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DRAFT DISCUSSION DOCUMENT ON COVID19 AND THE ACADEMIC PROJECT FOR THE CLINICAL DISCIPLINES: A SIMPLIFIED APPROACH.

The effects of the pandemic and the country's response has had adverse effects on the teaching and training of especially the clinical disciplines at both the under- and post-graduate levels. It is therefore imperative that the dental schools adopt a unified and sensible approach to achieving the goal of maintaining the standards of both the theoretical knowledge and clinical skills of the South African graduate. The mandate of the Medical and Dental Professions Board of the HPCSA is to, *inter alia*, 'guide the professions and protect the public'. This document is produced in the hope that its contents will do just that. It will deal with the two principle domains of learning in dentistry, namely the cognitive and psychomotor, and assumes that underlying both is the important affective domain of the attitudes and values of the profession.

1. Theoretical knowledge

"In spite of discouragement and adversity, those who are happiest seem to have a way of learning from difficult times, becoming stronger, wiser and happier as a result." – Joseph B. Wirthlin.

At first glance it would seem that the cognitive domain would present fewer challenges in the time of Covid19, especially in this digital era; provided of course, that schools have indeed embraced a true blended learning approach. Some schools may have lagged behind in their adoption of blended and e-learning, and there has been a somewhat unseemly scramble to 'move teaching online'. This has been a common experience in Universities across the world, where the injunction to move online has been met with a blanketing of institutional websites with material such as lecture notes and PowerPoint slides, usually but not always, with little or no thought as to how students learn. There is a wealth of knowledge and information about the human-computer interaction, which shows that just dumping material online makes it harder to read, let alone understand. However, there is also a wealth of evidence that student learning is largely self-generated and self-regulated: 'they learn in spite of us'.

So one advantage of the digital era is that, whilst material is now more accessible, teachers become guides rather than the conduit through which knowledge passes. And we would contend that this guidance could be simplified into a simple dichotomy:

1. For any given topic, what must the student know in the sense that they understand and can use that knowledge at any time without recourse to anything other than their own understanding?
2. What other aspects of the given topic are important, and do they know where to go to pursue greater knowledge of those aspects?

There has been a tendency over the years to over-bureaucratise the levels and divisions of learning in what have become over-crowded curricula, where topics are added on without any removal of obsolete topics or rather aspects of those topics that fall into the second part of the dichotomy above. This more simplified approach, would save a great deal of the time that academics spend on pandering to bureaucratic edicts, and a great deal of student time trying to learn that which is really

not necessary. Furthermore, it will simplify the assessment of that learning, and make it more valid and relevant to the real world.

From a regulatory point of view, this would also have the great advantage of improving the accreditation processes and make them more efficient. From a national perspective, this would encourage the adoption of common core outcomes, so that when a national professional examination is introduced, dental graduates would have graduated with the same standards, competencies and knowledge base, irrespective of the dental school from which they graduated (whilst of course allowing for variations in teaching styles, curricula design, etc. – we are not suggesting a rigid conformity).

For life after Covid19, this would seem to be imperative for the continued accreditation of programmes and we would therefore encourage the dental schools to consider adopting such a dichotomous approach to help define especially the first part of the dichotomy above, for each discipline's outcomes for the cognitive domain. We would further suggest that this will also enable academics to guide students better into what they must know, and to help them in their learning, to use a well-documented and evidence-based technique of revision, which is for students to first identify what they do not know: *"An education isn't how much you have committed to memory, or even how much you know. It's being able to differentiate between what you do know and what you don't. It's knowing where to go to find out what you need to know; and it's knowing how to use the information you get."* – William Feather.

Clinical competencies

This is the issue that will present the most challenges to the dental schools, as well as to the Regulator. There have been suggestions that it may be necessary to reduce the numbers or even types of procedures that both under- and post-graduate students have to have completed prior to entering the final examination. We would suggest that in order to define just what those procedures and their numbers should be, as the barest minimum required to assess competency, there are some questions that must first be answered:

1. Does the clinical assessment system used, assess as objectively as possible, competency to perform this procedure independently?
2. Are there some procedures which it is not necessary to have completed, as they require the equivalent skills of other procedures that are deemed absolutely necessary?
3. How many of each procedure should the average student perform, in order to acquire the competency to carry out the procedure independently?

We will deal with each of these in turn:

Clinical assessment

It is acknowledged that there will always be a subjective element to the assessment of psychomotor skills in the clinical disciplines, but it is equally possible, as the literature has shown, to compensate for that subjective element by identifying, and correcting for, easy and hard raters. It is also clear from the literature that the mere repetition of a procedure without any assessment of the quality, is not appropriate in identifying competence. Assessment systems that merely convert a count of procedures into a summative mark are therefore invalid.

From a regulatory point of view, the injunction to 'protect the public' is epitomised in this assessment of clinical competence. It is therefore incumbent on the Regulator to provide guidance as to the minimum requirements for competency assessment, and the following principles are therefore proposed, which are considered to be the basic and non-negotiable aspects of any clinical assessment system:

a. Each procedure carried out should be assessed in such a way as to identify a minimum score that relates to the quality of the work carried out. If not achieved, the procedure must not be recorded for quota purposes as having been satisfactorily performed.

b. The student should first provide their opinion on the quality score – this is the widely accepted principle of self-assessment and should be the cornerstone of any system as once graduated, clinicians must constantly assess their own work.
c. There must be a system of compensating for easy and hard raters, to correct for the subjective nature of clinical assessments.

It is suggested that any system that does not abide by these basic principles is fatally flawed and that students graduating cannot be declared clinically competent.

1.1 Skill equivalents

The well-known teaching strategy of chunking (breaking information into units or chunks improves learning) which should, incidentally be the cornerstone of online and e-learning, is also applicable to the learning of psychomotor skills. Any good clinical assessment will have already done this, and any good pre-clinical techniques course will also already be doing this.

It is suggest that this can be used to identify skills which may be applicable to more than one procedure, so that for example, it may not be necessary to require both anterior and posterior ceramo-metal crowns, whereas it would be necessary to carry out an all-ceramic anterior crown as well as a ceramo-metal one.

One again, we would encourage the dental schools to identify such procedures in each of the clinical disciplines as this will assist with the final aspect, of numbers of procedures.

1.2 Quotas

The culmination of competency assessment combined with skill equivalents should now enable decisions to be made as to the procedures and their number to be carried out in each year, leading to a cumulative number prior to entering the final examination.

Currently the dental schools have identified these essential procedures, and the Regulator has produced a document called “The South African Dental Degree”. But this sets out only the procedures identified by at least three of the schools, and the range in terms of numbers, as each school has specified a different minimum number. This document has proved useful in evaluating foreign degrees and also as part of the accreditation process.

We would suggest that the time is now ideal for the schools to identify collectively the minimum number and type of procedures to be carried out, which would not only create commonality but would greatly assist the Regulator in the evaluation procedures for accreditation so that students will graduate with the standard competency of a South African graduate.

2. Summary

The Covid19 pandemic has held up the academic project and is likely to continue to do so. Clinical dentistry requires unavoidable proximity to the mouth and unavoidable contact with saliva; more importantly, most restorative procedures produce aerosols containing saliva and often blood. This means that infection control precautions and procedures have to be more intense, and is likely to result in procedures taking longer, especially for undergraduate students. This is almost certainly going to result in an extension of the academic year but should not result in any compromise whatsoever in the standards and competencies obtained by dental graduates.

Dental schools are therefore urged to urgently address the issues highlighted here.

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