a positivist tradition.

Darby and Bowen (23) described a scientific method for dental hygienists containing five steps: problem formulation, hypothesis formulation, data collection, analysis/interpretation and conclusions. This view is probably consistent with that of the majority of dental hygienists, overlooking and suggesting a devaluing of naturalistic forms of inquiry and their potential contributions to dental hygiene knowledge. Darby at one point does say that 'All systematic inquiry designed for the purpose of advancing knowledge is called research' (2, p. 44), opening the door for other than positivistic methods. Others have promoted the use of qualitative methods (24), and qualitative works are beginning to appear in dental hygiene journals. The amount of research conducted and published by dental hygienists is growing (25), yet it remains a small body and is dominated by positivistic approaches. This may be as much a function of the fact that there are few dental hygienists prepared at graduate levels conducting research, as it is a function of the traditions of positivistic approaches inherent in dental hygiene and the training environments available to potential dental hygienist researchers.

The consistent thread in the discourse on dental hygiene science is its association with theoretically driven research, and that research by dental hygienists for dental hygiene practice is seen as key to advancing dental hygiene (1–3, 14, 20, 26, 27). At the first international conference on research in dental hygiene Stamm said 'Clearly, research is a necessary enterprise to establish and enlarge the knowledge base…' (20, p. 6). This history, coupled with the current culture of evidence-based practice which emphasizes practice decisions based on hierarchically ordered research, primarily from a positivistic tradition, suggest that science or the knowledge derived from science is a highly valued form of dental hygiene practice knowledge.

However, Johnson has pointed out that 'Science alone will not solve all the problems of nursing' (5, p. 1). This statement could be reasonably extrapolated to reflect the situation in dental hygiene. She goes on to point out that 'Guidance regarding the use or application of scientific findings does not emanate from nursing science itself' (p. 1). Johnson has defined science broadly as 'empirical knowledge that is grounded and tested in experience, specifically special experience' (4, p. 9), with special experience referring to the 'result of investigative efforts' (p. 9). She suggests that knowledge from science is 'by nature general' (p. 9) or universal. This leaves a gap that is related to the particulars of the clinical setting, the context of practice.

The primacy given to science-based practice knowledge, coupled with the relative invisibility of an art of dental hygiene, or artful dental hygiene practice, in the literature, raises questions about whether art exists in practice, and if so, how does it manifest and is it valued?

Art

Formal documents, present and past, imply the existence of an art of dental hygiene, without going so far as to define it. The American Dental Hygienists Association in its Bylaws and Code of Ethics states 'The purposes of this Association shall be…to advance the art and science of dental hygiene' (14, p. 1), and this Association's older version of its practice standards (13) stated 'These Standards are the profession's consensus on the current art of dental hygiene clinical practice'. The Missouri Dental Hygienists Association includes in its mission statement that 'the mission of the Missouri Dental Hygienists' Association is to advance the art and science of dental hygiene' (12).

Walsh (3) explicitly acknowledges that an art of dental hygiene practice exists, suggesting that 'dental hygiene science… underlies the art of dental hygiene practice' (p. 12). However, neither she nor others have gone on to put forward a definition or description of dental hygiene art. This is unfortunate, as science alone does not provide all of the knowledge necessary for dental hygiene practice and this omission leaves a gap in our understanding of the nature of the knowledge used in dental hygiene practice. Science, conceived as the findings from research, does not apply itself: it is the knowledge, judgement and skill of practitioners to carefully apply these findings in a particular clinical setting that constitutes another form of practice. (5). I suggest that this other way of knowing for practice informs the art of dental hygiene and that at its highest level constitutes artful dental hygiene practice, or the pursuit of perfection or excellence in dental hygiene practice. Johnson suggests a broad definition of nursing art as 'a developable ability that perfects a nurse's practice and is possessed only by a nurse' (6, p. 170). She has further

suggested 'Nursing art, then, is what enables a person to nurse in an excellent manner' (8, p. 37). As with other aspects of society and life, art makes it better.

These differing ways of knowing for practice are consistent with the Canadian Dental Hygienists Association's definition and scope of dental hygiene, requiring 'knowledge, ethics, standards, and research' (28, p. 4). The American Dental Hygienists Association sees dental hygiene as 'highly valued for its knowledge, skill and commitment to improving the quality of the nation's overall health' (29, p. 10). These definitions imply the existence and valuing of forms of knowing that are other than rote application of science. Descriptions and definitions such as these provide implicit evidence of the existence and valuing of knowledge that may be related to an art of dental hygiene practice.

Johnson (5), reviewed nursing literature from 41 authors that was broadly related to nursing art, representative of a diversity of conceptualizations, and across different historical contexts beginning with Nightingale, to examine and clarify what is implicit in the discourse. In the process of dialectical analysis, she found five separate 'senses' of nursing art (p. 3). She described these as the nurse's ability to: (i) grasp meaning in patient encounters; (ii) establish a meaningful connection with the patient; (iii) skillfully perform nursing activities; (iv) rationally determine an appropriate course of action and (v) morally conduct his or her nursing practice. She also noted that many authors conceptualized art as consisting of more than one of these abilities. These abilities are distinctly separate from conceptions of science in the dental hygiene literature, and may be useful as a framework for examining the existence of similar abilities in dental hygienists, and whether these might contribute to our understanding of an art of dental hygiene.

The first sense, or conception, of nursing art Johnson identified in the literature was that of the ability to grasp meaning in patient encounters, to 'grasp what is significant in a particular patient situation' (5, p. 4). This 'immediate perceptual capacity' attaches significance and meaning to 'those things that can be felt, observed, heard, touched, tasted, smelled or imagined, including emotions, objects, gestures, and sounds' (5, p. 4). It is more immediate than reflection or reasoning, can involve perception of patterns such as signs and symptoms, grasps the meaning of the situation in its entirety and can lead to knowing what to do instantly without need for more conscious deliberation. This perceptual ability 'defies accurate and complete description' (p. 5) and includes tacit and personal knowledge. Johnson (7) found evidence, although not complete agreement, that there is a requirement for foreknowledge to recognize patterns arising from previous patient situations. This foreknowledge, claimed by some authors to derive from experience, helps to determine what is more or less significant in a patient situation and does not require a form of analysis to connect understanding to action (7, citing Benner). Johnson found evidence in the literature of disagreement about the verifiability of perceptual knowing, with some (7, citing Moccia, Newman and Parse), maintaining that it is subjective and therefore verifiability is inapplicable and others (7, citing Benner, Carper and Chinn & Kramer), contending that the ability to grasp meaning is demonstrated by the nurse's actions and therefore is verifiable by others. There was consensus in the literature that this perceptual ability was developed over time as nurses 'become increasingly sensitive to signals and cues and, with experience, can learn to apprehend their meaning' (7, p. 310).

The second sense of nursing art Johnson identified was the ability to establish a meaningful connection with the patient. This was seen as a means to 'bridge the gap introduced by technology' (5, p. 5) at a time when use of technology is increasing, and to make the most of the human-to-human interaction with the patient, whether brief or long-term. Peplau said 'The art of nursing transpires and is expressed in a nurse–client interaction process' (30, p. 10). This sense of nursing art is seen to express itself in the actions or behaviours of the nurse, in relation to another human being. Furthermore, it requires authenticity on the part of the nurse: '…the artful nurse must be genuine' (5, p. 7).

The third conception of nursing art is the ability to skillfully perform nursing activities, to proficiently and with dexterity carry out nursing tasks and procedures. Johnson drew on the work of Nightingale (1899, cited in 5) in pointing out ''the artful nurse knows more than what is to be done, she knows 'how to do it'" (p. 7). Johnson also drew on Heidgerken, who said that the principles or science of nursing is learned in the classroom and the art or skill of nursing is learned on the ward (1946, cited in 5) and found agreement that the art of nursing is a behavioural ability that can be learned through 'persistent practice and repetition' (p. 8). In this sense, artful nursing is seen to be efficient and to require skill plus understanding.

The fourth conception of nursing art Johnson identified was the ability to rationally determine an appropriate course of nursing action. This refers to 'the intellectual ability to draw valid conclusions from existing knowledge' (6, p. 170), and further to select and apply the best intervention for the best outcome. Those who saw the art of nursing as involving a rational aspect saw a link to professionalism and a distinction between a professional's knowledge of cause and effect and a technician's 'routinized activity' (6, p. 170).

This rational aspect of nursing art was linked to the use of the nursing process: assessment, planning, implementation and evaluation, to make certain high quality care results. This process connects actions to intellectual activities and judgements that use knowledge from science in the decision-making process. 'All of the authors who hold that the art of nursing involves a rational aspect emphasize the importance of knowledge, specifically, scientific knowledge, to the art of nursing' (6, p. 171). Achieving desired outcomes is seen as a way of judging the appropriateness of nursing actions, consistent with the evaluation phase of the nursing process.

There was not consensus on the rational aspect, however. Some saw the conscious process as interfering with a holistic grasp of the situation, inhibiting the perfection of nursing practice and distancing the nurse from the patient. There was sufficient rebuttal to provide support for the view that scientific knowledge is necessary for artful nursing to avoid trial and error approaches and that discretionary and practical judgements are required in the application of scientific knowledge. Johnson cautions against a reductionist view but points out that nursing, as a practice discipline, benefits from a rational approach to guide practice (6).

The final conception of nursing art Johnson identified was the ability to morally conduct one's nursing practice, seen to be good and beneficial for the patient while avoiding harm (5). Excellent nursing practice must be moral and ethical: while skill and knowledge are necessary, they are not sufficient. Artful nursing is seen to involve 'a commitment to care competently' (5, p. 11), sustaining this excellence even in circumstances that may be arduous. This conception sees an artful nurse as having virtuous motivations that arise out of care and concern for others. This caring enables the artful nurse to notice small details in the clinical particulars to aid in developing appropriate solutions for patient problems.

Johnson acknowledges that further work on defining nursing art is necessary, and work on determining which conception, or group of conceptions, is sound, and is required to 'answer questions regarding how nursing art should be pursued and developed' (5, p. 12). She found that, although there was always not consensus, there has been much written about the art of nursing and this writing fell into five separate senses or conceptions of what constituted artful nursing. There has been little written explicitly about the art of dental hygiene, save use of the historical phrase 'the art and science of dental hygiene' as sometimes found in older works, thus little to guide us in the pursuit of this topic. There appears to be implicit acceptance of some form of knowledge for practice that is other than science. Can all, or indeed any, of Johnson's five conceptions of nursing art be found within dental hygiene practice knowledge?

Evidence for art of dental hygiene

The first of Johnson's senses, or conceptions, of nursing art identified was that of the ability to grasp meaning in patient encounters, which was seen as an immediate perceptual ability to determine what was significant or not significant in a patient situation. This conception does not appear in dental hygiene literature associated with anything that may be considered the art of dental hygiene, yet few would deny its importance for good dental hygiene practice. It was posited that this ability would require foreknowledge, possibly derived from experience and preliminary findings of frequent use of a type of experiential knowledge can be found in recent literature (15) suggesting at the least that it is used often in practice. This study found that knowledge from their previous experiences was the second most frequently reported source of knowledge used by practicing dental hygienist respondents.

Whether the use of this form of knowing in dental hygiene practice would be perceived as an immediate perceptual ability, or would be characterized as involving more conscious deliberation needs to be studied. Furthermore, issues of subjectivity and verifiability related to a perceptual aspect of artful dental hygiene practice will need to be debated by the dental hygiene community. Johnson found consensus in the literature that the perceptual ability was developable in nurses over time and includes the notion of developability in her broad definition of nursing art. It seems plausible that this aspect of perceptual ability exists in dental hygiene and is indeed encouraged in notions of continuing competency and further that examination of this ability could contribute to discourse on dental hygiene art. The notion of developability suggests an avenue for education and educators to explore further.

Johnson's second conception of nursing art was the ability to establish a meaningful connection with the patient. Implicit evidence of this sense of art is found in many of the recent textbooks (31, 32) and professional documents suggesting the importance of patient-centred or client-centred approaches to practice, such as the Canadian Dental Hygienists Association (CDHA) definition and scope of dental hygiene which states that dental hygienists 'work in a client-centred, relationship-centred way' (28, p. 4) and the College of Registered Dental Hygienists of Alberta (CRDHA) definition which states that dental hygienists 'provide client-centred services' and 'practice collaboratively with clients' (33). With implicit support for the existence of this conception of practice and considering that

this conception of a way of practice is not consistent with the conception of science discussed earlier, I contend that this ability exists and is valued in dental hygiene and further suggest that it may be considered as a conception of dental hygiene art.

Johnson's third conception of nursing art is the ability to perform nursing activities skilfully, that the principles or science of nursing is learned in the classroom and the art or skill of nursing is learned on the ward. Education for entry into dental hygiene practice involves a large component of skill development with many hours devoted to clinical experience, and an increasing educational emphasis on achievement of clinical competencies. Few dental hygienists would argue the existence of an important component of skill development in dental hygiene education, and further that this skill development continues in clinical practice settings as hygienists become more efficient and proficient over time. Few would see this skill development as related to dental hygiene science; indeed, most would see it as distinctly different from science, yet this skill in performing the activities of dental hygiene is important in a practice discipline such as dental hygiene. To be a professional is to be skilful. I suggest that this ability to skillfully perform dental hygiene activities is certainly a reasonable conception of dental hygiene art and further suggest that this conception probably is consistent with what has been traditionally considered as the art of dental hygiene practice. These suggestions may serve as the basis of future discussion and debate on this conception of artful dental hygiene.

Johnson's fourth conception of nursing art was the ability to rationally determine an appropriate course of nursing action. This rational aspect was linked to the nursing process and intellectual activities and judgements using knowledge from science for decision-making. There is little doubt that this form of activity exists in dental hygiene. Major textbooks (31, 32) and dental hygiene practice standards (28, 33) describe the dental hygiene process of care as assessment, diagnosis, planning, implementation and evaluation, similar to the nursing process but singling out a specific step for diagnosis. That this form of intellectual activity exists cannot be denied, but there has been little to associate this with something called the art of dental hygiene and it may even be considered to be associated with a science-based or more methodical or systematic approach. As Johnson found discord in the literature about a rational aspect associated with an art of nursing for reasons of reductionism or feelings that it was not holistic, it is possible that similar discord may also arise in dental hygiene. A more compelling argument may be that many dental hygienists would prefer this type of behaviour to be considered scientific as they wish to be seen as more professional, and associate science-based approaches to practice with greater professionalism. But as Johnson points out, these forms of discretionary and practical judgements are necessary for the application of knowledge from science, that science does not apply itself (5). While science is necessary to avoid trial and error in practice applications, it is not sufficient for good practice. This is, in part, because it relates more to the universal or general than it does to the specifics or particulars found in the clinical context of application. I contend that although not likely to be generally acknowledged as a component of the art of dental hygiene, this form of intellectual activity is in fact an important component of artful dental hygiene practice.

Johnson's final conception of nursing art was that of moral or ethical practice. Evidence of the importance of ethical dental hygiene practice can be found in organizational codes of ethics (14, 34), in the most common textbooks (31, 32), and that these codes were developed early in dental hygiene's organizational history. As with skills, this way of knowing is not associated with dental hygiene science as conceptualized earlier, yet none would deny its significance to good dental hygiene practice or to professional aspects of dental hygiene. The association of a moral or ethical sense with good practice, and notions that artful practice is associated with pursuit of excellence and perfection, and that unethical, unskilled or unscientific practice cannot be good, suggest an important role for moral or ethical abilities in artful dental hygiene practice. A study of dental hygiene students found discomfort when students witnessed unethical situations and demonstrates that these moral and ethical foundations are present during educational preparation (35). I contend that this valuing of ethical and moral abilities, and the fact that these are not derived from science, suggest the existence of a conception of ethical abilities as an important component of an art of dental hygiene.

Discussion

This paper set out to clarify some inconsistencies and incompatibilities regarding the existence of an art of dental hygiene. Art cannot both exist and not exist: one must be false. This paper used a method of dialectical analysis from philosophy, based on a framework from nursing, to determine whether or not evidence exists for an art of dental hygiene. Such evidence was found.

There will be those who will not support acknowledging an art of dental hygiene. They will fear that this may position dental hygiene as less than scientific and since establishing a body of knowledge derived from science is seen as important to

advancing dental hygiene, this may be seen to thwart current professionalization efforts. Others might feel that an art of practice is in fact not scientific, as it is not in and of itself science, therefore not valuable for what purports to be a science-based, or evidence-based, profession. There may be fears that this may set dental hygiene back and not contribute to current advancement efforts, considered by many to be at a critical juncture.

Others may feel that discourse on a topic such as art is a diversion of valuable resources, distracting from a pressing need to develop more 'science' for the currently under-developed body of practice knowledge. That an older practice standards document acknowledged an art of dental hygiene practice explicitly, but the current one does not in the same sense, may be consistent with the increasing domination of science in society today (13, 14). Dental hygienists in their drive for recognition as a profession, may see the link to science as strengthening their image and with art undefined, it has been easier to overlook or exclude. It could also be that interest in the notion of dental hygiene art does not exist or that the scholarly ability to engage in this discourse is lacking – not an unreasonable thought in a profession with small numbers of members with graduate education.

It has been acknowledged numerous times over past decades (1, 2, 19, 29) that dental hygiene should focus on developing rigorously prepared researchers. I suggest that this needs to include preparation of philosophical researchers to contribute to explication of dental hygiene's ontological and epistemological assumptions. While there are arguments that suggest describing an art of dental hygiene may not be valued as a scholarly pursuit, conceptions of art have been identified both explicitly and implicitly in dental hygiene literature and as standards for practice. It appears from this dialectical analysis that an art of dental hygiene, as described in Johnson's five conceptions of nursing art, does exist and is in fact valued in dental hygiene practice. Evidence exists that artful dental hygiene is indeed more than just the application of science, and further work is warranted.

The process of dialectical analysis was useful for this purpose. In dental hygiene, science is explicit and valued, whereas art has been little mentioned and apparently contradictory positions exist where art is implicit and valued or deliberately absent from the discourse thus not valued. The dialectical approach enabled examination of both explicit and implicit characterizations that represent art in dental hygiene and provided the opportunity for discourse on the controversy inherent in the two contradictory positions, i.e. whether art does or does not exist. My use of a moderate realist perspective enabled me to identify sources of evidence outside and independent of me and my thinking, and to view these as probably true yet subject to future refinement. Johnson's and my use of a moderate realist perspective may not, however, sit well with those who espouse a post-modernist perspective. Post-modernists may suggest that it is not possible nor even desirable to be objective and non-partisan during this analysis. Views from different perspectives should be pursued and will undoubtedly enhance our understanding of dental hygiene art. Conceptions of nursing art, identified through the work of Johnson (5), have provided a framework for teasing out where dental hygiene art may be implicit in the literature, and the dialectical analysis permitted examination of the contradictions to make a reasonable judgement beyond 'mere opinion' about whether an art of dental hygiene exists, and whether it is valued for the practice of dental hygiene.

Conclusion

That an art of dental hygiene exists cannot be in doubt. Defining it is somewhat more challenging, and this may have contributed to its relative invisibility in the literature. A preliminary conceptualization, derived from nursing but substantiated within dental hygiene, has been put forward, that sees the art of dental hygiene as abilities to grasp meaning in client encounters, establish meaningful connections with clients, perform dental hygiene actions skilfully and proficiently, rationally determine courses of dental hygiene action, and conduct dental hygiene practice morally and ethically. A preliminary definition of dental hygiene art is suggested as the continuous pursuit of excellence and perfection in dental hygiene practice. In the case of science, art is the way we enact science through our ability to respond to the context of practice, and through our use of ways of knowing that are other than science (36).

Dental hygiene has a tradition of drawing on the work of nursing during its development, as Darby has drawn on the work of Fawcett (2), and Darby and Walsh have drawn on the work of Yura and Walsh (3, 20). Cobban *et al.* have used Carper's ways of knowing as a framework to begin to examine knowledge and ways of knowing in dental hygiene practice (36, 37). The use of Johnson's conceptions of art and her use of the approach of dialectical analysis (5) are consistent with traditions to draw on the work of nursing and determine whether application can be made to dental hygiene practice. In this case, application could be made and has been put forward to provide the groundwork for future discussion.

This paper is not intended to be the definitive work on an art of dental hygiene, but to serve to initiate the discourse on

the existence of art in dental hygiene. This paper also advances dental hygiene methodologically through the use of dialectical analysis. To further advance the field, we would find useful a concept analysis of art as it appears in the dental hygiene literature and other forms of discourse.

This paper has provided a starting point for future discourse on the topic of the art of dental hygiene practice. If we hope to better understand how dental hygienists make their decisions for practice, to develop this process to its optimum – the pursuit of perfection and excellence in dental hygiene practice, we must pursue understanding the art of dental hygiene practice.

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References

1 Darby ML. Toward a clearer understanding of dental hygiene research, theory and practice. In: Darby ML. ed. *Proceedings of the Conference on Dental Hygiene Research*. Ottawa, ON, Health and Welfare Canada, 1982, 10–13.
2 Darby ML. *Theory Development and Basic Research in Dental Hygiene: Review of the Literature and Recommendations*. Report for American Dental Hygienists Association, Chicago, IL, 1990.
3 Walsh MM. Theory development in dental hygiene. *Can Dent Hyg Assoc J Probe* 1991; **25:** 12–18.
4 Johnson JL. Nursing science: basic, applied, or practical? Implications for the art of nursing. *Adv Nurs Sci* 1991; **14:** 7–16.
5 Johnson JL. A dialectical examination of nursing art. *Adv Nurs Sci* 1994; **17:** 1–14.
6 Johnson JL. Dialectical analysis concerning the rational aspect of the art of nursing. *Image: J Nurs Scholar* 1996; **28:** 169–175.
7 Johnson JL. The perceptual aspect of nursing art: sources of accord and discord. *Scholarly Inq Nurs Pract* 1996; **10:** 307–327.
8 Johnson JL. Nursing art and prescriptive truths. In: Kikuchi JF, Simmons H, Romyn DM, eds. *Truth in Nursing Inquiry*. Thousand Oaks, CA, Sage, 1996, 36–50.
9 Kikuchi JF, Simmons H. The whole truth and progress in nursing knowledge development. In: Kikuchi JF, Simmons H, Romyn DM, eds. *Truth in Nursing Inquiry*. Thousand Oaks, CA, Sage, 1996, 5–18.
10 Bowen DM. Dental hygiene: a developing discipline? *Dent Hyg* 1988; **62:** 23–25.
11 Darby ML, Walsh MM. A proposed human needs conceptual model for dental hygiene. Part 1. *J Dent Hyg* 1993; **67:** 326–334.
12 Missouri Dental Hygienists' Association. *Mission Statement*. Available at: http://www.mdha.org/ (accessed on 13 February 2009).
13 American Dental Hygienists Association. *Standards of Applied Dental Hygiene Practice*. Available at http://ethics.iit.edu/codes/coe/amer.dental.hygienists.assoc.standards.practice.html (accessed on 13 February 2009).
14 American Dental Hygienists Association. *Bylaws and Code of Ethics*. Available at: http://www.adha.org/downloads/ADHA-Bylaws-Code-of-Ethics.pdf (accessed on 13 February 2009).
15 Cobban SJ, Profetto-McGrath J. Alberta dental hygienists' knowledge sources: a pilot study. *Can J Dent Hyg* 2007; **41:** 176–184.
16 Kikuchi JF. Nursing questions that science cannot answer. In: Kikuchi JF, Simmons H, eds. *Philosophic Inquiry in Nursing*. Newbury Park, CA, Sage, 1992, 29–37.
17 Kikuchi JF. Clarifying the nature of conceptualizations about nursing. *Can J Nur Res* 1997; **29:** 97–110.
18 Kikuchi JF, Simmons H. Practical nursing judgment: a moderate realist conception. *Scholar Inq Nurs Pract: An Int J* 1999; **13:** 43–55.
19 Johnson PM. Theory development in dental hygiene – reactor paper 1. *Can Dent Hyg Assoc J Probe* 1991; **25:** 19–21.
20 Stamm JW. Research and the dental hygienist: a lifeline to professionalism. In: Darby ML. ed. *Proceedings of the Conference on Dental Hygiene Research*. Ottawa, ON, Health and Welfare Canada, 1982, 5–9.
21 Cobban SJ, Edgington EM, Compton SM. An argument for dental hygiene to develop as a discipline. *Int J Dent Hyg* 2007; **5:** 13–21.
22 Donaldson SK, Crowley DM. The discipline of nursing. *Nurs Outlook* 1978; **26:** 113–120.
23 Darby ML, Bowen DM. *Research Methods for Oral Health Professionals: An Introduction*. St Louis, MO, The C.V. Mosby Company, 1980.
24 Dharamsi S, Cobban SJ, Compton S. Using qualitative research for evidence-based dental hygiene practice. *Can J Dent Hyg* 2004; **38:** 220–225.
25 Boyer EM, Nielsen NJ. Content analysis of original manuscripts in *Dental Hygiene*: 1975–1981. *Dent Hyg* 1982; **56:** 27–31.
26 Clovis J. The professional status of dental hygiene in Canada, Part one: Progress and challenges. *Can Dent Hyg Assoc J Probe* 1999; **33:** 186–195.
27 Lautar C. Is dental hygiene a profession? A literature review. *Can Dent Hyg Assoc J Probe* 1995; **29:** 127–132.
28 Canadian Dental Hygienists Association. *Dental Hygiene: Definition, Scope, and Practice Standards*, 2002. Available at: http://www.cdha.ca/pdf/DefinitionScope_public.pdf (accessed on 13 February 2009).
29 American Dental Hygienists Association. Advancing the profession. Available at: http://www.adha.org/downloads/ADHA_Focus_Report.pdf (accessed on 13 February 2009).
30 Peplau HE. The art and science of nursing: similarities, differences, and relations. *Nurs Sci Quart* 1988; **1:** 8–15.
31 Darby ML, Walsh MM. The evolving profession of dental hygiene. In: Darby ML, Walsh MM, eds. *Dental Hygiene Theory and Practice*, 2nd edn. St Louis, MO, Saunders, 2003, 2–18.
32 Wilkins EM. *Clinical Practice of the Dental Hygienist*, 9th edn. Baltimore, MD, Lippincott Williams & Wilkins, 2004.
33 College of Registered Dental Hygienists of Alberta. *What is a Registered Dental Hygienist?* Available at: http://www.crdha.ca/Public/Whatisaregistereddentalhygienist/tabid/68/Default.aspx (accessed on 13 February 2009).
34 Canadian Dental Hygienists Association. *Code of Ethics*. Available at: http://www.cdha.ca/pdf/CDHA_Code_of_Ethics_public.pdf (accessed on 13 February 2009).
35 Cobban SJ, Wilson MP, Covington PA, Miller B, Moore DP, Rudin SL. Dental hygiene student experience with ethically problematic situations. *Can J Dent Hyg* 2005; **39:** 67–74.
36 Cobban SJ, Edgington EM, Myrick FM, Keenan L. A discourse on the nature of dental hygiene knowledge and knowing. *Int J Dent Hyg* 2009; **7:** 10–16.
37 Carper BA. Fundamental patterns of knowing in nursing. *Adv Nurs Sci* 1978; **1:** 13–23.