CARDIFF UNIVERSITY
PRIFYSGOL CAERDYDD

Online Research @ Cardiff

This is an Open Access document downloaded from ORCA, Cardiff University's institutional repository: http://orca.cf.ac.uk/105379/

This is the author's version of a work that was submitted to / accepted for publication.

Citation for final published version:

Chuenjitwongsa, Supachai, Poolthong, Suchit, Bullock, Alison and Oliver, Richard 2017. Developing common competencies for Southeast Asian general dental practitioners. European Journal of Dental Education 81 (9) , pp. 1114-1123. 10.21815/JDE.017.067 file

Publishers page: http://dx.doi.org/10.21815/JDE.017.067 <http://dx.doi.org/10.21815/JDE.017.067>

Please note:
Changes made as a result of publishing processes such as copy-editing, formatting and page numbers may not be reflected in this version. For the definitive version of this publication, please refer to the published source. You are advised to consult the publisher's version if you wish to cite this paper.

This version is being made available in accordance with publisher policies. See http://orca.cf.ac.uk/policies.html for usage policies. Copyright and moral rights for publications made available in ORCA are retained by the copyright holders.

information services
gwasanaethau gwybodaeth

Developing common competencies for Southeast Asian general dental practitioners

Supachai Chuenjitwongsa, Ph.D.[1*]

Suchit Poolthong, Ph.D.[2]

Alison Bullock, Ph.D.[3]

Richard G Oliver, Ph.D.[4]

[1]Lecturer in Dental Education, Department of Biochemistry, Faculty of Dentistry, Chulalongkorn University, Bangkok, Thailand, 10100, Tel and Fax: +66 (0)2218 8670, Email: supachai.c@chula.ac.th *Corresponding author

[2]Assistant Professor, Department of Operative Dentistry, Faculty of Dentistry, Chulalongkorn University, Bangkok, Thailand, 10100

[3]Professor, Cardiff Unit for Research and Evaluation in Medical and Dental Education (CUREMeDE), Cardiff University School of Social Sciences, Cardiff, UK, CF10 3BG

[4]Professor, Postgraduate Medical and Dental Education, Wales Deanery, Cardiff University, Cardiff, UK, CF14 4YS

This research project is funded by ASEAN Studies Center, Chulalongkorn University, Thailand.

Abstract

Objectives

Current policy in Southeast Asian dental education focuses on high-quality dental services from new dental graduates and the free movement of dental practitioners across the region. The Southeast Asian Nations (ASEAN) Dental Councils has proposed a set of 'Common Major Competencies for ASEAN General Dental Practitioners' to harmonize undergraduate dental education. This paper discusses how ASEAN competencies were developed and established to assist the development of general dental practitioners with comparable knowledge, skills and attitudes across ASEAN.

Methods

The competencies were developed through four processes: a questionnaire about current national oral health problems, a 2-round Delphi which sought agreement on competencies, a panel discussion by representatives from ASEAN Dental Councils, and data verification by the representatives after the meeting. Numeric data were analyzed using descriptive statistics and qualitative data were analyzed thematically. Key themes of the ASEAN competencies were compared with the competencies from USA, Canada, Europe, Australia, and Japan.

Results

Thirty-three competency statements, consistent with other regions, were agreed. Factors influencing the ASEAN competencies and their implementations include: oral health problems in ASEAN, new knowledge and technology in dentistry, limited institutional resources, under-regulated dental schools, and uneven distribution of dental practitioners.

Conclusions

The ASEAN competencies are the foundation for further development in ASEAN dental education including: policy development, curriculum revision, quality assurance, and staff development. Collaboration amongst stakeholders is essential for the successful harmonization of ASEAN dental education.

Keywords: Competency-Based Education, Southeast Asia, General Dental Practitioners

INTRODUCTION

The Association of Southeast Asian Nations (ASEAN) is a political and economic organization of ten countries – Brunei Darussalam, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam. It aims to support free trade and free movement of people among its member states, peace and stability in the region, and collaboration on matters of common interests.[1] An ASEAN Mutual Recognition Arrangement (MRA) on Dental Practitioners was signed by the ministers of member states in 2009. The MRA focuses on strengthening professional capabilities by promoting flow of relevant information and exchanging expertise, experiences and best practices suited to the specific needs of ASEAN member states.[2] The implementation of the MRA is overseen and regularly discussed by the ASEAN Joint Coordinating Committee on Dental Practitioners (AJCCD). One of their main concerns is ensuring that standards of dental services provided by new dental graduates are comparably high across the ASEAN member states. An aim of undergraduate dental education is to prepare students to be competent dentists able to serve societal oral healthcare needs.[3] The identification of competencies is a core task when developing undergraduate dental education to support the societal needs.[4] An agreed set of competencies would support dental schools in ASEAN to deliver high quality undergraduate dental education.

In North America and Europe, for instance, competencies for new dental graduates have been developed and implemented.[5-8] However, in Southeast Asia, such competencies for ASEAN dental practitioners have yet to be established. Currently, some ASEAN countries have developed a set of competencies for dental graduates that are implemented at a local level. In a few ASEAN countries, national dental competencies are being developed more gradually

due to challenges arising from socio-economic problems, politics or staff shortages. Additionally, as the local socio-cultural context and oral health problems influence how undergraduate dental education is delivered,[4] the profile and characteristics of ASEAN dental graduates may be different from graduates from North America or Europe. Thus, competencies for ASEAN dental practitioners need to be identified and developed to ensure that new dental graduates meet expectations which in turn will enable the free movement of dental practitioners across the ASEAN by 2020.

The ASEAN Dental Forum (ADF) – supported by the AJCCD and Faculty of Dentistry, Chulalongkorn University, Thailand – was established in response to the desire to agree competencies for ASEAN dental practitioners. The first ADF was held in May 2015. Twenty-six representatives from dental schools and of the Dental Councils of the ASEAN member states signed a declaration and agreed to work together, on the basis of trust and willingness, to achieve the harmonization of dental education across the ASEAN region. The primary goals of the ASEAN collaboration are to develop common competencies for the safe and independent practice of ASEAN general dental practitioners, and to develop an agreed core ASEAN undergraduate dental curriculum.[9] At the second ADF, held in August 2016, the representatives from the Dental Councils of ASEAN member states proposed ‘Common Major Competencies for ASEAN General Dental Practitioners’ to assist the development of comparable general dental practitioners across ASEAN.

This paper discusses how the ‘Common Major Competencies for ASEAN General Dental Practitioners’ were developed and agreed and presents factors influencing dental curricula in ASEAN. Recommendations for the policy makers and dental schools in ASEAN are also

suggested.

MATERIALS AND METHODS

The manuscript was developed using secondary data (based on the ADF report) and did not require an Institutional Review Board (IRB) approval/exemption. The process for defining a set of competencies and characteristics which describe ASEAN general dental practitioners comprised four stages.

Stage One: Current ASEAN oral health status and undergraduate dental curricula (March 2016)

A questionnaire comprising questions about current national oral health problems and undergraduate dental education in ASEAN was developed based on official documents reporting competencies for general dentists[5-8, 10] and undergraduate curriculum structure.[11] It aimed to identify the common oral health issues that ASEAN dental practitioners regularly encounter and in which they need to be competent, and to find out whether the current topics taught in ASEAN undergraduate dental curricula are sufficient for comprehensive practice on graduation. The questionnaire was verified by two experts in dental education, distributed to and completed by representatives from the Dental Council of each member state during the AJCCD meeting in March 2016. The representatives were individuals involved in dental education policy development and selected by the Dental Council Committees of their country. The representatives from Dental Councils of ASEAN member states were invited to rank the importance of addressing various oral health conditions in their countries using a

four-point Likert scale (4 = Very Important; 1 = Not Important). They were also asked whether particular topics are missing from or available in undergraduate dental curricula in their countries. The data were analyzed using descriptive statistics.

Stage Two: Developing a list of competencies for ASEAN general dental practitioners (June-July 2016)

This stage aimed to develop a list of competencies informed by the results from Stage One. The Delphi method was used with members of dental councils across ASEAN. The Dental Council of each member state selected one representative, who (a) has been regularly involved in curriculum development for at least five years or (b) has an education-related qualification, to complete the questionnaire. Delphi is an iterative process using a questionnaire which seeks to obtain expert agreement without the need to meet.[12] This makes it useful for gathering information across geographical barriers.[13] In this study, two Delphi rounds were used to develop consensus. Lists of competencies for new dental graduates from USA,[5] Europe,[6] Canada,[7] Australia,[10] and Japan[14] were analyzed thematically, categorized, and used for developing the Delphi questionnaire. The Stage One results were attached to the questionnaire. The appropriateness of the Delphi questionnaire was verified by the same experts as used in Stage One. The data were analyzed using descriptive statistics. The Stage One and Stage Two questionnaires are available on request from the corresponding author.

Stage Three: Finalizing the competencies for ASEAN general dental practitioners (August 2016)

One weakness of Delphi is a lack of clarification and discussion amongst the panelists.[15] To

improve the quality of the Delphi results, the second ADF meeting was held allowing the representatives from the dental council of each member state to discuss three issues based on the results from the earlier stages:

i) the oral health needs of the ASEAN countries and undergraduate dental curricula in ASEAN,

ii) a list of common competencies for ASEAN general dental practitioners,

iii) factors to consider when implementing the competencies.

Prior to each discussion session, a one-hour lecture provided basic information about competency-based dental education. At the end of the meeting, the representatives proposed 'Common Major Competencies for ASEAN General Dental Practitioners' and signed 'The Bangkok Declaration of 17th August 2016'. The ASEAN competencies were triangulated with the lists of competencies for new dental graduates from other regions used in Stage Two and summarized into a meeting report.

Stage Four: Verification of the competencies for ASEAN general dental practitioners (September 2016 to January 2017)

A limitation of the Delphi is that the expert agreements may not be generalizable in a wider context; presenting the results to an interest group gaining their feedback can improve the quality of the Delphi results.[16] Thus, the meeting report containing 'Common Major Competencies for ASEAN General Dental Practitioners' was presented to, discussed, and verified by AJCCD on 27th September 2016. As a part of continuous development of the ASEAN competencies, an ASEAN Dental Student Forum will be held in 2017 to provide the

'student voice'. Prior to implementation of the ASEAN competencies, as suggested by AJCCD, the actions or activities dental graduates should be able to demonstrate for each competency statement will be defined.

The ASEAN competencies were sent to the Dental Council of each member state for consultation and approval between October 2016 and January 2017. Finally, the ASEAN competencies were endorsed, and announced by AJCCD on 31st January 2017.

RESULTS AND DISCUSSION

Of ten ASEAN countries, nine completed the first questionnaire. Brunei Darussalam requested to be excluded from the competency development process as currently the country has no undergraduate dental education establishment. Eight member states completed the two-round Delphi (Philippines completed only the first-round Delphi) and signed off the final competency statements. An additional three observers (from Indonesia, Singapore, and Thailand) attended the second ADF meeting. The representative from Laos was unavailable.

The Common Competencies for ASEAN General Dental Practitioners

The representatives discussed and proposed thirty-three Common Major Competencies for ASEAN General Dental Practitioners. Professional competencies are the ability that new graduate dentists have in order to practice as a general dentist. Competency is a combination of knowledge, skills, professional attitude and of personal attributes of good dentists. Competency also refers to an ability to work safely and independently (without direct supervision) in a real professional context. The proposed competencies (Table 1) refer to

general dental practice and include the management of patients of all ages including those with special needs (e.g., patients who are physically and/or intellectually challenged or who may have complex medical conditions which may make oral health care more complex).

Insert Table 1 here

The representatives agreed to convene as a permanent expert panel and continue working on the competencies. The expectation is that the competencies will be reviewed and revised every five years through a consultation process. This will be undertaken concurrently with the dental competencies revision process in some countries (e.g., Thailand) where the national QA (quality assurance) system requires dental schools to revise their dental curricula every five to six years.

While details of each competency in the form of supporting competencies are required for implementing competencies at the institutional or curricular level, the representatives agreed that in this early stage of harmonizing ASEAN dental education major competencies alone are adequate for (i) AJCCD to set up future regional policies to facilitate free movement of dental practitioners, and (ii) dental councils to develop their own national standards and systems to support curriculum revision and development. The thirty-three competency statements were grouped into twenty-two themes based on their foundation principles (e.g., statements twelve to eighteen were grouped into ‘Assessment, Diagnosis, and Treatment Planning’). These twenty-two themes of the ASEAN competencies were compared with the competencies for new dental graduates from North America, Europe, Australia, and Japan (Table 2).

Insert Table 2 here

ASEAN dental practitioners as a part of the healthcare system

Most themes of the ASEAN competencies are consistent with the competencies for dental graduates in other regions. The Healthcare System (item twenty-one in Table 2) is one important theme for ASEAN but it is not mentioned in the competencies in some countries (e.g., Canada, Japan). Due to the shortage of dentists in most ASEAN countries, new dental graduates are required to work for the government to serve the population especially concentrating in under-served areas. In this situation, knowledge of the national and local healthcare system as well as an ability to work within such a system are necessary for their practice. Similarly, in some European countries, dental graduates have a narrow (or even single) career choice in which graduates can only work for the government before they can develop their own specialties later[17]; graduates may need competencies relating to a healthcare system to work effectively in the government sector.

The current oral health status in ASEAN

The common oral health problems in ASEAN agreed by the representatives from the Dental Councils of ASEAN member states are presented in Table 3.

Insert Table 3 here

According to the participants, dental caries and periodontal diseases are the most common oral health problems. These conditions have a significant public health impact in the region.[18] Pulpal and periapical diseases were found to be very common in ASEAN; however, there is a paucity of reports highlighting these problems. As pulpal and periapical diseases often develop from untreated dental caries and sometimes caused by periodontal diseases (endo-perio lesions), their high prevalence implies that oral health prevention and promotion of these conditions is inadequate. Additionally, the majority of ASEAN countries are low/low-middle income[19] resulting in people having limited access to dental services. One ASEAN country noted that current dental practitioners tend to focus on providing treatment rather than promotion and prevention procedures (e.g., oral hygiene instruction).

Untreated dental caries, periodontal disease, and pulpal and periapical disease can result in tooth loss, which was indicated as the fourth common oral health problem in ASEAN. Additionally, the prevalence of tooth loss could relate to the high level of maxillofacial trauma caused by accidents and violence in some ASEAN countries.[18]

The responses from ASEAN Dental Councils showed that other oral health problems in ASEAN are distributed unevenly. For example, while ASEAN has the highest prevalence of oral cancers (especially squamous cell carcinoma) compared with other regions,[18, 20] such conditions are common only in particular countries (e.g., Myanmar) where oral malignancies caused by chewing betel nuts or tobacco-containing substances are high. The tobacco-related problems in other ASEAN countries are similar to other developed countries. In Singapore

and Thailand, there is a growing number of oral health problems related to high-socioeconomic status population in urban areas (e.g., tooth surface loss caused by carbonated drinks). In Indonesia and Philippines, systemic diseases such as diabetes which impact upon oral health are increasing.

ASEAN dental practitioners and other health problems

Some issues such as drug addiction and smoking have been perceived as an important part of undergraduate dental education.[21, 22] However, these issues may vary by area and could be influenced by local cultures implying that dental graduates may not regularly encounter them. Additionally, solving drug addiction and smoking may require a holistic approach from various healthcare professionals and other stakeholders. Dental graduates may only need to be aware of these problems, have basic knowledge, and an ability to work within a multi-professional healthcare team. Hence, the representatives suggested that, instead of setting a separate competency statement, competencies related to these topics could be integrated into other themes focusing on the roles of dental practitioners in a health team (e.g., community dentistry, preventive dentistry).

Current factors influencing undergraduate dental curricula in ASEAN

During the competencies development process, several issues in relation to the quality of undergraduate dental curricula, graduates, and oral health services in ASEAN were discussed by the ASEAN dental councils.

Advanced in scientific knowledge and educational innovations

New scientific knowledge, technology, and contemporary educational concepts in dentistry were discussed including: evolving biomedical science informing multidisciplinary dental research and practice[23] and the influences of technology in supporting dental education such as blended-learning, social media[24, 25]; and competency-based education which is generally believed to enhance the quality of dental graduates for society over that of traditional discipline-based education.[26, 27] Undergraduate dental education as well as roles and competences of educators need to be developed congruent with the educational changes.[11, 28] However, ASEAN undergraduate dental curricula and dental educators have not yet fully adapted to these changes. The main reasons relate to limited understanding of competency-based education amongst academic staff and policy makers, and cultural and political influences on how people respond to change (e.g. hierarchy and bureaucracy are barriers to curriculum development in some ASEAN countries). Supporting systems and policy at the ASEAN level was seen as lacking.

Resources required for evidence-based dentistry

Evidence-based dentistry (EBD) is important for providing a high quality oral health care and improving the patient's well-being.[29] While EBD is preferable within a dental curriculum, it requires infrastructures and institutional support to enhance the practice of EBD. However, EBP requires information searching and access to published evidence and most ASEAN dental schools do not have sufficient resources.

The challenges of educational quality assurance processes

In some ASEAN countries, private dental schools are driven by profit-making and are not regulated and quality assured by the government bodies. The quality of the curriculum and

graduates in these schools remain unreported. Standards for regulating dental schools at the national or ASEAN level are needed. Conversely, in some countries (such as the United Kingdom) there are numerous national QA bodies regulating dental schools and their curriculum, duplicating the information required. Many QA frameworks in education are developed based on the industrial model which focuses on administration and service functions rather than quality of education.[30] Normally the evidence needs to be prepared in the form of documentation[31], in many ASEAN dental schools educators perceive this as an extra paperwork. This results in dental schools being burdened by QA requirements which stifle their opportunities for development.

Distribution and shortage of dental practitioners

In some areas of some countries (e.g., Philippines, Thailand), there is a shortage of dental patients suitable for students. This could be a result of the uneven distribution of dental practices (e.g., lack of dental caries in big cities as there is an ample supply of dental practitioners working there) or a result of the availability of advanced/alternative treatment options for patients (e.g., a patient requests a dental implant instead of a bridge or denture). This can compromise the quality of dental graduates as they may lack experience and competence in some areas of dental practice. This situation may also lead to innovative solutions to the above problems such as the placing of outreach centers in areas of high dental need, but low dental supply.

Policy and administration regarding dental education in ASEAN countries

There is a variation in the process of dental education policy development in ASEAN countries. For example, in some countries (e.g., Malaysia), the ministry of health, the

ministry of education, and dental schools work together at the policy level while in other countries these three bodies work separately. This could affect how each country implements the common competencies for ASEAN general dental practitioners.

IMPLICATIONS AND RECOMMENDATIONS

The 'Common Major Competencies for ASEAN General Dental Practitioners' can be used for several purposes. They help AJCCD to establish policies raising the quality of oral healthcare provided by general dentists graduating from ASEAN member states. Competencies can be used to define 'what to teach - curriculum content', 'how to teach - teaching/learning strategies', 'how to assess students – assessment strategies', 'how to assist students' learning - support', and 'how to set up infrastructure and environment to support student - educational environment'.[4, 32] The ASEAN competencies are thus the primer for curriculum development and revisions across ASEAN dental schools. In order to achieve curriculum reform, ASEAN dental schools and their staff need to gain deeper understanding of educational principles to support the implementation of competency-based education. Dental educators who have a background in education are urgently required. AJCCD should establish standards or strategies to improve the quality of dental curricula and educators.

In order to fully support the free movement within ASEAN, the ASEAN competencies should be used as a framework for developing curriculum standards, setting educational quality assurance and benchmarking, guiding research development in relation to ASEAN undergraduate dental education, tailoring staff/faculty development programs, and promoting staff and student exchange programs within ASEAN.[9]

However, it is important to be aware that the Major Competencies developed at this stage only provide a set of minimum standards to support ASEAN dental schools to work toward harmonization of ASEAN dental education. Additionally, the ASEAN competencies were developed solely based on the policy maker (ASEAN dental councils) perspective supported which were driven by the society needs. Further inputs from service providers (dental schools) and stakeholders (e.g., students, allied dental professions) are required to improve the comprehensiveness of ASEAN competencies. Further input from these groups will also be needed to add details to the curriculum development and the supporting competency statements. Thus, AJCCD should continue working with dental schools, dental practitioners, and professional bodies to support the implementation of ASEAN competencies at the local level.

With regards to the oral health problems in ASEAN and factors influencing ASEAN undergraduate dental education, the representatives provided several recommendations for future development (Table 4)

Insert Table 4 here

CONCLUSION

The issue of harmonization of ASEAN undergraduate dental education to support free movement of dental practitioners and improve the quality of dental services within the region

has been discussed at the policy-maker level for decades. Recently, the ASEAN dental councils have developed and established 'Common Major Competencies for ASEAN General Dental Practitioners' to assist the harmonization process. The ASEAN competencies are the foundation of further educational development processes including curriculum development, quality assurance, and staff and academic development. The successful harmonization of ASEAN undergraduate dental education relies on collaborations amongst AJCCD, dental schools, other stakeholders, and the whole ASEAN community.

DISCLOSURE

The authors have no conflicts of interest to declare.

ACKNOWLEDGEMENT

This research project is funded by ASEAN Studies Center, Chulalongkorn University, Thailand.

The authors would like to thank all the AJCCD members, the ASEAN dental councils and their representatives who took the time to participate and complete the questionnaires in this research.

REFERENCES

1. The Association of Southeast Asian Nations. At:http://asean.org/asean/about-asean/overview/. Accessed: 6th September 2016.

2. ASEAN Mutual Recognition Arrangement on Dental Practitioners. 2009.At: http://investasean.asean.org/files/upload/MRA%20Dental%20Practitioner%20%28Feb09%29.pdf. Accessed:

3. DePaola DP. The revitalization of U.S. Dental Education. Journal of Dental Education 2008:72(SUPPL. 2):28-42.

4. Chuenjitwongsa S, et al. Competence, competency-based education, and undergraduate dental education: a discussion paper. European Journal of Dental Education 2016.

5. ADEA. ADEA competencies for the new general dentist. Journal of Dental Education 2010:74(7):765-8.

6. Cowpe J, et al. Profile and competences for the graduating European dentist - update 2009. European Journal of Dental Education 2010:14(4):193-202.

7. The National Dental Examining Board of Canada. Competencies for a Beginning Dental Practitioner in Canada. 2005.At: https://ndeb-bned.ca/sites/ndeb/files/pdf/competencies_2005-final.pdf. Accessed: 9th September 2016.

8. Commission on Dental Accreditation. Accreditation Standards for Dental Education Programs. 2016.At:

http://www.ada.org/~/media/CODA/Files/Comments%20Due%20Appendices%202016_2017/Appendix2_proposed_predoc.pdf?la=en. Accessed: 10th October 2016.

9. Poolthong S, Chuenjitwongsa S. Facilitating the movement of qualified dental graduates to provide dental services across ASEAN member states. In: Sasaki K, Suzuki O, Takahashi N, eds. Interface Oral Health Science 2016 : Innovative Research on Biosis-abiosis Intelligent Interface. xx: Springer Singapore, 2016:xx-xx.

10. The Australian Dental Council. Professional competencies of the newly qualified dentist. 2016.At: http://www.adc.org.au/documents/Professional%20Competencies%20of%20the%20Newly%20Qualified%20Dentist%20-%20February%202016.pdf. Accessed: 9th September 2016.

11. Manogue M, et al. Curriculum structure, content, learning and assessment in European undergraduate dental education - update 2010. European Journal of Dental Education 2011:15(3):133-41.

12. Keeney S, et al. The Delphi technique in nursing and health research. Chichester, West Sussex, UK: Wiley-Blackwell, 2011.

13. Powell C. The Delphi technique: Myths and realities. Journal of Advanced Nursing 2003:41(4):376-82.

14. Japan Universities Association for Computer Education. Competency of New Japanese Dentist. 2010.At: http://www.juce.jp/senmon/dent/competency/Competency_of_New_Japanese_Dentist2010-03.pdf. Accessed: 9th September 2016.

15. Okoli C, Pawlowski SD. The Delphi method as a research tool: An example, design

considerations and applications. Information and Management 2004:42(1):15-29.

16. Macdonald EB, et al. Requirements for occupational medicine training in Europe: A Delphi study. Occupational and Environmental Medicine 2000:57(2):98-105.

17. Manual of Dental Practice Version 5 (2014). 2014.At: http://www.eudental.eu/component/attachments/attachments.html?task=download&id=1366. Accessed: 3rd March 2015.

18. World Health Organization. Strategy for oral health in South-East Asia, 2013-2020. 2013.At: http://apps.who.int/iris/bitstream/10665/205929/1/B5099.pdf. Accessed: 9th September 2016.

19. World Health Organization. World Health Statistics 2015. 2015.At: http://apps.who.int/iris/bitstream/10665/170250/1/9789240694439_eng.pdf?ua=1. Accessed: 9th September 2016.

20. Chi AC, et al. Oral cavity and oropharyngeal squamous cell carcinoma—an update. CA: a cancer journal for clinicians 2015:65(5):401-21.

21. Brondani MA, Pattanaporn K. Integrating issues of substance abuse and addiction into the predoctoral dental curriculum. Journal of Dental Education 2013:77(9):1108-17.

22. Sood P, et al. Dental patient's knowledge and perceptions about the effects of smoking and role of dentists in smoking cessation activities. European journal of dentistry 2014:8(2):216.

23. Slavkin HC. Evolution of the scientific basis for dentistry and its impact on dental education: past, present, and future. Journal of Dental Education 2012:76(1):28-35.

24. Reynolds PA, et al. Nine years of DentEd - A global perspective on dental education. British Dental Journal 2008:205(4):199-204.

25. Spallek H, et al. Social Media in the Dental School Environment, Part A: Benefits, Challenges, and Recommendations for Use. Journal of Dental Education 2015:79(10):1140-52.

26. Oliver R, et al. Curriculum structure: Principles and strategy. European Journal of Dental Education 2008:12(suppl 1):74-84.

27. Chambers DW. Competency-based dental education in context. European Journal of Dental Education 1998:2(1):8-13.

28. The UK Committee of Postgraduate Dental Deans and Directors. COPDEND Standards for Dental Educators. 2013.At: http://www.copdend.org/data/files/Downloads/COPDEND_Standards%20high%20resolution.pdf. Accessed: 3rd March 2015.

29. Winning T, et al. Evidence-based care and the curriculum. European Journal of Dental Education 2008:12(suppl 1):48-63.

30. Becket N, Brookes M. Quality management practice in higher education–what quality are we actually enhancing. Journal of Hospitality, Leisure, Sport and Tourism Education 2008:7(1):40-54.

31. Standards and guidelines for quality assurance in the European Higher Education Area. 2005.At: www.enqa.eu/wp-content/uploads/2013/06/ESG_3edition-2.pdf. Accessed: 3rd March 2015.

32. Harden RM, et al. AMEE guide No 14: Outcome-based education: Part 1 - An

introduction to outcome-based education. Medical Teacher 1999:21(1):7-14.

Table 1 Proposed competencies (Approved and announced by AJCCD on 31st January 2017)

Competency Statement	Theme
1. Demonstrate ethical and professional behaviors which are in accordance with the local codes of conduct for dental professionals.	Ethics, Laws, and Professionalism
2. Provide dental care in compliance with the principles of ethics and jurisprudence.	
3. Recognize patients' rights, demonstrate appropriate care, and respect patients and colleagues without discrimination.	
4. Practice within one's competence and know when to consult and/or refer.	
5. Communicate effectively with patients and their caregivers, colleagues, and the public.	Communication, Interpersonal, and Social Skills
6. Critically evaluate and apply best up-to-date research evidence in managing oral health.	Critical Thinking, Evidence-Based Dentistry, and Information/Technological Literacy
7. Apply knowledge of the scientific basis of dentistry, including the relevant biomedical and psychosocial sciences, to the practice of dentistry in compliance with the correct academic principles.	Biomedical and Psychosocial Sciences Knowledge

8. Display commitment to lifelong learning for professional development and maintain high quality care for the patients and community.	Critical Thinking, Evidence-Based Dentistry, and Information/Technological Literacy
9. Lead and/or participate with dental and/or other health care team in dental and general health promotion.	Leadership and Teamwork
10. Manage and maintain a safe working environment including patient safety and effective cross infection control.	Practice Administration and Patient Management
11. Organize and manage dental practice office/clinic.	
12. Identify patient's chief complaints and obtain complete medical, dental and psychosocial history.	Assessment, Diagnosis, and Treatment Planning
13. Perform appropriate clinical examination, necessary diagnostic tests, and radiographic examination/investigation.	
14. Obtain and interpret all findings in order to arrive at an accurate diagnosis.	
15. Formulate appropriate initial, differential and final diagnoses based on the interpretation of the clinical, laboratory and radiographic findings.	
16. Keep accurate, systematic and current patient medical/dental records in compliance with international standards and local data protection regulation/legislation.	
17. Formulate a comprehensive treatment and/or referral plan.	

18. Apply a patient-centered approach to adjust treatment plans to suit patients' needs and values according to standards of care.	
19. Recognize and manage medical and dental emergencies and perform basic life support.	Medicine and Medical Emergency
20. Manage patient's pain and anxiety by using both pharmacological and non-pharmacological techniques.	
21. Manage carious and non-carious lesions, and provide treatment when indicated.	Cariology and Restoration
22. Manage pulpal and periapical diseases and perform non-surgical root canal treatment on uncomplicated single and multi-rooted teeth.	Endodontology
23. Manage periodontal conditions and diseases and provide non-surgical periodontal treatment when indicated.	Periodontology
24. Manage oral surgery treatment needs and perform minor oral surgical procedures.	Oral and Maxillofacial Surgery
25. Recognize and manage common oral mucosal lesions.	Oral Medicine
26. Manage patients with prosthodontic treatment needs, and provide suitable removable and/or fixed prostheses.	Prosthodontics
27. Manage patients with abnormal craniofacial anomalies and malocclusion.	Orthodontics
28. Manage patients with masticatory disorders/diseases and/or orofacial pain.	Masticatory System and Occlusion
29. Recognize and manage patients with special needs.	Special Patients
30. Recognize indication of patient suitable for implant	Multidisciplinary Topics

treatment and its complications, and make appropriate referral.	
31. Monitor and evaluate treatment outcomes and provide additional action as necessary.	Treatment Outcome Evaluation
32. Use the concepts of holistic healthcare, health promotion, disease prevention, and public health management to educate and promote oral health of the individuals and the community, and be able to evaluate results.	Oral Health Prevention and Promotion / Community Dentistry
33. Recognize the oral health status and importance of the health service systems in a culturally diverse society.	Healthcare System

The competencies above refer to general dental practice and include the management of patients of all ages including those with special needs (e.g. patients who are physically and/or intellectually challenged or who may have complex medical conditions which may make oral health care more complex).

Glossary of Key Words

- ‘Recognize’ means to perceive and identify, to realize and be able to identify the impact of an apparent patient management issue or incident.
- ‘Manage’ means being able to: evaluate patients’ and dentists’ circumstances, statuses and conditions, provide an initial diagnosis, arrange for patients’ care and/or treatment, which can range from no intervention to obtaining advice from a physician and/or another dentist, make a referral, provide initial treatment, and provide competent treatment independently.

- ‘Appropriate’ refers to the level of practice that offers maximum benefit to patients with respect to their oral/general health condition, circumstances and other determinants of oral/general health. ‘Appropriate’ also refers to the dentists’ clinical competence and expertise.
- ‘Competence’ is a combination of knowledge, skills, professional and personal attributes of good dentists.
- ‘Competency’ refers to an ability to work safely and independently (without direct supervision) in a real professional context.
- ‘Professional competencies’ refer to the abilities that the new graduate dentist needs in order to practice as a general dentist.

Table 2 Key themes of the ASEAN competencies compared with the competencies for new dental graduates from USA, Canada, Europe, Australia, and Japan.

Theme	ASEAN	USA	Canada	Europe	Australia	Japan
1. Ethics, Laws, and Professionalism	O	O	O	O	O	O
2. Communication, Interpersonal, and Social Skills	O	O	O	O	O	O
3. Critical Thinking, Evidence-Based Dentistry, and Information/Technological Literacy	O	O	O	O	O	O
4. Biomedical Sciences Knowledge	O	O	O	O	O	O
5. Leadership and Teamwork	O	O	X	O	O	O
6. Practice Administration and Patient Management	O	O	O	O	O	N
7. Assessment, Diagnosis, and Treatment Planning	O	O	O	O	O	O
8. Medicine and Medical Emergency	O	O	O	O	O	O
9. Cariology and Restoration	O	O	O	O	O	O
10. Endodontology	O	O	O	O	O	O
11. Periodontology	O	O	O	O	O	O
12. Oral and Maxillofacial Surgery	O	O	O	O	O	O
13. Oral Medicine	O	O	O	O	O	N
14. Prosthodontics	O	O	O	O	O	O
15. Orthodontics	O	O	O	O	O	X
16. Masticatory System and Occlusion	O	O	O	O	O	O

17. Special Patients (e.g., pediatric, elderly, disability)	O	O	O	O	O	O
18. Multidisciplinary Topics (e.g., implant, trauma)	O	O	O	O	O	X
19. Treatment Outcome Evaluation	O	O	O	O	O	O
20. Oral Health Prevention and Promotion/Community Dentistry	O	O	O	O	O	O
21. Healthcare System	O	O	X	O	O	X
22. Others Topics (e.g., patient abuse and neglect, substance abuse. smoking cessation)	X	O	O	X	X	X

Note

O = Included as a major or supporting competency statement

N = Not clearly stated in a competency statement (e.g., implied o referred to but not directly stated)

X = Not included as a competency statement

Table 3 Common oral health problems in ASEAN.

Oral Health Problem	Mean Score
1. Dental caries	3.78
2. Periodontal diseases	3.56
3. Pulpal and periapical diseases	3.44
4. Tooth loss/missing	3.33
5. Oral and maxillofacial surgery problems	3.33
6. Diseases or abnormalities of oral mucosa	3.00
7. Diseases or abnormalities of the masticatory system, oral, and facial pains	3.00
8. Tooth surface loss and sensitivity	2.89
9. Abnormal growth and development of skulls, facial bones, and jaws	2.89
10. Systemic-related oral and maxillofacial diseases	2.89

Note

Rating scale: 4 = very important, 3 = important, 2 = less important 1 = not important

Table 4 Recommendations for future development of ASEAN dental education.

ASEAN Problem	Recommendation
Lack of prevention of oral diseases and oral health promotion in relation to dental caries, periodontal diseases, and pulpal and periapical diseases	ASEAN dentists should be competent in not only providing treatment and management of dental caries, periodontal diseases, and pulpal and periapical diseases but also prevention of these conditions. The ASEAN undergraduate dental curricula should emphasize more the prevention and promotion aspects to improve patients' oral health status.
High prevalence of tooth loss caused by untreated dental caries and periodontal disease and high prevalence of dental trauma caused by accidents and violence	The ability of ASEAN dentists to treat and manage tooth loss as well as manage oral and maxillofacial surgery problems is essential.
Uneven distribution of oral health problems	ASEAN dental practitioners should be able to manage a wide-range of oral health problems appropriately. For the practitioners who practice in an area where specific oral diseases are common, an ability to provide treatment and prevention is required.
Insufficient resources to support EBD	The implementation of EBD may vary in each dental school. Dental schools need to share resources in order to deliver effective EBD.

Under-/over-regulated dental curricula	Agreement that a single regulatory body for the QA of dental curricula for each country, overseen by an appropriate ASEAN body is required.
A variation in the process of dental education policy development in each ASEAN country	The harmonization of ASEAN dental education needs to extend beyond an educational context to include a political context.