Soft skills and dental education

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Abstract

Soft skills and hard skills are essential in the practice of dentistry. While hard skills deal with technical proficiency, soft skills relate to a personal values and interpersonal skills that determine a person’s ability to fit in a particular situation. These skills contribute to the success of organisations that deal face-to-face with clients. Effective soft skills benefit the dental practice. However, the teaching of soft skills remains a challenge to dental schools. This paper discusses the different soft skills, how they are taught and assessed and the issues that need to be addressed in their teaching and assessment. The use of the module by the Faculty of Dentistry, University of Malaya for development of soft skills for institutions of higher learning introduced by the Ministry of Higher Education, Malaysia.

Introduction

Students in a professional undergraduate program such as dentistry are expected to not only be clinically competent upon graduation but also to exhibit good soft skills in order to serve the society at large. Clinical, scientific and interpersonal skills have been recognised as important components of the dental curriculum. Through good interpersonal skills, students are able to listen and question their patients in an empathetic manner, and this would enable the patients to understand their oral health condition and needs. Although patients may not be able to objectively judge the quality of the care provided by the student, they could readily develop an opinion of the student’s ability based on their interaction; thus, trust and student–patient relationship will be further enhanced.

Soft skills encompass a wider scope than just interpersonal skills alone. Jupp reported that whilst some dentists are lucky to enjoy working with their colleagues, many faced staff-related issues contributing to poor working environment (1). She suggested that this was likely to be due to little emphasis given on the development of other types of soft skills such as leadership and entrepreneurship. Halley et al. (2) concluded that apart from clinical experience, a new associate must also exhibit pleasant personality and able to interact well with patients, staff members and the principal dentist. Razak et al. (3) also reported that whilst graduates believed that their soft skills were developed through undergraduate training, their senior dental officers felt that their soft skills such as community-based skills and personal management and professional development needed to be improved. However, both respondents were in agreement that communication skills were developed.

Areas of soft skills in dental training programme in the literature have been concentrated mainly on individual soft skills elements such as communication skills (4–8), critical thinking (9, 10), teamwork (11), leadership (12), professionalism (8, 13), life-long learning (14) and entrepreneurship (15). All universities in Malaysia have been instructed by the Ministry of Higher Education (MOHE) to implement the teaching of soft skills at both undergraduate and postgraduate levels (16). The various soft skills were identified after exhaustive research and expert consultation include communication, critical thinking and problem-solving, teamwork, lifelong learning and information management, entrepreneurial, professional ethics and moral, and leadership (17). This article attempts to give an overview on why soft skills are important and how they are being taught and highlight a model used to inculcate soft skills amongst dental students at the University of Malaya.

What are soft skills?

A skill is the ability to make use of one’s knowledge readily and effectively (18). One must have the ability to be discerning
to be competent in one’s skill. Skills can be learned and are essential in the everyday function of organisations. Soft or social skills are those personal values and interpersonal skills that determine a person’s ability to fit in a particular structure such as a project team or a company. Perreault (19) defined soft skills as personal qualities, attributes or the level of commitment of an individual that sets him apart from other individuals who may have similar skills and experience.

Communication skills

Communication refers to ‘the imparting or exchanging of information by speaking, writing or using some other medium’ (20). It also includes the mutual conveyance of emotions, knowledge and ideas in an honest and effective manner. The ability to communicate effectively is a feature that differentiates individuals from one another. The importance of interpersonal communication skills has been recognised as being essential in a good provider–patient relationship across health disciplines (5–7). Interpersonal skills have been shown to improve after communication skills training (6,8). The ability to communicate with patients, listen, be observant and respond to patients’ needs, empathise, understand and carry out consultations in an organised and professional manner are considered as basic requirements of a competent dentist (21). Patient complaints regarding dental appointments have commonly included communication problems with their dentist (22,23). Effective communication could further aid and hasten the diagnostic process and decision-making and enhance patient–clinician understanding (21).

Critical thinking and problem-solving

Present day dentists are required to be skilled at reaching diagnosis, treatment planning and providing the most favourable treatment to patients. Behar-Horenstein et al. (10) described critical thinking as ‘intellectually engaged, skilful and responsible thinking that facilitates good judgement because it requires the application of assumptions, knowledge and competence and the ability to challenge one’s own thinking’. Whilst Chambers (9) simply defined critical thinking as ‘being able to give reasons for what one says and does’. The Commission on Dental Accreditation (CODA) in the USA has put forward a new standard in the teaching of critical thinking and the demonstration of this skill in complete patient care (10).

Teamwork

The principle of working together in a team should underpin how all the team members operate. Teamwork refers to ‘the combined action of a group of people, especially when effective and efficient’ (24). It means involving people throughout the team in a creative role, to ensure that together they are all able to succeed. The dental team is composed of individuals with different competencies who play different roles in the successful completion of dental care procedures. Therefore, acceptance and respect of the competence of each member of the team is vital. It has been emphasised that teamwork is essential for the development of cooperation between members of the dental team within a practice (11, 25).

Leadership

The good team leader encourages participation and delegates the work wisely amongst the members, but never loses sight of the crucial fact that responsibility for team success comes with good leadership. Efficient leadership style is required to move the profession ahead, to never stop at one’s own achievements, to be ready to accept change and challenge and to solve problems innovatively (12). Leadership can be defined as ‘the action of leading a group of people or an organisation’ (20). In dealing with members of the dental team, the leadership skills of the dentist can help develop strong working bonds and earn the respect and support of co-workers and patients. Certosimo (26) indicated that qualities of a leader include being a role model, effective communicator, synthesiser, systematic thinker, designer and servant. Good leadership coupled with management and business skills would facilitate a dental practice in seeking opportunities and expanding their services (27).

Professional ethics and morals

Healthcare providers frequently face challenges to their professionalism. Patients are more likely to show compliance if they trust the dentist and are more likely to go in the legal pathway if they perceive the dentist’s behaviour as unprofessional. Professionalism refers to ‘the high standards that you expect from a person who is well trained in a particular job’ (20). Professionalism also involves working within the bounds of one’s training and competence. Christie et al. (28) stated that professionalism represents selflessness, responsibility, excellence, reliability and respect for others. Pursuing a career with these qualities may interfere with income generation and efficiency in practice. One should be able to use good judgement in choosing between options. Ethical decision-making and critical thinking skills must be nurtured amongst students so that they could deal with conflicting interests. The decision to refer cases to a more adept dentist is an ethical choice that one should make when the situation warrants it. Ethical dilemmas occur when there are moral decisions to be made given different choices. Ethics principles involve doing no harm (nonmalificence), promoting good (beneficence), respect of people’s wishes (autonomy) and being fair (justice) (29).

Lifelong learning

Another and perhaps the most important approach for the dentists in overcoming the evolving science caused by differences in paradigms is to be an unrelenting learner. It is not acceptable to assume yesterday’s knowledge can meet present day demands. Knowledge updating involves both the theoretical and practical aspect so that the dentist could provide a standard of care consistent with what it expected in the profession. Dentists have the legal responsibility to update themselves to be able to present patients with all available treatment options in their everyday clinical practice (14, 30). Lifelong learning has been recognised as an essential element to self-regulate professionalism. The introduction of self-directed continuing professional development programme is aimed at nudging individual dentists to continuously upgrade their knowledge and skills and
In 2010, Carey et al. (4) presented a systematic research review of teaching was through lectures compared to active practice. They reported that only one-third of schools had communication skills taught in 40 US and Canadian dental schools, and its importance must be inculcated into students so that they are prepared to face the dentistry of tomorrow.

**Entrepreneurship**

Filion (31) defined an entrepreneur as one ‘who innovates by recognising opportunities; he or she makes moderately risky decisions that lead into actions requiring the efficient use of resources and contributing an added value’. Based on this definition, a dentist is not an entrepreneur in a true sense. A wide range of competencies has been identified to contribute towards the development of good entrepreneurial skills including; management, communication motivation, adaptability, perseverance, competitiveness, innovative, creativity and personal traits. Many, if not all, of these competencies will be valuable in establishing a successful dental practice. Levin (15) was in the opinion that, unlike an entrepreneur who are willing to take risk in an attempt to bring new idea to the market, dentists utilise proven or evidence-based techniques and concepts on their patients. Therefore, this soft skill will not be discussed further.

**How are soft skills being taught and assessed?**

Clinical competence comes with the integration of cognition in identification of problems and problem-solving during clinical interactions with patients that include sensitivity to the social, cultural and political atmosphere using skilled communication, critical thinking, professionalism and information management (32). Different teaching methodologies have been used in teaching soft skills such as lectures, seminars, case-based studies, problem-based learning (PBL), project-oriented PBL (POPBL), clinical simulation laboratory activities on specific soft skills amongst others (4, 33, 34). The basic precept is for the concept and principle of the specific skill to be explained prior to its practical application. The expectation is that soft skills will develop and mature. Where no formal course is offered, the teaching of soft skills is embedded in the various courses. However, the teaching and assessment of soft skill competencies still remains a challenge to teaching institutions in an already crowded curriculum. There is a need to be more creative and to think out of the box where teachings of soft skills are concerned.

**Communication skills**

In 2001, Yoshida et al. (34) investigated how interpersonal communication skills were taught in 40 US and Canadian dental schools. They reported that only one-third of schools had courses specifically focusing on interpersonal communication of which more than half of the schools offered these types of courses only during the first 2 years. The most common topics were communication skills, patient interviewing and patient education/consultation, and the most frequently used method of teaching was through lectures compared to active practice. In 2010, Carey et al. (4) presented a systematic research review where they found didactic teaching still predominating together with clinical role-play with simulated patients in communication skills training. At the University of Malaya, PBL and a lecture on communication skills are offered prior to entering the clinics (33). Role-play sessions, video presentations, interview with real patients, case presentations and home interviews are given in the clinical years including a reinforcing lecture in the final-year (33) school-based programmes on interpersonal skills and interpersonal communication skill development have been introduced and have proven to be effective (6,8). Lanning et al. (7) introduced student peer teachers as a teaching method involving the 2nd (D2s), 3rd (D3s) and 4th year dental students (D4s) and 4th year medical students (M4s). The D2s were provided with knowledge on clinician–patient communication observed through a dental faculty role-play. They then participated in role-playing with the M4s as simulated patients, after which a feedback session facilitated by D4s and M4s was held. They applied what they have learned as D3s on patients in the dental clinic. Feedback about the programme was positive for both the students and peer instructors with improvement in their communication skills. Wagner et al. (35) evaluated the effectiveness of online instruction in the improvement in medical and dental students’ communication and counselling skills. They found a positive association between the use of online instruction and improvement in most of the clinical skills evaluated. They recommended further studies to determine for which types of students this technique would be most advantageous to (35). Motivational interviewing (MI) is seen as another method to improve communication skills (36). MI is a technique used for counselling to motivate patients to change their behaviour and adhere to treatment protocol. Preparations or MI is time-consuming, and further study into its effectiveness within the dental setting has been recommended. Debe et al. (37) used an evaluating, assessing and treating (EAT) framework based on brief motivational interviewing (B-MI) technique for secondary prevention of eating disorders. The EAT method was found to be non-confrontational and easily adopted. Lucander et al. (38) evaluated a pilot workshop for communication skills teaching based on experiential learning approach and realistic situations. The workshop used was short and considered to be suitable for frequent training of six to ten students. One point highlighted was that presentation of the criteria for effective high-quality communication to the students may have led to their positive response to the workshop. Sakaguchi adapted the one-minute preceptor method used in Medicine in an iCARE approach by both preceptor and student in the dental clinic (39). The term iCARE is an acronym for inquire, cultivate, advise reinforce and empower for actions taken by the preceptor. Whilst initiate, contribute, apply, reflect and execute are the actions that students use in this approach. This method is said to promote critical thinking amongst the students.

Effective communication is said to be therapeutic and is meant to contribute to the physical and emotional well-being of the patient. This type of communication is essential in patient-centred provision of care where the primary element is listening to the patient and communicating with them in a manner that they can easily comprehend (40, 41). Other key elements include trust, empathy, respect and self-awareness (21,40,41). The dental clinician and the patient must share a mutual respect
before trust can be developed and communication to be more effective. The actions of the dentist must be congruent with the messages that he relates. The dentist must show a genuine concern for the patient’s well-being. Self-awareness involves being aware of how one can help to relate respect and empathy through one’s thoughts and behaviour. The focus should be on the patient. Benefits of therapeutic communication include increased patient satisfaction and treatment outcome as well as reduction in patient anxiety amongst others (40).

In the pursuit of better teaching and learning of communications skills, the lack of clinical dental communication models becomes evident (40). The dental profession has taken from the medical models such as the Macy model of effective doctor–patient communication but still focuses on patient treatment and anxiety and fear alleviation (40). There are several factors that need to be addressed with regards to communication skills teaching. One is the perceived lack of empathy amongst the dental graduates. The ability to empathise has been shown to be associated with communication and the understanding of what the patient is going through. There are, however, no measures to determine how empathy is practised within the dental education setting (41). Empathy amongst students was found to decline as their exposure to patients increased, and it was recommended that interpersonal skills training of students be consistently given throughout the training duration (41). Holden (42) held the opinion that dental students know what they need to say but not the manner by which they should say it. He opines that this may cause the patient to believe that they are being patronised. Female dentists were found to be perceived as having more empathy-related traits in a study by Smith and Dundes (43). They reported that gender stereotyping was applied to dentists by 40–58% of those surveyed. Dental institutions should be aware that gender stereotyping persists and may need to incorporate gender sensitivity topics in their training. Communities are also becoming more diverse with people from different cultures living in the same communities from migration. This situation exists in countries like the United States and Australia. Countries like Malaysia have three races, namely Malay, Chinese and Indian, in culturally diverse communities. Ignorance of their practices and their sensitivities may lead to dissatisfaction and mistrust. Cultural sensitivity based on a strong foundation of communication skills ensure everyone gets equal access to healthcare regardless of race and ethnicity (8). Community-based communication skill teaching has been suggested to provide a proper teaching environment in culturally diverse communities.

Chilcutt noted that training in dental communication and interpersonal skills in dental schools emphasises on dentist–patient relationship and lacks training in team communication and leadership in preparation for a dental practice (22). She highlighted that a lack of training in leadership and communication skills can lead to high degree of staff-related stress and high turnover in a dental practice.

**Critical thinking and problem-solving**

Critical thinking and problem-solving are loosely interpreted as being clinical reasoning, diagnostic thinking or clinical judgement (44). The teaching of critical thinking is still largely didactic, and lectures are deemed not effective in teaching this soft skill (9,10). Hendricson et al. (44) presented four teaching strategies that can be used as these have been associated with critical thinking development:

1. **questioning from teachers that require problem analysis**, comparison of different approaches, rationalising development of specific course of action and giving the prognosis for their chosen course of action on a regular basis;
2. **listening to experts as they discuss the process they go through in problem analysis and problem-solving**;
3. **comparison of strategies used to those used by experts given the same scenario**; and
4. **written reports on problem analysis which include theories of causal factors, comparison of alternative solutions and justification for course of action**.

Johnsen et al. (45) presented three stages used in the teaching of critical thinking at the College of Dentistry, University of Iowa. The initial phase includes introduction to the concepts of critical thinking, scientific literature and evidence-based dentistry in their pre-clinical years followed by PBL. The next phase begins with the shift to clinical training where different departments involve small groups of students in patient assessment, treatment planning and providing guidance to the students. In the final phase, departments would conduct clinical reviews to reinforce treatment planning and other activities that involve analytical processes. It has been noted that PBL and case-based seminars provide fertile ground for the development of critical thinking (46). Critical thinking has also been associated with reflective judgement, and research on critical thinking has been concentrated on the keenness and inclination of individuals to use reflective and logical thinking (9, 44). Behar-Horenstein et al. (10) believed that critical thinking teaching would be more effective if dental instructors are trained in enhancing the use of critical thinking in their teaching. Students hold their teachers as role models, and thus, they should be competent in these skills for students to emulate them.

The studies by Razak et al. (3) and Yusof et al. (47) highlighted the deficiencies in the aspect of critical thinking in competencies displayed by dental graduates. In the Benbelaid et al. (48) study, the dental students identified difficulties in explaining treatment options to the patient. This may be related to their lack of experience or inability to integrate what they have learned in the dental clinics. Dental school may have integrated dental clinics, polyclinics or general dental practice clinics as part of their practice management scheme. However, individual departments exist with their individual assessment that may limit the planning in a general practice theme. Behar-Horenstein et al. (10) suggested that the development of the faculty to teach critical thinking is effective in addressing the unpreparedness of the faculty to teach students to think critically. Opinions on the how to teach critical thinking is equivocal. DePaola et al. (49) suggested that the culture of science and research would instil critical thinking amongst students. Chambers (9), however, found that critical thinking performance was not increased with knowledge of research design, statistical techniques and principles in the dental literature. He also found that the talent for logic did not enhance
critical thinking performance. He is of the opinion that critical thinking is being confused with being critical. Additionally, he indicated that personality factors can be a predictive factor for critical thinking and clinical performance. The development of teaching strategies to develop critical thinking has been hampered by the lack of assessment and evaluation tools to measure adequacy and measure the level of reasoning that is given (44). Although critical thinking has been reported as the most evaluated domain in a survey of assessment techniques in the USA in 2008, the adequacy of the methods used was not evaluated (22).

Teamwork

The ability to work in a team is very important for a dental practice to succeed and literature focuses on utilising interdisciplinary education as a platform for teaching teamwork to dental students (50). Leisnert et al. (51) initiated a project in Sweden to develop teamwork skills where dental and hygiene students worked together to acquire a more complete perspective on the patient’s condition and improve their knowledge and appreciation of each other’s profession. Activities found important by both groups of students included seminars with public health dentists, dental students assuming the role of the supervisor and planning for and treating their common patients. PBL has been used to develop teamwork skills amongst dental students. During PBL sessions, students are able to practise teamwork by accepting roles and communicating with their peers. They are expected to analyse the problem presented as a team and use evidence to support their arguments.

Whilst the dental team is well established, the acceptance of expanded roles of other members of the dental team has been an issue. Ross et al. (52) found that only 35% of dental students in ten UK schools agreed that patients should have direct access to dental care provided by non-dentists or dental care professionals (DCP) in spite of being exposed to clinical sessions with a student hygienist or hygienist. They commented that this attitude was far from that found within a primary care medical team. Morrison et al. (53) found that dental and DCP students had a favourable attitude towards a programme on interprofessional education for teamwork and communication skill improvement amongst members of the dental team and with patients. There were some anticipated problems to this proposed programme based on the student’s perception and knowledge of each other’s roles. Thus, role and task identification should be clarified before any such programme is undertaken.

Leadership

Although many students may have prior leadership experiences and training, others may have very little or none at all. Leadership skills are best developed within the dental training programme (12). Dental students have been found to be willing to participate in leadership programmes, but such programmes are limited within the dental curriculum (12, 54). Victoroff et al. (54) introduced a leadership development programmes to dental students that aimed to increase leadership knowledge, improve leadership skills and inspire students through exposure to role models in leadership. They found such a programme to be feasible for dental students. Leadership training programmes are offered to students by the American Student Dental Association (ASDA) to students who are involved in their activities (54). Schools of Dentistry at the University of Michigan and University of Southern Carolina had introduced formal leadership development programmes in their curriculum. Slavkin and Lawrence (55) described an 11-week Dean’s Leadership Course that was offered to staff, students and teachers. This incorporated case-based and problem-based learning under a ‘learning organisation’ perspective. Leadership theory and skills were incorporated in the teaching of practice management and received positive response from third-year students who took the course at the Harvard School of Dental Medicine (56). There are concerns on the preparedness of leaders within the dental school to initiate changes in curriculum to align with the changing paradigm of dental science and technology (57, 58).

Professional ethics and morals

Training in professional ethics and moral aspire to turn dentists into socially and professionally responsible human beings. Field et al. (50) found that the most common method of teaching professionalism in the UK was through lectures and seminars. They also found that the most commonly used method of the evaluation of professionalism in UK dental schools was by providing feedback that could influence students after a clinical interaction and by giving a grade. They encouraged the development of the ability to reflect as reflection is an important component to developing professionalism. Ethical issues can be integrated in PBL courses and case presentations. Brondani and Rossoff (29) presented ‘hot seat’ experience with role-play and standardised patients (SP), small group presentations and student reflection with SP. The purpose for the use of the strategy was not to make the students ethical but rather to allow them to recognise ethical dilemmas and come up with good decision-making. It was deemed that further studies were needed to validate this strategy.

Ethical and professional issues are encountered by the dental practitioner every day. Brondani and Rossoff (29) noted that dentist sometimes failed to differentiate between clinical decisions and ethical issues. Ethical issues reported by fourth-year dental students at the University of Iowa extramural programme included patients’ limited resources, conflicts between professionals, clinical policy or procedures and decisions by patient surrogates (59). In another study, dental hygiene students were found to be lacking in their understanding of what truly are ethical issues (60). Whilst students believed strongly that hygienists should report, intervene or teach patients on certain areas like ill-treatment and sexual harassment, they were less likely to report on matters that can jeopardise their employment. One of the most difficult aspects of acquiring the wisdom to decide on ethical issues is that the practical application of ethical principles can be learned more from practical experience than from vicarious learning and didactic courses that predominates its teaching (61). A survey conducted to determine the teaching of ethics in dental schools unveiled four general themes of unmet needs, namely integration of ethics in the curriculum, assessment and achievement of competency, faculty development and attention to teaching methodology (62).
Lifelong learning

The foundation for life-long learning can be laid down in the dental school. There are teaching strategies that can develop skills that contribute to lifelong learning. One such strategy is self-assessment. Redwood et al. (63) introduced workshops to first-year dental students to determine improvement in instruction of the criteria and standards used for clinical assessment. They believed that such a programme would lead to development of skills that students would need for lifelong learning. The Faculty of Medicine, University of Toronto, modified its traditional lecture-based curriculum in 1992 and used a ‘hybrid’ curriculum that incorporated small group, PBL and self-directed learning opportunities (14). This provided fertile ground to stimulate the students, have them appreciate the relevance of what they are learning and give them the opportunity to understand professional responsibility (64). This observation could also be made for dental schools that utilise PBL as a teaching modality. Dental students from Universiti Sains Malaysia were of the opinion that PBL sessions are beneficial to them in achieving their learning objectives and acquiring in depth understanding of the topic of study, in linking basic science knowledge to clinical appraisal skills and in developing group interaction skills (65).

According to Wilson (66), dentists have the responsibility to be creative in producing ways of teaching and learning and to broaden their scope in gaining new knowledge and understanding. Polyzois et al. (14) agreed that with present day growth in knowledge required for everyday clinical practice, dentists must be committed to lifelong learning as a professional responsibility. However, there is a dearth in studies related to lifelong learning. The impact of the undergraduate curriculum instructional approach (PBL or didactic teaching) on identifying the dentist attitude towards lifelong learning was investigated in a study by Polyzois et al. (14). Findings showed that undergraduate curriculum has a minor impact on the graduate’s approach towards lifelong learning compared with the postgraduate programmes. They explained this by the nature of the postgraduate program that accepts dentists with excellent undergraduate credentials. Demographic and professional factors were seen to influence lifelong learning. At present, dentists are required to pursue continuing professional education (CPE) to earn points to renew their practising licences in many countries. This is the manner by which the profession is assured that dentists update themselves.

Halley et al. (2) embarked on a study to provide practical information for graduating US dental students regarding the characteristics preferred by dentists when hiring an associate. They concluded that apart from clinical experience, a new associate must also exhibit pleasant personality and able to interact well with patients, staff members and the principal dentist. Sanz et al. (67) also reported that the profile of dentists in economically developed countries should include both their soft and hard skills. Soft skill has also been found to be important enough that Smithers et al. (68) emphasised that personality measures should be included in the selection process of dental students apart from academic performance.

Dental educators are always challenged when developing the appropriate assessment methods. As we assess dental graduates’ competencies, we should be reminded that evaluation is not performed on individual competencies per se but the overall performance as the students function within the clinical practice situation (69). Therefore, the assessment must be largely performance based where soft skills can be applied and assessed. Communication skill is interrelated with the development and demonstration of other soft skills like critical thinking and problem-solving, teamwork, leadership, and professional ethics and morals. As such much emphasis has been made in its importance, unfortunately, the teaching and assessment of communication skills have not been highlighted uniformly amongst dental schools (34). Evaluation of communication skills is important in the development of students who are patient-centred (70). The University of Manitoba embarked in research for the development of evaluation tools for the student and patients. (40,70,71). In a series of articles, the development and refinement of the two evaluation tools, student communications assessment instrument (SCAI) and patient communication assessment instrument (PCAI) were presented. Criteria for assessment of students are traditionally made by supervisors rather than using the perspective of the patients. In this study, the formulation of these tools was made in consultation with various stakeholders including patients and auxiliary staff. The results from SCAI and PCAI provided for a venue for learning through self-assessment and reflective learning for the students although this was not the primary purpose of the research. Six components were identified with each having its own component items (70). These included being caring and respectful, sharing information, interacting with team members, tending to your comfort, professional relationship building and appointment preparation and follow-up (70). The refined instruments were used to determine sociodemographic factors affecting patient satisfaction. Practical applications of the research were presented, which included patients to whom communication needs to be focused on, number of appointment when patient satisfaction declines and time for communication skill evaluation (71).

Objective structured clinical examination (OSCE) has been as a tool to evaluate the development of communication skills amongst dental students. Cannick et al. (5) evaluated dental students’ competency in interpersonal and tobacco cessation communication skills. Two groups of students participated in the study of which one underwent a 2-h communication skills training course. Both groups were evaluated by two independent raters on their interpersonal communication skills at baseline and at 6 months post-OSCE by standardised patients. They concluded that a single training session was not adequate to improve the dental students’ communication skills, and a comprehensive communication skills training programme must be instituted if the desired improvement is to be achieved. Hendricson et al. (44) stated that there is lack of valid assessment instrument to measure reasoning skills amongst dental students. Johnsen et al. (46) in 2009 described a model to measure critical thinking applied to patient assessment and treatment planning across their 4-year curriculum and across clinical disciplines. This model offers various steps to train students to follow procedures that can develop their critical thinking skills. However, they suggested that a longitudinal follow-up study is required to determine its reproducibility across disciplines.
Model for implementing soft skills development in undergraduate dental training program at the University of Malaya

In Malaysia, it was found that aside from not meeting expectations in technical skills proficiency, employers have commented that graduates who entered the job market today are lacking in soft skills amongst the different professions (72). The lack of soft skills amongst Malaysian dental undergraduates has been partly attributed to the 'rote-learning' style adapted by Malaysian schoolchildren under pressure from their parents, peers and school to excel academically as a result of the examination-based system (72). This may also be true for other countries that use the same educational strategy.

The teaching of soft skills has been implemented at both undergraduate and postgraduate levels upon instructions from MOHE (16). A guideline on the soft skill elements (Table 1) was given, and the decision on how to teach and assess soft skills is left to the discretion of each university through either a standalone or embedded programme. It is important that dental schools identify which soft skill elements should be developed during the undergraduate dental training and how this will be taught given the limitations of a crowded dental curriculum (59, 73, 74). The general framework to implement soft skills instruction for the institutes of higher learning under the preview of MOHE described three strategies, namely

1. **formal teaching and learning activities,**
2. **university support programmes** and
3. **students' interactions in campus life.**

The Faculty of Dentistry, University of Malaya, has utilised the above suggested framework (Figure 1) since 2008 to form a model for the implementation of soft skills teaching in our undergraduate dental training programme. Development of the

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**TABLE 1. Soft skills elements and sub-elements as outlined by the Ministry of Higher Education (MOHE) Malaysia**

<table>
<thead>
<tr>
<th>Soft skills Elements</th>
<th>Sub-elements</th>
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<tbody>
<tr>
<td>Communication skills</td>
<td>The ability to present ideas clearly, effectively and confidently, in both oral and written forms</td>
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<td></td>
<td>The ability to practice active listening skills and provide feedback</td>
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<td>The ability to present clearly with confidence and appropriate to the level of the listener</td>
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<td>The ability to use technology in presentation</td>
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<td>The ability to negotiate and reach an agreement</td>
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<td>The ability to communicate with others from different cultures</td>
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<td>The ability to develop interpersonal communication skills</td>
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<td>The ability to use non-verbal skills</td>
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<td>Critical thinking and problem-solving skills</td>
<td>The ability to identify and analyse problems in complex and vague situations, as well as to make justified evaluations</td>
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<td>The ability to develop and improve thinking skills such as to explain, analyse and evaluate discussions</td>
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<td>The ability to find ideas and alternative solutions</td>
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<td>The ability to think out of the box</td>
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<td>The ability to make decisions based on concrete evidence</td>
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<td>The ability to persevere as well as to fully concentrate on a given task</td>
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<td>The ability to understand and to fit in with the culture of the community and new work environment</td>
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<td>Teamwork skills</td>
<td>The ability to build to good relation, interact with others and work effectively with them to achieve the same objectives</td>
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<td>The ability to understand and interchange roles between that of a team leader and a team member</td>
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<td>The ability to recognise and respect the attitude, behaviour and beliefs of others</td>
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<td></td>
<td>The ability to contribute towards the planning and coordination of the team’s efforts</td>
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<td></td>
<td>Be responsible for the group’s decision</td>
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<tr>
<td>Life-long learning and information management</td>
<td>The ability to search and manage relevant information from different sources</td>
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<td></td>
<td>The ability to accept new ideas and the capability for autonomous learning</td>
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<td></td>
<td>The ability to develop a curious mind and the thirst for knowledge</td>
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<tr>
<td>Entrepreneurial skills</td>
<td>The ability to identify business opportunities</td>
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<td></td>
<td>The ability to outline business frameworks</td>
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<td></td>
<td>The ability to build, explore and seize business and work</td>
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<td>The ability to work independently</td>
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<tr>
<td>Professional ethics and morals</td>
<td>The ability to recognise the effects on the economy, environment and socio culture in professional practice</td>
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<td>The ability to analyse and make decisions in solving problems related to ethics</td>
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<td>The ability to practice ethically, apart from being responsible towards the society</td>
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<tr>
<td>Leadership skills</td>
<td>Have the knowledge of basic leadership theory</td>
</tr>
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<td>The ability to lead a project</td>
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<td>The ability to understand and interchange roles between that of a team leader and a team member</td>
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<td>The ability to supervise team members</td>
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soft skills is not confined in the classroom, and students’ inter-
actions with peers and the campus community are vital in their
total development. In addition, the university also offer core
compulsory courses to further enhance their soft skills. The
strategies and teaching approaches used are described in
following sections.

Development of soft skills through formal
teaching and learning activities

In this strategy, two methods are employed through the utiliza-
tion stand alone and/or embedded approaches. The standalone
approach comprised of lectures in Behavioural Science module,
whilst the embedded approaches are conducted through PBL,
simulation laboratory course, clinical sessions, the School Den-
tal Health Day and Community Posting. All students were
assessed in all soft skills elements during and after completion
of these modules. An example of the combination of the stand-
alone and embedded module is the Elective Project where
fourth-year students work in pairs and embark on a research
project of their choice under the guidance of a lecturer. Stu-
dents must produce a written research report which is assessed.
In the first semester of their final year, students are required to
present their research work either in oral or in poster mode.
The elective project is a prerequisite to pass the Bachelor of
Dental Surgery programme.

Development of soft skills through support
programmes

The second strategy involves the implementation of various
support programmes at both the University and Faculty levels.
Specific courses are being implemented by the university, where
students are required to attend and pass the university’s core
courses, namely Information Technology and Management,
Islamic and South East Asian Civilisations, Ethnic Relations
and English Language. With regards to entrepreneurship,
final-year dental students are required to attend a special
programme organised by the faculty where dental entrepreneurs
in Malaysia are invited to give lectures to highlight their ven-
tures and success. Students are also encouraged to participate
in co-curricular activities carried out by the Dental Students
Society. Activities organised include community service and
sports between local and regional dental schools. Student
exchange programme is also conducted between dental schools
in the Southeast Asia regions through the Inbound and Out-
bound Initiative which is funded by MOHE. Although there is
no formal assessment of soft skills developed through this
support programmes, it is hope that their interaction lead to
the development of soft skills.

Development of soft skills through interactions
in campus life

Interactions of dental students with students from other
courses constitute the approach for this final strategy. All first-
year dental students are required to stay in the university resi-
dences, and they are encouraged to participate in the various
activities organised by the individual hall of residence, which
include sports, cultural and community services. Students are
also encouraged to join social clubs. Active participation in
these activities will be used as one of the criteria for placement
at the residential hall for the incoming academic sessions.

Conclusion

In conclusion, we recognise that research is lacking in soft skills
development and assessment in the dental schools. There are
several aspects of soft skills teaching and assessment that need
to be addressed. A study of students’ awareness of their profile
upon graduation that include soft skills would help the students understand the expectations of the dental schools in terms of their exit competencies. It would be interesting to investigate students’ perception on the importance of soft skills during their undergraduate dental training and the teachers’ perception and their preparedness in teaching and evaluating students’ soft skills. Further studies should be planned to determine whether the selection process of student’s entering the dental school is suitable so that students accepted are able to develop competencies needed by a dentist. Personal qualities that predispose to development of soft skills should be explored including the ability to reflect that is said to enhance critical thinking and lifelong learning (9, 43). This information may have important implications for programme design. Studies are presently being pursued in the Faculty of Dentistry at the University of Malaya to determine whether the dental students appreciate the importance of soft skills and are able to practice them effectively. Whilst we are attempting to develop soft skills amongst the undergraduate dental students, the questions arise as to whether we are using the appropriate assessment tools to evaluate the effectiveness of our efforts as no consensus has been formulated for soft skill assessment.

References
35. Wagner JA, Pfieffer CA, Harrington KL. Evaluation of online instruction to improve medical and dental students’
communication and counseling skills. Eval Health Prof 2011: 34: 383–397.