

Developing Reflective Health Care Practitioners: Learning from Experience in Dental Hygiene Education

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Abstract: Maintaining competence requires health care practitioners to remain current with research and implement practice changes. Having the capacity to reflect on practice experiences is a key skill, but reflective skills need to be taught and developed. This exploratory qualitative study examined the outcomes of a dental hygiene program requirement for developing reflective practitioners. Using a purposive convenience sample, students were solicited to participate in the study and submit reflective journals at the end of two terms. Eleven of twenty-six students participated in the study, providing sixty-four reflective entries that underwent qualitative thematic analysis. Using a reflective model, we identified themes, developed codes, and negotiated among ourselves to reach consensus. Results showed approximately two-thirds of the participants reached the central range as “reflectors” and most of the remaining fell within the lower range as “non-reflectors.” We concluded that dental hygiene students reached similar levels of reflection to other groups and the triggers were varied, appropriate for early learners, and divided between positive and negative cues. However, the small sample represented less than one-half of the class, yielding a potentially biased sample. Therefore, we conclude that the findings provide a departure point for further research with a more cross-cutting sample in order to substantiate reflective educational requirements and validate these findings.

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This study was supported by a grant from the University of Manitoba’s University Research Grant Program.

Keywords: reflection, experiential learning, dental hygiene education

Submitted for publication 5/4/10; accepted 11/11/10

Dental and dental hygiene education is committed to developing students with the ability to self-assess their performance in order to think critically and direct learning while in school and, later, as practitioners.¹ Key to the self-assessment process is the ability to use reflection on one’s practice.^{2,3} The reflective practitioner is valued because he or she is one who looks back on and critically examines clinical experiences and learns from them, making sense of the complexities of daily clinical life.^{4,5} Recently, a literature has emerged concerning the inability of practitioners to conduct accurate self-assessments, due largely to the human need to protect one’s self-esteem from negative feedback—whether self- or externally derived.⁶⁻⁹ However, the more specific activity of developing reflective practitioners as a pedagogical strategy has persisted because it reportedly increases self-awareness and promotes learning and associated changes to practice, self-empowerment, and ultimately professional competence.^{3,6,10} Thus, it is incumbent on health care profession educators to develop learning strategies

to ensure that students graduate with reflective skills and are capable of becoming reflective practitioners.

Because health-related research is constantly evolving, there is an expectation that health care providers will remain up-to-date with new knowledge and readily and appropriately apply it to practice.^{11,12} However, research consistently shows that a gap exists between current knowledge and existing practice, implying there is a delay in new, more effective care being available to patients/clients.¹¹⁻¹³ Within the comprehensive and expanding research field of knowledge translation, this gap is often referred to as the theory-practice gap.^{12,13}

Continuing competence—also referred to as continuing education, quality assurance, continuing professional development, etc.—involves the learning activities of health care providers after they have graduated from their professional program and is often mandated by health professions regulatory bodies to demonstrate a commitment to competent health care delivery to the public.^{14,15} Continuing competence programs typically have dual aims:

first, to ensure the public has access to high-quality, safely delivered health care through an assurance that every practitioner has minimum competence, and, second, that the health profession overall improves its performance over time.^{14,15} To achieve these aims, continuing competence programs have undergone a shift from mandatory continuing education (credit hour-based) to self-assessment tools because the former have been shown to be largely ineffective in narrowing the theory-practice gap and ensuring quality practice.¹⁶⁻¹⁹ However, more recently, self-assessment has undergone criticism based on the understanding surrounding the human need to protect one's self-concept from negative stimuli such as an authentic examination of one's performance.^{6-8,20} While this view of self-assessment is debatable, the concept of reflection on one's clinical experiences has remained as being important as both a pedagogical strategy and in continuing competence of practicing clinicians.^{3,6,10}

Reflection is typically described as a deliberate and structured process requiring one to recapture and contemplate on real experiences and challenge existing beliefs.^{4,21,22} It is through this mental processing that contradictions become evident between current theory and one's existing knowledge and practice; the process thus directs the student or practitioner to relevant learning activities and motivating changes to current behaviors.^{3,21} As such, reflection is viewed as an action-oriented and purposeful endeavor.^{22,23}

Reflection is not a spontaneous activity, but rather is believed to be a teachable skill requiring practice.²⁴ Ideally, training for and development of foundational skills, including reflective capabilities, occur in the undergraduate setting to ensure such abilities become entrenched later in practice. The benefits of reflection in health care practice can be summarized as several key points: 1) reflection helps integrate the linkage between new theoretical knowledge and one's existing practice; 2) it uses practice experiences, which are virtually limitless in supply and have a complexity that is unlike typical learning mediums such as reading journals or attending continuing education activities; 3) authentic, experiential reflective activities elicit a deeper form of learning than more superficial learning associated with rote methodologies; and 4) reflective learning has the potential to generate what is referred to as "transformative knowledge" in which the acquisition of new knowledge compels the clinician to change practice behavior.^{3-5,10,24-26}

In nursing and medical education programs, reflection is widely used and has been studied in regard to its process and outcomes.^{10,21,24,27-29} However, the role of reflection in educational settings and in practice needs to be further validated in order to justify its use,^{10,24} particularly in dental hygiene settings where little, if any, work has been done. Regarding physiotherapy, for example, Donaghy and Morss have stated that "the link between reflection and enhancement of practice remains speculative and conjectural."³⁰ Because reflective activities require a considerable investment of time and effort, it is incumbent on its advocates to validate its effectiveness. Reflection has been most commonly required by educators, and most of the research on reflection has been conducted with students. Much less research has been done in practice environments, and we are unaware of any studies within continuing competence programming.

Further, research investigating the depths of reflection achieved by students is limited.^{10,24} While there may be interest in incorporating reflection into dental hygiene education settings, little is known about its structured implementation or outcomes. Although the nursing literature has identified positive outcomes in nursing students who use reflection,^{27,29,31,32} these results have been limited and are not necessarily generalizable to other contexts such as dental hygiene. While it may be hypothesized that reflection is beneficial to dental hygiene students' learning, a need exists to substantiate its use and further guide how dental hygiene educators should best implement reflection in their programs.

Various theoretical models of reflection for health care practice have been developed, and a similar hierarchical structure describing reflective capability is apparent in many of these.^{4,23,25,31-34} In these models, reflection is typically viewed as occurring on a continuum from the least sophisticated point, where it is purely descriptive, to a moderate level, where self-awareness and analysis of experiences become evident, to the most advanced level. At the advanced stage, a new perspective on one's knowledge and practice has been acquired, while learning and beliefs are transformed and can be further validated in practice. In our study, an untested hybrid experiential reflection model was applied that had been previously developed and utilized in a dental hygiene education setting by the principal investigator (JA), based primarily on the works of Boud et al., Mezirow, and Kolb.^{4,25,33}

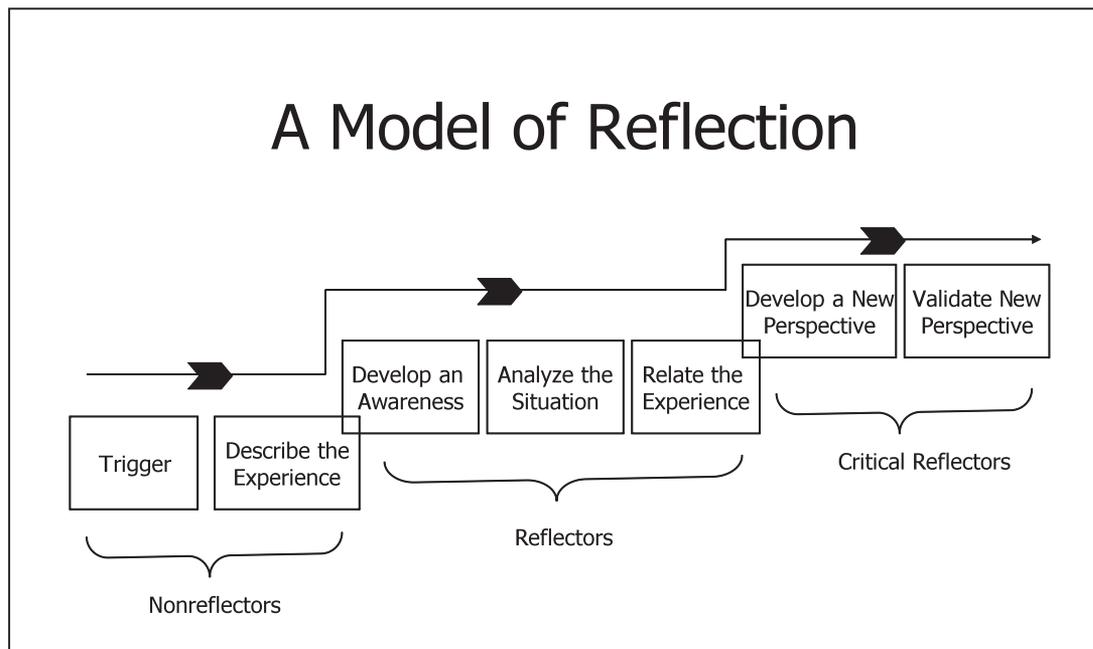


Figure 1. A basic model of reflection

This theoretical reflection model has been used with first-year dental hygiene students in the preclinical and first-year clinical setting at the University of Manitoba School of Dental Hygiene since 2004. The model has a seven-level hierarchy of reflection: trigger, description, awareness, analysis, relating, new perspective, and validation (Figure 1), but the levels can be collapsed into broader, more easily detected categories or levels of reflection similar to that used elsewhere.^{25,26,34} The reflection model and reflective process aim to guide the student from simply describing a clinical experience to analyzing it in detail, trying to connect it to prior theoretical knowledge in order to inform future clinical practice and thus learn from one's experience (Figure 2).

The purpose of this exploratory study was to begin evaluating the outcomes of a dental hygiene program requirement designed to develop reflective practitioners. The reflective educational component incorporates a theoretically grounded approach to developing reflective dental hygienists that has not been previously evaluated. The study specifically aimed to determine 1) the levels of reflection the students achieved, 2) the types of triggers for reflection

the students experienced, and 3) the types of subject matter on which students reflected.

Methods

Using a qualitative approach, this study explored the outcomes of an existing dental hygiene student curriculum requirement of reflecting on preclinical and clinical experiences over the course of two consecutive terms using the theoretical work of Mezirow, Wong et al., and Boud et al. as a basis for estimating levels of reflection.^{25,34,35} As part of the preclinical and clinical courses in first-year dental hygiene, students were required to reflect on their preclinical/clinical experiences using the theoretical model described on a weekly basis in order to develop their reflective skills. Students maintained a reflective journal and selected meaningful preclinical and clinical events on which to reflect. Assessment of student reflections occurred as part of the regular course evaluation, with students selecting and submitting two reflective narrative entries within their written journal each term for feedback from and grading by

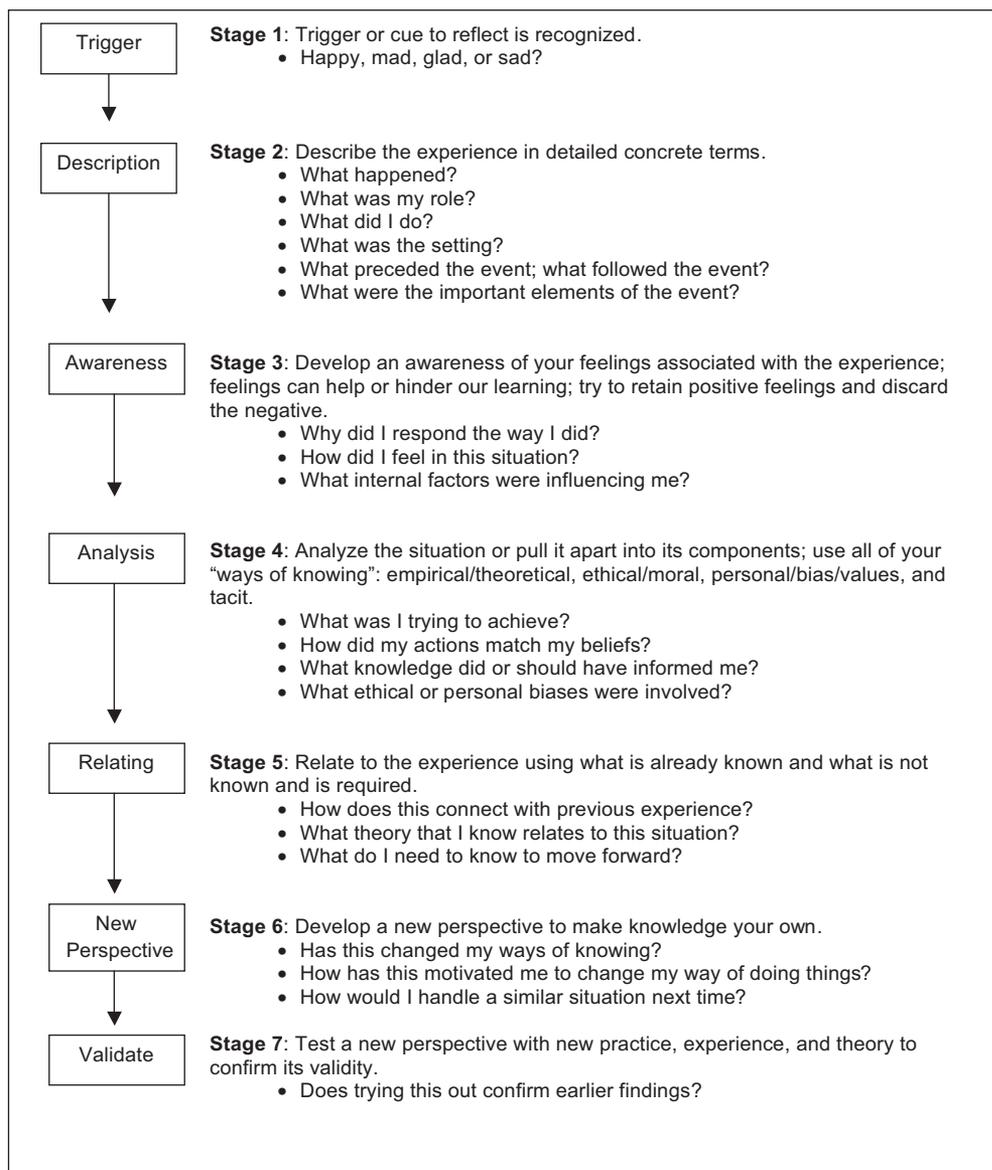


Figure 2. Descriptors to guide the stages of reflection

the course coordinator (JA). The intent of providing feedback was to improve the *relative* level of reflection rather than only concentrating on the absolute reflective level; in other words, higher grades were assigned to those who improved their level of reflection regardless of the level achieved overall.

The study aimed to provide reproducible procedures for evaluating the level and content of reflection

for use in this and other dental hygiene (and potentially other) contexts. As part of the students' usual course, a one-hour PowerPoint presentation was given by the preclinical/clinical course coordinator to all twenty-six admitted students providing a description, rationale, and recommended structure (theoretical model) for reflection in the first-year dental hygiene preclinical (term 1) and clinical (term 2) courses.

For the purpose of the study, following ethical approval from the University of Manitoba Health Research Ethics Board, a purposive convenience sample of all twenty-six first-year dental hygiene students was selected at the end of the first and second terms to participate in the study. To minimize duress, ensure confidentiality, and minimize researcher bias, one study coinvestigator (study coordinator) who does not teach in the dental hygiene program solicited students to participate in the study. The study coordinator approached students near the completion of each term so as to minimally influence student journal entries. Consenting students were asked to drop off their journals to the study coordinator's office if they were willing to participate. Students were assured that their journals would be immediately anonymized prior to analysis (i.e., all information identifying the study subject, other students, and instructors would be removed) by the study coordinator, who would not be involved in the analysis. At no point would the reflection journal entries be able to be linked to an individual student, thus ensuring students of complete confidentiality at all times.

Consenting participating students submitted their entire journals at the end of preclinic (term 1) and clinic (term 2) to the study coordinator. Copies of the journals were made for the study, and the originals were immediately returned to the students. After identifying features were removed, submitted journals were coded with an identifying number to permit linking to other student data in the future. The study coordinator maintained a record of students' identification and corresponding journal identification number in a separate and secure location. During all phases of analysis, journal copies and associated research materials were securely stored.

Transcribed (by the research associate), electronic copies of the narrative journal data were made and provided to the principal investigator (PI) and the research associate (RA) for subsequent analysis. The PI and the trained and calibrated RA independently analyzed all the journals in their entirety using qualitative thematic analysis. This well-accepted qualitative technique for analyzing narrative data is well suited for analyzing reflective journal entries. Typically in this method, the written narrative content is broken into individual words and/or phrases having a collective meaning.³⁶ Items are then classified or coded into a finite number of categories to permit further identification of themes. In this study, because the researchers were working from existing theory, an approach was used in which the expected

themes were predetermined based on the reflective categories of the hybrid model. Themes or what is sometimes referred to as "sensitizing concepts" help the researcher make sense of large amounts of data and codes.³⁷ A somewhat inverted technique was used in this study, in which the themes were identified first and then subsequently categorized into codes reflective of the specific narrative content and using a more inductive approach.

"Credible" interpretation of data, a qualitative term reflecting the quantitative characteristics of reliability and validity, is often the most challenging aspect of qualitative thematic analysis.^{38,39} To best ensure credibility, the PI and RA first independently analyzed the journals and then met to compare results. The PI and RA took each single narrative entry, which surrounded one preclinical/clinical experience, and analyzed it according to the levels of reflection of the hybrid model and supportive instructional materials. The reflective themes, where they existed, were identified regardless of whether they were in the appropriate hierarchical order or if some levels were missing. Where disagreement about a given code or theme occurred, the PI and RA negotiated, referring to the original documents describing the meaning of the reflective hierarchies as needed until consensus was reached. This was a somewhat iterative process, necessitating both investigators to go back to the raw data and reanalyze material to ensure credibility of analytic procedures. Thus, reliability estimations were not statistically conducted in this study for two reasons: first, this is not typical procedure in qualitative technique; and second, the PI and RA eventually achieved consensus on all themes and codes, making reliability estimations a moot point, also found to be the case by others.³⁴

As has been done elsewhere,^{25,26,34} in analyzing the level of reflection achieved by the students in this study, the seven specific hierarchies of reflection were later collapsed into three broad categories. This process was reasonably straightforward in that those narratives that fell within "trigger" and/or "description" categories were deemed to be "nonreflectors"; those that included elements of "awareness," "analysis," and/or "relating" were considered to be "reflectors"; and those that reached the "new perspective" and/or "validation" levels were found to be "critical reflectors." Problems arose when students had elements of more than one theme represented but may not have been represented in its entirety. These conditions were analyzed and are described in the results.

Results

Of the twenty-six students asked to submit their reflection journals for the study, eleven agreed to participate and submit their entire journals. These eleven journals provided a total of sixty-four separate narrative journal entries, which were all included in the analysis. The findings demonstrated that more than two-thirds (n=43; 67 percent) of the journal entries fell within the central level of reflection (reflectors) with a little less than a third (31 percent) falling into the nonreflector category and only a very small proportion (<5 percent) reaching the critical reflector level (Figure 3).

Of the nonreflective entries, most provided both a trigger and a description of the experience. The following two examples demonstrate students' positive and negative emotional triggers, respectively (reflective level 1 is italicized), and descriptions of the experiences, but their failure to go further with the reflective process (these dental hygiene students will be identified as to whether they were at the preclinical or clinical level):

"I felt at ease and confident in this lab because I found the intraoral exam easy and interesting, and I had already practiced the extraoral exam at the last lab. I found palpat-

ing the buccal mucosa and the tongue rather easy. This lab was interesting to see the differences in people's mouths." (Preclinical Student)

"I felt very nervous in this lab. I was shaky because I wanted to do the strokes correctly, but not hurt my partner. . . . In the clinic it felt like I could not see the tooth surfaces, especially with indirect vision. I did not go very far subgingivally, and my strokes were short." (Preclinical Student)

While most of the reflective entries included a trigger, description, and awareness of experience (reflective level 1 to 3), many did not complete the reflective category to the analysis and relating levels as demonstrated in this example:

"I felt frustrated with finding proper clock positions for certain aspects of the teeth. This was brought on by seeing other students find their positions easily. I felt like I was struggling to understand which aspects of the teeth we were supposed to be seeing. I was comparing myself to everyone else, which made me feel underprepared and inferior." (Preclinical Student)

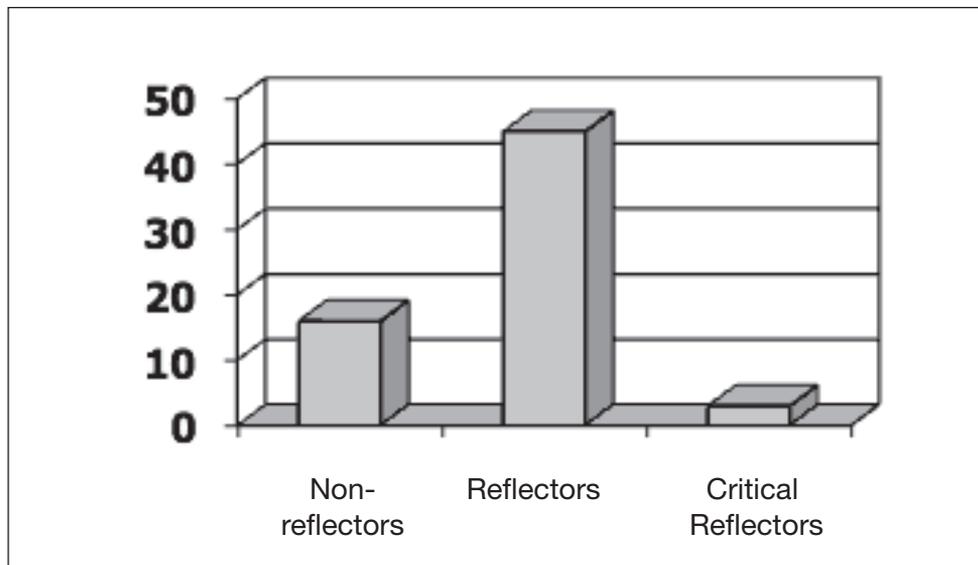


Figure 3. Levels of student reflection (n=64 reflective narrative entries)

Approximately half of the reflective entries did go on to provide an analysis (reflective level 4, italicized), which is illustrated in the following reflective entry:

“I was slightly frustrated in today’s lab because I didn’t realize how different it would be to actually handle the instrument than understand it in the textbook readings. *I found it difficult to keep the toe third adapted to the tooth surface without slipping, especially when turning the corners of the teeth. I felt like every time I slipped or adapted more than the toe third, I would definitely be lacerating my client’s tissue.*” (Preclinical Student)

While fewer journal entries showed reflection to the relating level (reflective level 5, italicized), some examples did demonstrate the linkage of theory to practice to lesser and greater degrees as shown here, respectively:

“I had some trouble keeping my strokes small. This was frustrating because when I tried to make my strokes smaller, it was harder to maintain control of the curette. *Maybe if I just focus on the tip third and*

I imagine the rest of the working end isn’t there, then it will be easier to make tiny strokes.” (Preclinical Student)

“This week, I felt so excited because I had a really great learning experience in clinic, which went beyond my psychomotor skills or cognitive skills. My client was a forty-year-old female who experienced high anxiety every time she visited the dentist or dental hygienist . . . [continued description]. I didn’t quite know what to expect or how to handle the situation. What I did know, however, was that I had to find a way to make the appointments with me as comfortable as possible for her. *I also remembered from the communications course that we should ask the fearful client probing questions in order to find out what triggers their anxiety.*” (Clinical Student)

As shown in Figure 4, most of the reflectors demonstrated voids in the reflective process, meaning that they skipped over a stage, primarily in the lower levels of the process. The critical reflector entries showed evidence of having a new perspective but did not reach the validation level. The following example

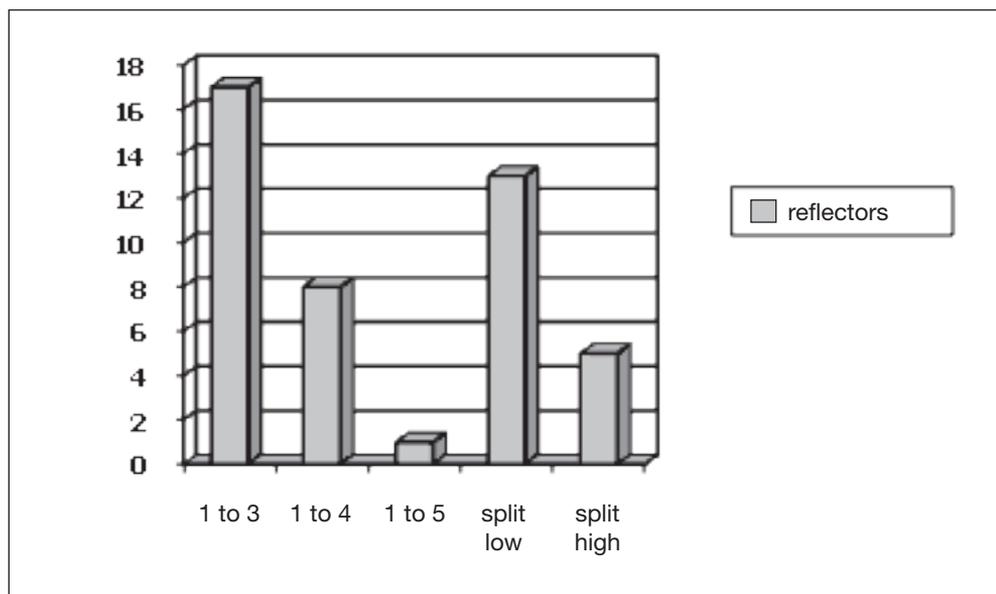


Figure 4. Specific levels reached by the students within reflector category

Levels of reflection: 1=Trigger, 2=Description, 3=Awareness, 4=Analysis, 5=Relating, 6=New Perspective, 7=Validating. Split low=voids occur in lower half; split high=voids occur in upper half.

is a good illustration of a student reaching the critical reflector level and developing a new perspective (level 6, italicized):

“I took a look around in his mouth and noticed a drastic reduction in plaque since the last appointment where we discussed OHI. This gave me a huge boost of confidence, knowing that the knowledge I provided to the client was put into action. Before starting the debridement, I encouraged him to continue with his new routine and also gave him the opportunity to ask questions. He really seemed to understand: I was so proud! This was such a change from previous clients who understood but were not at the appropriate stage of change to adopt new habits. *This experience challenged my opinions about the success of OHI. It also helped put the stages of change theory into reality. The experience made me realize that although people might not initially change, they do have the knowledge for a possible change in the future.*” (Clinical Student)

It was evident that although the students are taught to move through the reflective process in a

linear manner, many progressed through the stages out of the recommended order or skipped over some levels of reflection entirely.

The study also aimed to determine the types of reflection students experience based on the triggering events. Because there was no theoretical work available to underpin this part of the analysis, we allowed meaning to inductively emerge from the data. As recommended in the literature,⁴ students are taught to reflect on clinical events that elicit an emotional response, and, interestingly, the triggers for reflection were almost evenly split between positive and negative stimuli with very few being neutral (Figure 5). While most of the negative triggers for reflection surrounded various miscellaneous emotive stimuli, almost as many were due to feelings of frustration followed by nervousness (Figure 6), which is appropriate considering the study examined preclinical and early clinical students. The following three entries are illustrative of some of the negative emotional triggers: “Frustrated. I felt incapable of probing today. I just wasn’t getting it” (Preclinical Student); “Today was our first day of preclinical lab. I must admit that I was a little bit nervous” (Preclinical Student); and “Wow. . . . Clinic was horrid. I felt like I wasn’t able to do anything right” (Clinical Student).

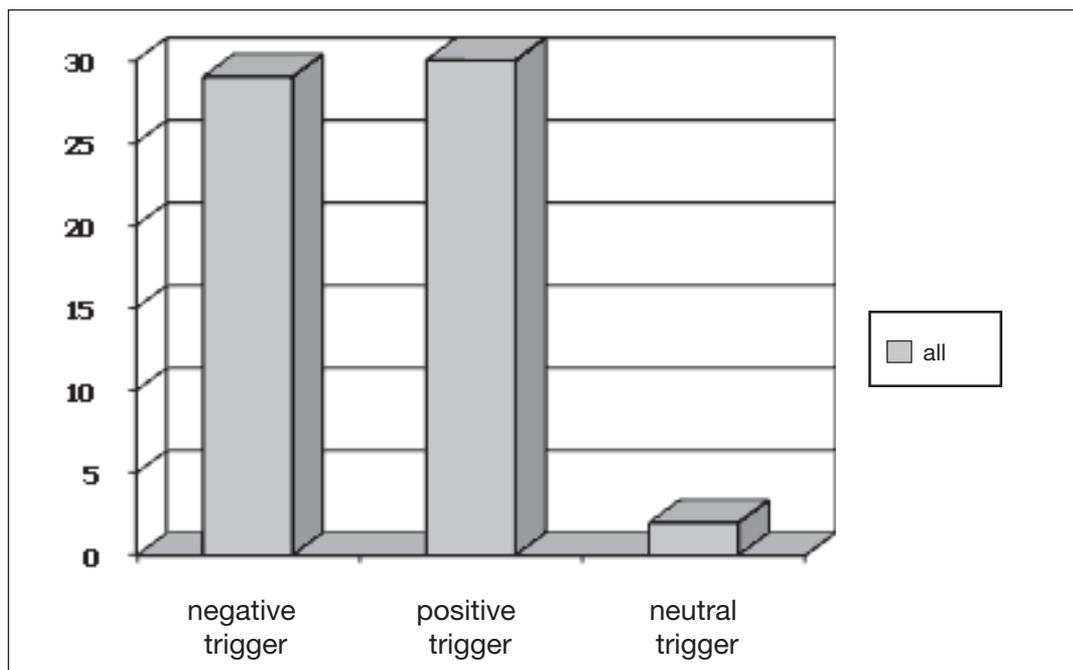


Figure 5. Triggers for reflection among the students

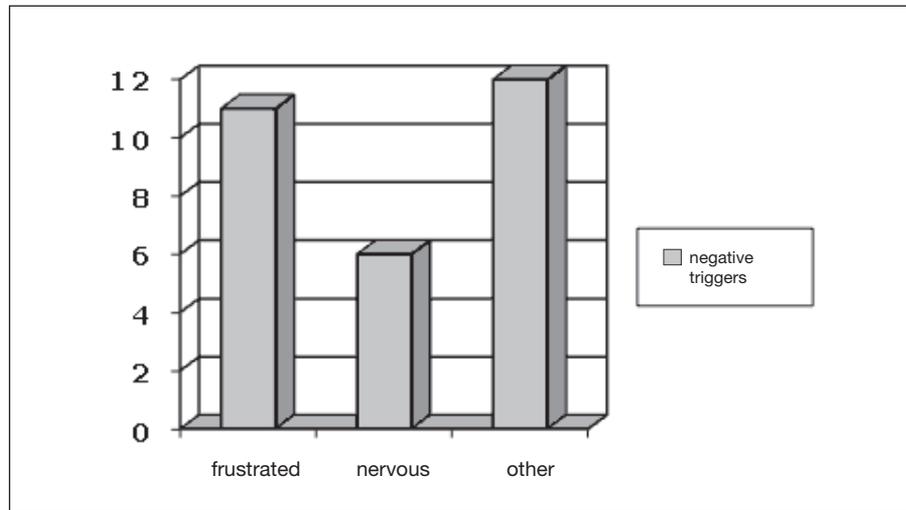


Figure 6. Negative stimuli for reflection among the students

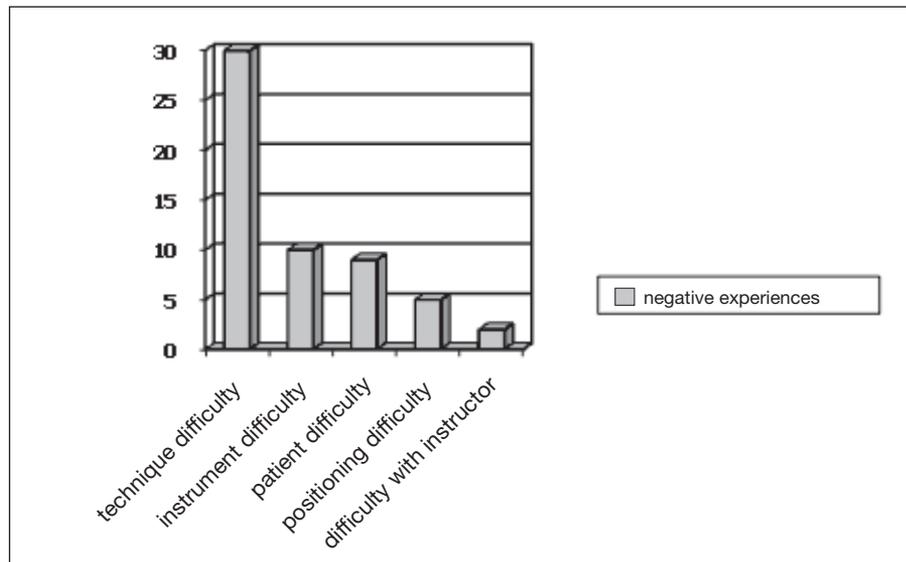


Figure 7. Negative experiences on which the students reflected

We also investigated the specific types of negative experiences that students reflected upon. “Technique difficulty” was overwhelmingly the predominant negative experience reflected upon, followed by difficulties with instrumentation, patients, positioning, and the instructor (Figure 7).

As shown in Figure 8, the predominant positive trigger surrounded feelings of confidence. Other positive emotions triggering the reflective experience were feelings of comfort, feeling good, at ease, excited, and others. The following examples demonstrate some of the positive emotional stimuli that were the focus for

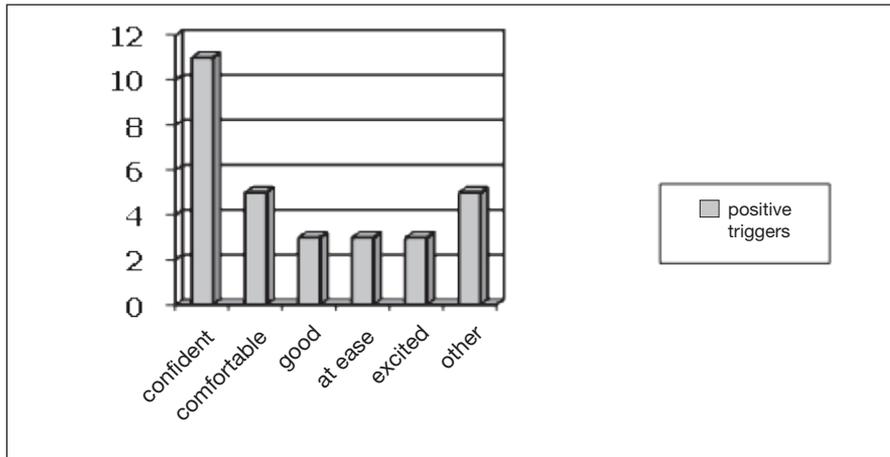


Figure 8. Positive stimuli for reflection among the students

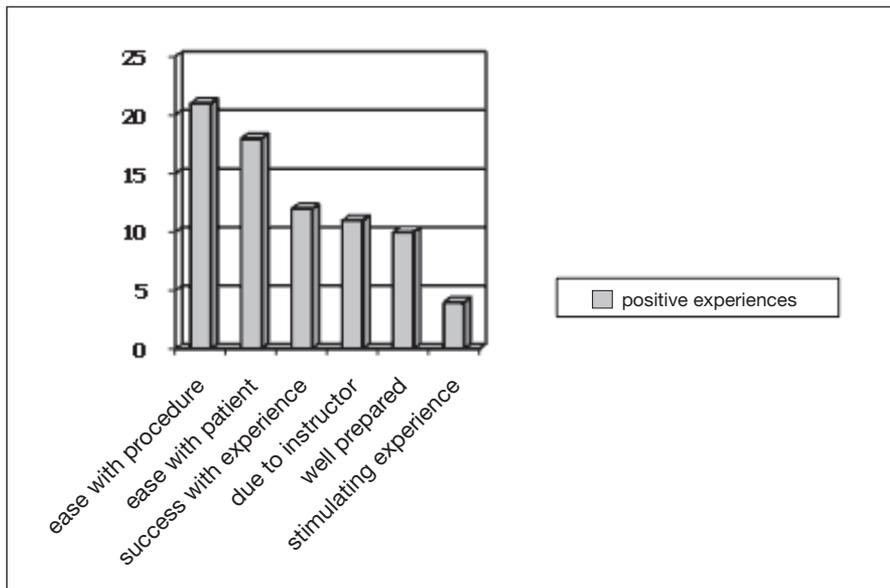


Figure 9. Positive experiences on which the students reflected

reflection: “But it went and it wasn’t so bad! . . . It was fun, I really felt challenged” (Clinical Student); and “I learned a lot in this session. I’m feeling more confident and less worried” (Preclinical Student). Specific positive experiences that the participants reflected on included ease with the procedure, with the patient, or with the overall experience followed by positive encounter with the instructor, being well prepared, and having a stimulating experience (Figure 9).

Discussion

This exploratory qualitative study begins to illuminate the reflective process of dental hygiene students in their preclinical and early clinical experiences. While the study was small, it provided a rich volume of text that provides insight into the reflective content of the preclinical and early clinical dental

hygiene experience. Qualitative research is ideally suited to exploratory situations when the topic is new, there is no existing theory available, the key variables are unknown, or the sample is new to examination.⁴⁰ Additionally, those phenomena that are processes, such as reflection on practice, rather than events lend themselves to qualitative inquiry. Thus, from this perspective, the study was successful in revealing the level of reflection students achieved, the emotional stimuli triggering reflection, and the reflective content of experiences. The finding that most students fell within the reflective category in this investigation is aligned with studies conducted with other health care students in the early years of clinical education.^{10,26,34} This being said, the results must be interpreted with considerable caution because of the modest sample size and additional limitations in the study design.

Because the study sample included less than half of the students in the first-year preclinical and clinical courses, there may be bias introduced in the reflective content of those choosing to participate versus those who did not. We anticipated that most triggers for reflection would be negative stimuli, but this was not the case and emotive stimuli were found to be evenly distributed between the positive and negative. This could be a true reflection of the student population or it could be due to sampling procedures.

The reflection literature suggests that students/practitioners reflect on any emotional stimuli and particularly those experiences that are out of the ordinary or constitute surprises or what has been referred to as a “disorienting dilemma.”^{4,5} While more challenging, reflecting on routine, more mundane behavior is also beneficial for challenging long-held beliefs and practice patterns, which would not typically elicit a strong emotional response.⁵ However, there is a paucity of research examining the nature of emotive stimuli and, while this study begins to reveal reflective triggers, further examination in student and practitioner contexts is needed. In this case, students were encouraged to reflect on an emotional trigger of any kind, and this is reflected in the findings. It is encouraging, particularly in an early educational context, that students were able to find as many positive experiences as negative ones to reflect upon since health professions education is commonly viewed as being considerably stressful. However, it can be hypothesized that the dental hygiene students who find the preclinical and clinical learning environments to be most stressful and negative opted out of participating in the study, thus resulting in positively skewed findings.

Furthermore, in this study it was found that the positive triggers for reflection were predominantly based on similar topic areas as the negative cues and occurred in a similar distribution with the most to least being procedural, patient-, and then instructor-related experiences. In other studies, additional reflective content areas were found indicative of student development. For example, in a nursing study examining reflection in health counselling, reflections were initially technical and disease-centered and became increasingly complex in later years of the program.²⁶ In a study conducted with fifth-year medical students, the three most common reflective areas were communication skills, knowledge deficits, and cultural influences,¹⁰ and these were indicative of the more advanced educational level. The findings here are representative of the early level of learning of these dental hygiene students.

In naturalistic qualitative research, the phenomenon is encouraged to unfold naturally with the aim of improving understanding about it and potentially extrapolating that knowledge to other settings.⁴¹ However, an additional limitation of this study was that students would be able to predict that they would be asked to participate in the study again in the second term, and such an expectation may, subconsciously or otherwise, cause students to adjust their reflection entries to be more desirable in response to this knowledge. Reflective skill improvement was the overarching goal of the reflective curriculum requirements; therefore, the expectation was that the quality of reflections would improve substantially from the first term to the second. Thus, without access to the nonparticipants’ journals, it is not possible to conclusively ascribe improvements in reflections over time, where they occurred, to bias, or to actual learning. However, it seems prudent to assume that some level of improvement in reflection is an outcome of bias from participating in the study.

From a qualitative research perspective, reliability and validity are sometimes viewed as one construct, referring to the overall rigor, quality, and credibility of the study.⁴¹ Together, the concepts are related to precision, neutrality, and consistency, which provide the confirmability and trustworthiness of the findings and potentially permit transfer to other settings.⁴¹ While the generalizability of our findings to other settings is likely premature given the preliminary nature of this study, this research aims to inform researchers conducting future work in dental hygiene or other contexts aimed at substantiating reflection as a pedagogical strategy.

To ensure rigor in most qualitative research projects using thematic analysis, multiple researchers are part of the coding and interpretation of the data.⁴² While a specific ideal number of individuals conducting qualitative thematic analysis has not been identified, a normal qualitative process to ensure the best quality coding and interpretation is through careful scrutiny of the codes and themes by the researcher(s).⁴³ This is done by going back to the raw data several times including when the researcher transcribes the data and reads and rereads the transcripts while analyzing the data.³⁷ This study relied on two trained and calibrated investigators qualitatively analyzing the narrative data. While some studies have utilized more researchers in the thematic analytic process,^{34,44} others have relied upon a number similar to our study.⁴⁵

While it may be somewhat disconcerting that most dental hygiene students did not reach the advanced levels of reflection (i.e., critical reflection) in that it is in the higher stages that changes in perceptions are believed to occur, this can be justified given the early educational stage of these students. Further, in foundational educational settings, all learning is new, and, therefore, it is not necessarily “transformative.” This being said, once practicing, entrenched foundational knowledge will typically need to be transformed by clinicians at some point in time. It is hoped that, by developing reflective capacity in students, they will possess the skills as practitioners that stimulate learning and change in practice associated with reflection.

Conclusions

This exploratory study represents early work investigating reflection in dental hygiene education. While some generalizations surrounding reflection in other health professions can be insightful, we recognize that more work needs to be done in the dental hygiene context. We conclude that the dental hygiene students included in this study were similar to other health professions students in the level of reflection reached and, although they did not go further in the reflective process, we believe it to be appropriate for their learner level. Triggers for reflection were shown to be positive and negative and, for both, the topic areas centered on procedures, patient issues, and instructor encounters. While this study provides important preliminary findings, understanding reflection in dental hygiene practice remains tentative. To

ensure the best use of limited research resources, a clear research agenda needs to be defined that aims to further substantiate reflection in dental hygiene education settings and practice environments to show that reflection can promote transformative knowledge acquisition and continued competence.

Acknowledgments

The investigators would like to thank the diligent work and effort of our research associate, Mr. David Schmucker, who provided significant assistance in preparing the journals for analysis, coding the raw narrative data, and negotiating with the PI in determining themes. We also greatly appreciate the University of Manitoba for providing an internal research grant (UMRG) to support this study.

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