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An argument for dental hygiene to develop as a discipline

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Abstract: The practice of dental hygiene was developed to provide oral health education and preventive oral health care, originally for children. It has grown to provide oral health services valued by a broad spectrum of society, but has not attained the desired respect and status accorded to other professional groups. *Objective:* Professional disciplines link actions of practitioners with the science that is the foundation of practice. The purpose of this paper is to examine whether dental hygiene practice could benefit from pursuit of development as a discipline. *Methods:* Literature on professionalization and disciplines, related to dental hygiene in general and the North American context specifically, was retrieved from databases and grey sources, such as organizational reports. Dental hygiene's current characteristics relative to a discipline were examined. *Results:* Dental hygiene has developed some characteristics of a discipline, such as identifying a metaparadigm that includes concepts of the client, the environment, health/oral health and dental hygiene actions, with a perspective that includes a focus on disease prevention and oral health promotion. However, research production by dental hygienists has been limited, and often not situated within theoretical or conceptual frameworks. *Conclusion:* Dental hygiene draws its knowledge for practice from a variety of sources. Dental hygiene could strengthen its value to society by prioritizing development of highly skilled researchers to study interventions leading to improved oral outcomes, and transferring that knowledge to practitioners, strengthening links between practice and science. Intentional pursuit of knowledge for practice would lead to dental hygiene's eventual emergence as a professional discipline.

Key words: dental hygiene; dental hygiene research; dental hygienist; discipline; profession; theory–practice relationship

In recent years, there has been some debate about whether dental hygiene is a profession, and consideration given to characteristics or attributes that should be found in dental hygiene for it to be considered a profession (1–4). Prior to this, there had been debate about whether dental hygiene displayed the characteristics of a discipline (5–8), although there has been little in the literature recently. It is a reasonable assumption that these two are inextricably linked and that consideration of dental hygiene's characterization as a profession cannot take place without also examining whether dental hygiene displays the characteristics of a discipline. This paper examines dental hygiene's characteristics as a potential discipline, and argues that it is important for dental hygiene to actively pursue development as a discipline.

What is a discipline?

The Canadian Oxford Dictionary (9) defines a discipline as a branch of instruction or learning, with the word originating from disciple, which is from Latin *discere* – learn. A discipline may be considered to be the knowledge or body of knowledge that is the product of science and arises from a distinct perspective (7, 10–12). It has an inherent or unifying metaparadigm that is comprised of the major concepts that are studied by that discipline. These concepts form the theoretical and conceptual frameworks that guide research and contribute to the metaparadigm. The distinct perspective includes a syntax that is composed of the research methodologies and criteria used to consider propositional statements within the discipline. Bowen (6) also suggests that a discipline includes a component of discipleship.

Disciplines can be seen to differentiate from each other based on how they define or view the major concepts of concern to the discipline (7, 11). Disciplines evolve as repeated investigations in an area of study continue to make repeated use of key concepts, examine relationships within data in a similar manner, and apply this knowledge to a common range of problems (8, 10, 11). As theory develops in a given area, it is tested in practice, which in turn leads to refinement of theory and expansion of the body of knowledge that constitutes the discipline and subsequently guides practice.

An academic discipline consists of science, with the main goal being to know (11), and a professional discipline includes its science, or body of knowledge, and its practice, the actions of its practitioners (7, 13, 14). Donaldson and Crowley suggest that academic disciplines' theories are descriptive in nature. They contrast this approach with professional disciplines that have more practical aims and generate prescriptive as well as descriptive theories. The prescriptive approach of professional disciplines concerns predictions about outcomes and implementation of knowledge in practice. Donaldson and Crowley have pointed out that as a discipline is defined by social relevance and value orientations, the discipline and profession must be continuously re-evaluated in terms of societal needs and scientific discoveries. Donaldson and Crowley (11) and Walsh (12) discuss how interdependent relationships exist between science and practice in a professional discipline. The nature of a profession concerns the act of practice whereas the nature of a discipline concerns the way of knowing that is brought to practice. This makes it apparent that the practice of the profession requires the knowing from the discipline.

Stamm (8) and Biller-Karlsson (5) have contrasted the nature of a discipline with the nature of a field of study. While a discipline is seen to develop its own knowledge that is viewed through its own lens or perspective, a field of study is seen to have a body of knowledge that is primarily drawn from multiple existing sources and then applied to answer questions within the field.

What is dental hygiene?

The Canadian Oxford Dictionary (9) describes a Dental Hygienist as a person trained and licensed to act as a dentist's assistant, specializing in oral hygiene, and cleaning and scaling teeth. It is unfortunate that the Dictionary describes a dental hygienist as a dentist's assistant as dental hygienists do not function in that capacity in practice. It further defines a Hygienist as a specialist in the promotion and practice of cleanliness for the preservation of health, and Hygiene as the branch of knowledge that deals with the maintenance of health and the conditions and practices conducive to it. The word hygiene derives from Greek mythology, from Hygieia the goddess of health, cleanliness and sanitation. She was one of the daughters of Asclepius, the god of healing (15). She was associated with the prevention of sickness and the continuation of good health, and was typically represented as a young woman feeding a huge sacred snake which is wrapped around her body. Her sacred snake is depicted with the rod of Asclepius as the symbol for medicine.

The origins of the practice of dental hygiene bear many similarities to the mythology. Early in the 20th century Fones, a dentist, saw a need for preventive oral hygiene programmes for children, and developed a plan to prepare women to provide this preventive care (16). He opened the first school of dental hygiene in 1913. In 1934, he wrote of dental hygienists that 'She must regard herself as the channel through which

dentistry's knowledge of mouth hygiene is to be disseminated.' (16, p. 3). Although the use of the term 'dental nurse' was then in common use, Fones did not like the association, at the time, between 'nurse' and 'disease' and preferred the term 'hygienist' because of its association with health and prevention of disease. The oral health promotion and disease prevention foundations of dental hygiene are consistent with the health promotion and disease prevention perspective associated with Hygieia.

Dental hygiene has progressed considerably since it originated. In 1982, the University of Manitoba hosted the first conference on dental hygiene research, inviting leaders from both Canada and the USA to consider the role of research in further development of dental hygiene (17). In 1984, the American Dental Hygienists Association (ADHA) sponsored a conference to articulate the evolving functional roles of dental hygienists. Outcomes of that conference suggested a view of the dental hygienist as a licensed professional within a healthcare team. They identified roles and functions used by all dental hygienists as including clinician, oral health educator, manager, consumer advocate, change agent and researcher. The ADHA also convened a theory development panel in 1992. This panel conceptualized dental hygiene as '…the study of preventive oral healthcare, including the management of behaviours to prevent oral disease and promote health.' (7). The panel went on to identify the major concepts studied in a discipline of dental hygiene would be health/oral health, dental hygiene actions, the client, the environment, their interactions and the factors that affect them. These major concepts in turn can be used to derive theoretical and conceptual frameworks to guide research that contributes to a metaparadigm that is dental hygiene.

Value of a discipline to society

A discipline provides a value to society and is valued by society. This value comes from the ethical application of the knowledge that is the foundation of practice. Further, 'Society has a right to dental hygiene care provided by professionals who possess a substantial theoretical foundation for exercising judgment and improving oral health care. A profession's research efforts are closely linked with its service role, responsibility and accountability to the public, therefore, practice can be only as good as the research and theory base that supports it.' (18, p. 3). The proposed structure for a discipline of dental hygiene, illustrating the inter-relationship between the practice and the science, is illustrated in Fig. 1. This framework demonstrates that the linkage between the practice and the science

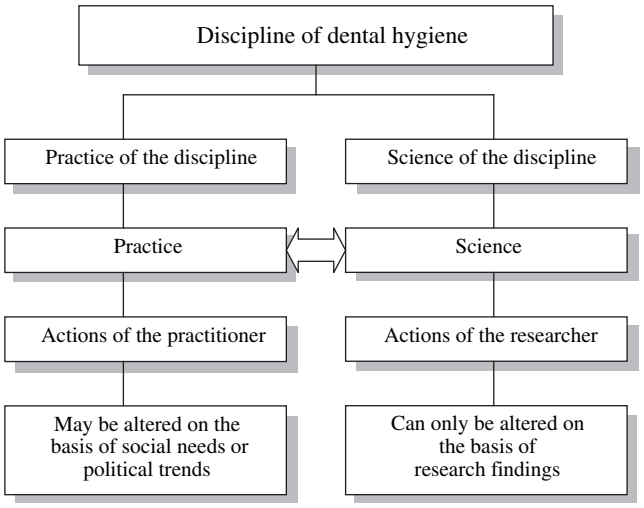

Fig. 1. Model for the discipline of dental hygiene. Adapted from the original developed by M.L. Darby and M.M. Walsh and first presented by M.M. Walsh at the Symposium on Dental Hygiene Research, Education, and Practice, University of Alberta, 1990, and used with permission of the authors (12).

is the core of a health service that is of value to society, and is a further illustration of the need for rigorously prepared dental hygienist researchers. This also supports the notion of the importance of the science, or body of knowledge, to the practice or the profession. Without the science, neither the profession nor the discipline could exist.

There is little doubt that dental hygiene's preventive focus and work with children, as Fones envisioned, has contributed to the general improvements in oral health status over the past century. As people are living longer, and retaining their teeth longer, dental hygiene's contributions to quality of life will continue to be valued by society. Providing primary health care in settings that are not restricted to dentists' offices, referral services to an interdisciplinary network of healthcare providers, and expanded access to services for those in greatest need of care will also enhance dental hygiene's value to society (19, 20). It would be fundamental to the nature of a discipline that these services be provided based on sound research. Dental hygienists and society can both benefit from dental hygiene's active development as a discipline.

Knowledge sufficient for a discipline of dental hygiene

A discipline has a metaparadigm that contains the major concepts studied by that discipline. Alternately, a field of study draws heavily on other disciplines for its knowledge for prac-

tice. Whether dental hygiene is classified as a discipline or a field of study would influence research methodologies and would influence selection of theoretical frameworks to guide empirical studies.

Does dental hygiene demonstrate the characteristics of a discipline? The American Dental Hygienists Association has identified a metaparadigm for dental hygiene that includes the concepts of the client, the environment, health/oral health and dental hygiene actions (16). Dental hygiene's perspective is to view the client as a whole person, interacting within their environment, and consider the role of the environment in fostering or preventing oral disease (12). Dental hygienists also actively involve the client in the process of care, understanding the client's role in self-care for maintaining oral health, and implementing communication strategies to focus on behavioural interventions.

Does dental hygiene demonstrate the characteristics of a field of study? Dental hygiene practice draws heavily on knowledge from other disciplines, and dental hygienists seek advanced education within other disciplines, especially where access to advanced dental hygiene education is limited. This is particularly relevant at the doctoral level where dental hygiene studies currently do not exist, forcing advanced graduate students to study within another field. Dental hygiene draws on knowledge from education and communication for client or patient education, from nursing for theories and models of practice, such as human needs theory and the nursing process, from psychology for understanding human behaviour, from sociology for understanding social behaviour, from biomedical sciences for understanding structure and function of the body, and many others. Practices such as these have led Biller-Karlsson (5) and Stamm (8) to suggest that dental hygiene is more appropriate as a field of study. Dental hygienists have not further developed many of these concepts from the perspective of dental hygiene, as Donaldson and Crowley (11) have suggested is necessary for a discipline. It is not enough to apply concepts that have been developed by other disciplines. These need to be tested in the realities of dental hygiene practice settings (13, 21, 22) to determine the effects on oral health. This then forms an important part of that body of dental hygiene knowledge that informs practice (10).

It is not known if or how the quality of dental hygiene care, the oral health outcomes, or the client's oral self-care actions would be influenced by either technically based or knowledge-based models of dental hygiene care (23). Stamm felt the question of whether dental hygiene is a discipline with an inherent theory and/or an area for study and research was one which needed to be openly debated by the dental hygiene community, as that would influence the orientation to be taken when dental hygiene research is being conducted. This paper's purpose is to contribute to that debate.

As dental hygiene borrows heavily from other disciplines it may be argued that dental hygiene's perspective is not sufficiently distinct from others, because of the overlap with other areas, including dentistry, education and nursing. There are no concepts or theories that are widely acknowledged as the foundation of dental hygiene science (21), nor is there general agreement about which research methodologies are appropriate for the study of dental hygiene, and what criteria will be used to justify the acceptance of statements as true for dental hygiene (24). Further, much of the research conducted by dental hygienists has not been conducted within a conceptual or theoretical framework consistent with dental hygiene's unique perspective.

However, Bowen, Darby and Walsh, Dickoff and James, Johnson, and Walsh (6, 7, 12, 13, 22, 23) suggest that dental hygiene's perspective of oral health education, oral wellness, health promotion and disease prevention, is sufficiently distinct to guide the development of a body of knowledge that could emerge as the discipline of dental hygiene. Their argument suggests that much of dental hygiene research should be situated within these conceptual frameworks.

The nature of the knowledge used for dental hygiene practice is yet to be articulated in dental hygiene literature (21, 24). Carper (25) described four patterns or ways of knowing in nursing: science or empirics, art or aesthetics, ethics or moral knowing and personal knowing. These ways of knowing may also be seen to describe patterns of practice knowledge used in dental hygiene, as well as in nursing. Dental hygiene is striving to develop the science or empirical foundation that supports interventions and leads to predictable outcomes, and the evidence-based practice movement currently privileges this form of empiric knowledge. One of the core dental hygiene competencies for entry into practice is that the practitioner be 'humane, empathetic and caring' demonstrating the value dental hygienists place on aesthetic knowledge (26). Ethical knowing has long been important to dental hygienists, with national organizations in Canada and the USA having developed Codes of Ethics early in their organizational history. Ethics education figures prominently in curricula for dental hygiene educational programmes and is monitored during accreditation reviews. Patterns of personal knowing have not been studied in dental hygienists, so little is known about how these patterns of knowing influence practice, yet this form of knowing will figure largely in many new continuing competency programmes that are based on reflection and knowing oneself as a practitioner.

Dental hygienists as a body need to articulate forms of knowledge that are valued by dental hygiene practitioners, educators, researchers and leaders, and need to articulate ways that will be acceptable to develop and validate the knowledge used for practice.

Dental hygiene has been progressing in recent decades in an intentional pursuit of theory development, led by the American Dental Hygienists Association (12, 18). These efforts have resulted in the development of a number of theories proposed to guide dental hygiene research and practice, including the Human Needs Model (7), Oral Health-Related Quality of Life (27) and the Client Self-Care Commitment Model (28). The Human Needs Conceptual Model was based on a theoretical framework that suggests that humans will take action to fulfil an unmet need to eliminate the perceived deficit, and that hygienists can use this notion to diagnose problems and set goals related to dental hygiene care to address unmet oral health needs (12, 16). The Oral Health Related Quality of Life Conceptual Model posits that a satisfactory level of oral health, comfort and function are an integral component of general health (27, 29). The Client Self-Care Commitment Model looks at relationships between client and provider interactions, client motivation, cultural processes and commitment to oral self-care (28). These three models describe a process of care that is both unique and distinct for dental hygiene.

When Brownstone (30) studied the culture of dental hygiene, she found dental hygiene was moving from technically oriented to research-oriented practice. Participants in her study saw the new knowledge from research '…utilized in an advanced process of care that would emphasize a holistic approach to treating clients.' (p. 247). She noted that dental hygiene appeared to be a subdivided culture of two types of dental hygienists: professional and technical. Professional hygienists were considered to be those who applied research findings to their practice and were very 'caring' in their interactions with clients. These concepts of research use and caring interactions may extend dental hygiene's perspective beyond those concepts originally suggested.

Is dental hygiene a discipline?

The notion of situating research within the theoretical or conceptual frameworks consistent with a distinct perspective is essential to the development of a discipline. This unique perspective or inherent theory evolves as consistent patterns emerge from the research and the interactions with practice. Considering that a discipline is the knowledge derived from theoretically driven research and that arises from a distinct perspective, can dental hygiene be considered a discipline?

At an international dental hygiene research conference hosted by the University of Alberta in 1990, Johnson (22, p. 21) called for engaging 'more purposefully in theory development', and Walsh called for developing conceptual models and labelling them as such (12). Appropriately prepared dental hygienist researchers must develop and test dental hygiene theories (8, 11). Stamm considered the appropriate preparation required for conducting research to be PhD level training from a graduate programme with a strong research orientation that would result in the acquisition of skills and analytical tools to conduct credible research in many settings. He advised that the emphasis needed to be on personnel training for the development of strong research skills, rather than on research projects. This is an approach American dental hygienists have pursued over recent decades, much more successfully than Canadian dental hygienists, albeit American hygienists have long had greater access to graduate level dental hygiene educational opportunities.

Bowen (6) has pointed out the importance of establishing dental hygiene as a discipline with inherent theory, and providing students with the theoretical basis for dental hygiene care. Both Dickoff and James (13) and Donaldson and Crowley (11) suggest theoretical pluralism as a way to expand knowledge development and enhance a discipline. Walsh (12) has criticized dental hygienist researchers for producing isolated studies on multiple unrelated topics that are not grounded in theory, and while she pointed this out 15 years ago this situation continues today.

Darby (21) has pointed out that dental hygiene knowledge is often viewed as a conglomeration of knowledge taken from other disciplines (p. 12), and referred to use of communication, motivation and teaching/learning theories. Dental hygienists have also drawn on nursing theory for practice, as there are similarities related to care-giving and health education and health-promoting behaviours (22). Many health professions do have overlapping core competencies or approaches to practice (31), and so they should, particularly when it comes to evidence-based practice and patient-centred care. The caution, however, with using theories from other disciplines is the need for the theories to be tested in practice and refined for dental hygiene's unique environments (10, 11, 22). Despite these seemingly eclectic sources of knowledge, practicing dental hygienists would see a consistent thread in the knowledge they use for practice, viewing themselves as 'prevention professionals'. This lends support for disease prevention and health promotion to be important

components of the perspective for a potential discipline of dental hygiene.

Dental hygiene appears to have made progress on efforts intended to result in greater recognition as a profession. Lautar had used Greenwood's attribute model to characterize dental hygiene as a semi-profession, using a range of basic criteria that includes systemic theory, authority, community sanction, ethical codes and a culture (3, 4). To this list, Clovis, working with Pavalko's eight categories or dimensions of professionalization, added relevance to social values; specialized post-secondary education including a trend toward increasing preadmission and curriculum requirements; high-level specialization in dental hygiene directly related to the prevention of oral disease; and a strong service orientation (1). Both authors suggest that dental hygiene demonstrates considerable progress along a continuum toward the status of a profession, with most attributes developed and supported within dental hygiene. Lautar and Kirby further found that many dental hygienists perceived dental hygiene as a profession (4) but differed in their understanding of criteria to be demonstrated by a profession, a finding supported by Brownstone (30).

Despite the appearance of progress toward the status of a profession within the literature, the reality is considerably different. Clovis (1) suggested that attribute theory may not be adequate to explain dental hygiene's lack of professional status, and suggested Abbott's theory of jurisdiction as a possible explanation. Clovis (2) identified 'The prevailing impediments to the achievement of professional status are the underdeveloped articulation of dental hygiene's professional work, the professional dominance of dentistry, and the feminized character of dental hygiene.' (p. 103). Stamm (8) suggested that although a group may seek professional status, 'Professional status cannot be forced, it can only be attracted', and this could best be attracted by a group that provided a service desired by society, based on a coherent body of knowledge (p. 6).

Adams examined jurisdictional disputes between dentistry and dental hygiene in Ontario (32, 33), and suggested that dentistry had originally delegated a portion of its scope of practice to dental hygiene as it pursued more remunerative and complex areas of its scope of practice, essentially abandoning this area of jurisdiction to dental hygiene. Dental hygiene practice in turn has always focused on oral health promotion, disease prevention and self-care education to arrest oral disease and decrease its future incidence (6, 16, 23), and is expanding its scope to include primary oral health care (33) and restorative services with the proposed Advanced Dental Hygiene Practitioner (19). Moves such as these will indeed increase dental hygiene's value to society, although they may have the potential for further jurisdictional dispute.

The educational preparation of its practitioners is another problem when attempting to define whether dental hygiene is a discipline. Dental hygiene educational programmes are located in a variety of different types of academic institutions, including research universities, public and proprietary colleges and CEGEPs (junior colleges). Dental hygiene does not control the accreditation processes for its educational programmes, and dental hygiene only controls entry-to-practice regulations in a few locations. A college or university diploma or associate degree remains the credential for entry-to-practice in North America, and limited baccalaureate or degree-completion opportunities exist. The limited educational opportunities restrict the development of the cadre of researchers needed for the advancement of the body of knowledge necessary for a discipline to evolve. Ross-Kerr (34) has pointed to one possible solution in collaborative arrangements between colleges and universities, such as articulation agreements for baccalaureate programmes, to help expand educational opportunities for nursing students, and dental hygiene needs to vigorously pursue such arrangements to pursue advancement of dental hygiene knowledge.

A further challenge is that many dental hygiene faculty are only prepared at the master's degree level, and much of the preparation is in teaching rather than rigorous development as researchers. Biller-Karlsson pointed out that this standard of teacher preparation is well below that of other disciplines in higher education (5). She suggested that dental hygiene's identity was as weak among other professionals as it was with the general public, and raised the question of whether the push for professionalization was to meet the needs of society or to meet dental hygiene's 'own egocentric needs' (p. 21).

There are other challenges to developing the body of knowledge that would contribute to the evolution of dental hygiene as a discipline. A lack of access to baccalaureate degrees, in many regions, has meant that few dental hygienists are able to pursue graduate degrees and research training (35). The location of many dental hygiene programmes in community and proprietary colleges, frequently with little requirement for research as part of employment responsibilities, rather than in research universities has reduced both opportunities for research and research funding, and the research development environment for researchers (8). Clovis has pointed out that 'of the literally hundreds of posters and papers presented at Canadian dental hygiene conferences and meetings in the past decade, relatively few seem to achieve publication in peer reviewed journals.' (1, p. 188). She goes on to note that there

are so few dental hygienists in Canada working in positions in which time and resources are available for research and theory development that 'knowledge production and dissemination in Canadian dental hygiene is virtually accomplished by extraordinary effort on the part of relatively few committed individuals.' (p. 188). These issues present huge challenges to dental hygiene's potential development as a discipline, as they limit the fertile ground necessary for advancing and testing theory.

Where do we go from here?

At this point in the debate, it appears that there are two potential courses of action. One course of action is that dental hygiene could choose to do nothing, which must be recognized as a choice. A second course of action would be to engage in a formal defined programme of knowledge development to build the science that supports the practice of dental hygienists. This upholds the fundamental inter-relationship between the practice of the discipline and the science of the discipline, as illustrated clearly in Fig. 1.

If the choice is to do nothing, dental hygiene continues to proceed along the current path. This sees dental hygienists seeking professional status, with mixed results. Past research trends include isolated research studies or the pursuit of multiple unrelated topics not grounded in theory (12). Education at entry to practice would remain at the diploma level, with the number of community college and proprietary programmes increasing, and the number of university programmes decreasing, as per current trends. Few, if any, new baccalaureate programmes would begin. Access to master's level dental hygiene education would remain limited and no doctoral programmes would become available. A strong cadre of dental hygiene scientists would not come to be, as there would not be the research environment for their development. Without this research production, dental hygiene practice would be oriented toward traditional technical modes, rather than a model based on utilization of research for practice decisions. There would be increased competition from others to provide technical services. Dental hygienists would continue to remain frustrated at their inability to use all of their skills and knowledge in their practice settings, and control would likely remain largely within the purview of dentistry. Dental hygiene practitioners are small in number compared with other professions, such as nurses or teachers, so have limited manpower to proceed along any course of future development.

A second, and in our opinion preferable, course of action would be to accelerate the programme of knowledge development in dental hygiene, beginning with articulation of the nature of dental hygiene knowledge. A priority needs to be placed on development of a large number of dental hygienist researchers. Two models have been put forward in the literature proposing collaboration among novice and more experienced researchers to aid in building capacity in dental hygienist researchers (36, 37). Both the CDHA and the ADHA have recent Dental Hygiene Research Agendas for their respective national professional organizations; the next step is to begin a concerted programme of supporting implementation of these research projects and ensuring the theoretical or conceptual frameworks are consistent with dental hygiene's perspective. As the results of these research studies become available, a sophisticated programme of knowledge transfer and utilization, sensitive to the realities of the dental hygiene practice context, must come into effect. It is the ethical responsibility of practitioners to apply theory for the ultimate benefit of the public (38), and Ross-Kerr has pointed out the ethical dimension as being of key importance in a professional discipline, acknowledging societal values and the use of knowledge for the benefit of the public (34).

Dickoff and James (10) suggested that developing a capacity for referrals would be an important part of development as a profession. Woodall (39) and Cobban (24) have called for developing a culture of research-based practice, and replacing procedures of limited value, such as polishing, with services that have demonstrated therapeutic or preventive merit which contributes to the good of society.

Dental hygienists would have some limitations placed on a course of expansion. In many regulatory jurisdictions, particularly in the USA, hygienists are not self-regulated, and are frequently regulated by dentistry boards. Similarly, accreditation processes for dental hygiene programmes are controlled by dentists in both countries. Changes to scope of practice and education credentials for entry to practice are consequently controlled by dentists in many cases. Richardson (40) has questioned the ethics and conflict of interest inherent when one professional body, dentistry, profits financially from another body, dental hygiene, that they regulate and control in practice, including controlling practice settings and education. Much work needs to be done at the legislative level on policy change (41). Clovis felt, however, that the temporal sequence for development was not clear: '…the development of the knowledge base through research and theory construction and validation may co-exist, precede, or follow any of the politico-legal determinants which secure a sanctioning of a more independent practice.' (p. 219).

Currently, dental hygiene demonstrates more of the characteristics of a field of study than of a discipline, and discussion

of the intentional pursuit of development as a discipline has slipped from being the priority it once was in favour of other topics, such as evidence-based practice, professionalization projects or self-regulation. This is not to say that those are not important topics, indeed they are also important. But dental hygiene must not be distracted from what is believed to be more important. It is time to revisit this topic and take greater action to accelerate research and theory development for dental hygiene.

Conclusion

As the body of knowledge *for* dental hygiene practice, and *of* dental hygiene practice, develops over time, dental hygiene should begin to emerge as a discipline. Its preferred research methods and accepted forms of validation of results, or syntax, would become apparent. Practitioners would practice with the knowledge that the services and interventions they provide would have predictable outcomes, a most ethical way to practice. This beneficial service will be valued by society, which may in turn lead to the respect and status within society sought by dental hygienists.

Dental hygiene has an ethical obligation to society to fully develop the knowledge upon which its practice is based. Clovis (2) has said that 'Knowledge development will define even more precisely the professional work of the dental hygienist and distinguish it from that of the dentist'. Dental hygiene needs to articulate the nature of dental hygiene knowledge. Stamm (8) suggested that '…professional status will only be conferred by a society that is persuaded that the aspiring profession possesses an ideal of service together with a coherent body of knowledge and technology… Clearly, research is a necessary enterprise to establish and enlarge the knowledge base…' (p. 6.) If dental hygiene is to provide the service to society of which it is capable, a larger number of dental hygienists need to be prepared to conduct credible research that will form the knowledge for this emerging discipline. This is the urgent work facing dental hygiene today.

Walsh, in her discussion of theory development and dental hygiene's status as an evolving discipline, quoted Plato, 'Nothing ever is but is always becoming.' (12, p. 18). Perhaps Plato's words are most appropriate to describe dental hygiene's current course toward potential evolution as a discipline. There is no question about whether dental hygiene ought to actively pursue development as a discipline – there is an ethical obligation to society to do so. Dental hygiene must engage in this endeavour without delay.

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