Assessing Behavioural Change Support Abilities of the Oral Healthcare Team*

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Abstract: Competent behavioural change intervention can be learned, practised and developed. Therefore, the teaching and assessment of this ability should be within the scope of both the undergraduate and post-graduate curriculum. Assessment should target knowledge base and skills in the areas of counselling, communication and behaviour. Assessment of the knowledge base should ideally be conducted in a comprehensive, multidisciplinary, centrally based manner in the preclinical curriculum. Assessment of skills in the areas of communication, counselling and behaviour change is a wider aim that should be integral throughout the curriculum. In continuing education (CE) environments, an initial 'screening' assessment would help educators to adjust the course to the participants' background and needs. Furthermore, three major assessment schemes are proposed: (1) assessment of knowledge and skills, (2) evaluation of the whole course by the participants, and (3) assessment of the implementation process, four to six months after completion.

Key words: assessment, oral healthcare education, behavioural change intervention, tobacco use cessation, undergraduate education, post-graduate education, continuing education

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Health awareness and the active personal engagement of the patient is probably the most important factor in long-term maintenance of oral health. The success of dental therapeutic interventions (e.g. treatment of periodontitis) is also greatly determined by patients' ability to reject damaging behaviours and maintain healthy attitudes. Oral hygiene practices, tobacco use and nutrition habits are some of the most important areas of behaviour that influence oral health. Therefore, the ability of the oral healthcare team to successfully guide behavioural change in patients is one of the most important factors for long-term oral health maintenance in the population (Koop, 1996; Ashenden et al, 1997; Mullen et al, 1997).

Several models have been proposed for structured behavioural change interventions, such as, for example, motivational interviewing (Koerber et al, 2003). Regardless of the specific model, competent behavioural change intervention can be learned, practised and developed (Ockene and Zapka, 1997; Lancaster et al, 1999). Therefore, the teaching and assessment of this ability should be within the scope of the undergraduate curriculum, as well as of continuing education for the oral healthcare team.

Particularly within the undergraduate curriculum, assessment of students' ability to plan and execute behavioural change interventions would have the following aims:

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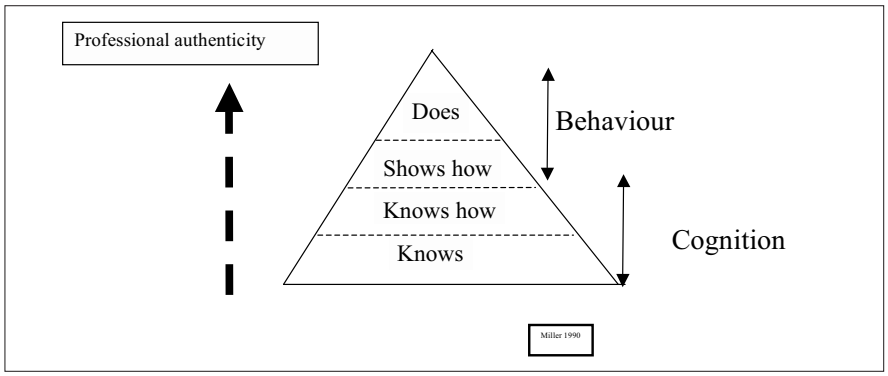

Fig 1 A schematic drawing of Miller's pyramid.

- Completing and directing the learning process with feedback to the students (formative functions). Assessment drives student learning (Schuwirth and van der Vleuten, 2004).
- Ensuring that students are well prepared to perform behavioural change interventions (accreditation - summative function).
- Providing the educators with continuous feedback on the effectiveness of their teaching.

The same principles apply to undergraduate, postgraduate and continuing education programmes for the oral healthcare team. However, within continuing education, the course content, instruction and assessment methodology should be adapted to the specific needs of the participants.
An assessment model for the purpose of behavioural change intervention should ideally:

- Be a valid and reliable estimate of students' knowledge and skills (validity, reliability)
- Reflect the actual clinical situations
- Be adaptable to different educational environments and availability of resources (undergraduate, continuing education etc)
- Address the significant time component of behavioural change interventions, as well as maintenance support.

Successful behavioural change interventions require knowledge and skills in multiple areas (Elder et al, 1999; Smedley and Syme, 2000). Therefore, assessment should take into consideration the progressive development of these skills. An interesting model to approach such an assessment is proposed by Miller in his 'competence pyramid' (Miller, 1990). The base of the pyramid is 'knowledge' and moves via the 'knows how' (competence) and 'shows how' to 'does' stage (Fig 1). Miller's model can be an appropriate approach to the assessment of behavioural change interventions like tobacco use cessation (TUC), where each level can be approached with different methods. At the base of Miller's pyramid, the knowledge can be tested with summative or factual tests. The 'knows how' stage can take place in a preclinical or simulated situation. The 'shows how' needs performance assessment in a clinical environment with a final 'does' level evaluation with a case presentation in the clinical setting (Table 1).

AIMS

The current position document aims to investigate and describe a complete model for the assessment of the ability of oral healthcare students and professionals to achieve TUC through behavioural change techniques. The position document will specifically address the application in undergraduate education, as well as continuing education settings for the oral healthcare team. The document will not address issues related to the assessments of TUC intervention's effectiveness per se.

The authors recognised that there exists a wide variety of assessment methods and strategies. They aim to describe an assessment strategy based on available evidence and practices, as independent as possible from specific instruction approaches and systems. The final organisation of the assessment methodologies relies on the individual learning institution. A successful assessment must be in accordance with the availability of human and material resources, time, cultural and professional characteristics of the clinic, the students and the patients.

Table 1 A methodological approach for assessing the different levels of professional development in TUC interventions

Knowledge base and skills	Levels	Methodologies
knowledge:	knows	Oral/written assessments
- Biological		Factual tests
- Prevention /		Essay questions
Treatment	knows	Case-based assessment
- Psychosocial	how	Interactive examination
		OSCE stations
skills:	shows	Case presentation
- Counselling	how	Portfolio assessment
- Communication		Reflective diaries
- Behavioural		
	does	Chairside observation
		Video/audio audits
		Virtual patient
		OSCE stations

What needs to be assessed?

The ability to plan and execute behavioural change interventions requires a broad spectrum of knowledge and certain skills from the areas of communication, counselling and behavioural sciences. These would respond to the two lower levels of Miller's pyramid, namely 'knowledge' and 'know-how'.

The essential knowledge base includes:

1. Biological effects of tobacco use
2. Prevention and treatment of tobacco use and dependence
3. Tobacco culture/psychosocial aspects of tobacco use.

The communication, counselling and behaviour skills should include empathy, active listening, reflection, deductive reasoning and the ability to apply general knowledge to the problems of the individual patient. Several classifications have been proposed for the organising of such skills (Bloom, 1956; Bryn Mawr College, 2005), and it is beyond the aims of this document to give an in-depth analysis of them or advocate any of the available classifications. Emphasis on behavioural skills is of critical importance not only for successful TUC interventions but also for the whole practice of clinical dentistry. Therefore the development of such skills should be addressed throughout the whole curriculum.

The teaching of the aforementioned knowledge base and skills should ideally occur early in the curriculum, through an integrated multi-disciplinary approach. An early exposure to behavioural change support through TUC, in coordination with the teaching of behavioural sciences, should also be encouraged.

How do we assess the necessary qualities?

1. How do we assess the knowledge base?

It is clear that the knowledge base for TUC interventions covers areas in many classical biological, behavioural and social science disciplines. It is therefore evident that the teaching of such a wide knowledge base should involve professionals from many areas of science. However, the teaching of all necessary fields must be comprehensive and centrally coordinated, thus presenting students with the whole spectrum of complicated interrelations between biology, behavioural and social science in tobacco use. The assessment, as an integral and crucial part of the learning process, must follow the same principle of comprehensive approach. Rather than relying on separate department-based assessments, the authors encourage a comprehensive and centrally co-ordinated assessment of the knowledge base. Such an assessment will require students to identify and evaluate not only the specific biological mechanisms, but also the whole network of interactions between biology, behaviour, social and cultural structures that shape the problem of tobacco use. This would ideally occur at a preclinical level or early in the curriculum, to ensure that students will be able to identify the role of tobacco use for each individual patient and attempt TUC when applicable.

Various forms of written or oral assessment are applicable at this stage. However, the authors would encourage active assessment procedures, in order to evaluate the students' knowledge base and understanding in all relevant disciplines. The assessment can be done using case-studies with a problem-based methodology. Presentation of an actual patient, with his individual tobacco use pattern, social background and pathology, could be used in a multidisciplinary and comprehensive examination.

Another model suitable for this stage could be this of the interactive examination, a model based on actual patient cases that includes both an assessor and a self-assessment component (Mattheos et al, 2004). In this methodology, the student has to pre-

Table 2 An example of points of interest for the assessor during assessment through case presentation methods.

In the presentation the student shows...	skills reflected
...he/she can design an initial TUC intervention approach	Application of knowledge, deductive reason ing, strategy, planning
...he/she can well adjust motivational strategy to patient's own response, approach and needs	Reflection, initiative, creativity, flexibility, self-assessment
...he/she can well justify his/her choices, as based on current evidence and best practice	Application of knowledge, deductive reasoning, understanding of the evidence base of intervention

sent a solution to a clinical problem and then compare in a structured manner his solution to one originating from another peer or an expert. The written comparison that completes the assessment is directed towards identifying learning objectives and areas of improvement which reflect the student's self-assessment ability in addition to his/her related knowledge base.

2. How do we assess the essential skills in areas of communication, counselling and behaviour of TUC?

Building these attitudes and exercising the respective cognitive skills is something that goes well beyond the practice of TUC and should be an intergral part of the whole curriculum (Manogue et al, 2002). However, the assessment of such competencies becomes much easier when it is tied to specific authentic tasks and is as closely related as possible to students´ future professional practice. TUC interventions can be an applicable field for the wider assessment of students communication, counselling and behavioural skills.

At this stage, the assessment moves to the 'shows how' level of Miller's pyramid. The assessment is then targeted towards the ability to design and execute a meaningful intervention and not towards separate cognitive skills. Skills such as empathy, application of knowledge and active listening can serve as important 'checkpoints' in the process of comprehensively evaluating student's intervention process.

Therefore, meaningful assessment strategies at this level would place the student at the centre and require judgement, reflection and argumentation on the choices made. Such methodologies could include case presentation, case log, portfolio assessment, reflective diaries or similar approaches (Watts and Feldman, 1985; Challis, 1999). In such an approach, the student is called to attempt a TUC intervention with one of his/her patients and then prospectively record the whole process, including reflections upon changes, limitations experienced, the patient's behaviour and response, strategies employed and more. At a certain point the student is called to present the whole intervention process to peers or assessors. During a presentation, skills can be assessed, such as the student's ability to plan and execute interventions, his/her ability to relate general knowledge to the needs of the individual patient, his/her understanding of the patient's profile and background and more (Table 2).

However, important skills such as empathy, active listening, communication and counselling skills in general are not easily assessed through the abovementioned approaches. Such skills are of crucial importance for the successful practice of modern dentistry and should be assessed throughout the curriculum. These skills are placed at the 'does' level of the pyramid and are best assessed in an authentic clinical situation (Table 3). Consequently, chair-side assessment methodologies would be more applicable to this type of assessment:

- Patient feedback-surveys (Matthews and Feinstein, 1989).
- Standardised patients-actors (Ladyshewsky and Gotjamanos, 1997).
- Video (Hobmaet al, 2004; Schittek Janda et al, 2005; Van Dalen et al, 1998) or audio (Guerlain et al, 2005, Scott et al, 2003) recording of conversation between student and patient. Consequent feedback sessions in groups with assessor and peers.
- Utilising the 'virtual' patient for preparation and/or assessment of the student (Schittek Janda et al,

Table 3 An example of points of interest for the assessor during assessment through observation methods

action observed	skills reflected
The students adopts a patient-centred approach; he/she 'listens' to what the patient actually says	Empathy, active listening skills, comprehension
The student understands patient's attitude and needs	Selective attention, reflection
The student reflects patient's feelings in a professional way	Empathy
The student addresses the patient in a non-confrontational manner	Empathy, counselling skills
The student speaks in a level of language fhe patient easily comprehends	Communication skills
The student encourages the patient to talk about the quitting process	Listening skills, counselling skills

2004). A text-based 'virtual' patient has been successfully used for training of undergraduate students in learning to take medical histories, with encouraging results.

- OSCE stations (Brown et al, 1999). An example of the assessment of empathy at an OSCE station was mentioned by Schoonheim-Klein et al (2005). In this OSCE, students were shown video-recorded fragments of a patient's intake interview and were then asked to respond by reflecting the feelings of the patient.

Considerations within specific learning environments

1. Specific characteristics of undergraduate education

The aforementioned methodological approach is, in principle, applicable within undergraduate oral health education. Two additional structures were considered within undergraduate education, which can be beneficial for the practice of TUC interventions:

- The existence of a comprehensive care clinic, an oral hygiene recall scheme or any other structure where the student and the patient will have longer-term contact. A strong association is noted between the amount of clinical contact and the effectiveness of the treatment. Smoking cessation counselling interventions that include general problem-solving/behavioural skills and intra-treatment provider support are also associated with higher smoking cessation rates (Skaar and Tsoh, 1997).
- The basic teaching of behavioural sciences that takes place in almost all dental curricula in the early stage within studies. TUC interventions would be a very good field of application of the theoretical knowledge gained through teaching of behavioural sciences.

2. Specific characteristics of continuing education

The knowledge base and skills to be assessed within continuing education environments do not differ from those discussed within undergraduate education. However, major differences in continuing education environments, such as the wide diversity of the potential students' background, experience and expectations, must be carefully considered (Harrisson and Hogg, 2003). In addition, teaching in undergraduate education takes place within a controlled environment and a specific length of time. In continuing education, the learning process expands well into the everyday practice of the participant. In this environment, peer and self-assessment should be strongly utilised. Therefore, within continuing education settings it is essential that both the teachings as well as the assessment are cognisnant of the needs and learning environment of the participants.

Screening assessment

To better achieve this adaptation of contents and methodologies, it is recommended that 'screening' or 'diagnostic' assessment is undertaken before the beginning of the course. Such an assessment would investigate the participants' needs, expectations, attitudes, professional experience and current knowledge in the field of TUC behavioural change. This insight would allow educators to prioritise the appropriate components of the course (e.g. behavioural techniques, nicotine replacement therapy), to better meet the needs of the participants. This kind of 'screening' assessment needs to be specific and concise. Short, anonymous questionnaires, on paper or online, are appropriate for this purpose. Especially online questionnaires, feedback and distribution of participants to groups and modules could be arranged automatically, thus simplifying the logistics of continuing education (Stephens, 2005; Mattheos et al, 2005).

An assessment model for continuing education

Three distinct assessment schemes should be considered for continuing education upon completion of the course:

Assessment of participants' competence and accreditation (upon completion)

There is no doubt that the actual competence and skills gained after the continuing education course needs to be assessed. Such an assessment would provide critical feedback for the effectiveness of teaching and also validate that the learning objectives have been met by the participants (accreditation). However, as the participants of continuing education courses are likely to be experienced practitioners, the assessment objectives and methodology may differ from models used in undergraduate education. The short duration of these courses is another important factor. Therefore, assessment within continuing education could be directed towards more practical skill issues, utilising peer and self-assessment approaches. To emphasise the importance of teamwork in behavioural interventions, assessment on an individual level as well as a team should be considered. Formulation of self-support groups (local or internet-based) among professionals or utilisation of already existing structures should also be encouraged.

Evaluation of the whole course experience by participants (upon completion)

A short evaluation of the whole course by the participants must be considered a necessary part of the learning outcomes. This could significantly help educators to evaluate their teaching strategies and better plan future courses (Rohlin et al, 2002). This can be done through questionnaires, group discussion or both, with each method presenting certain strengths and weaknesses.

Assessment of implementation of what was learned (four to six months after completion)

At this stage, the course participants are asked to provide some feedback after a certain period (four to six months), describing the implementation process of the skills gained in the course into their everyday professional experience. Structuring the feedback into observed changes, perceived benefits, experienced limitations, strengths and weaknesses would help educators evaluate the actual impact of the course on participants' professional life. This type of feedback could also help future cohorts of course participants to better implement the acquired competence in their professional activities.

Conclusions – Suggestions

- Students must be encouraged to attempt smoking cessation interventions with all smokers they treat. Treatment provided in a comprehensive clinic may be beneficial, as the patient is in contact with the potential intervention for a longer amount of time.
- Competent behavioural change intervention can be learned, practised and developed. Therefore, the teaching and assessment of this ability should be within the scope of both the undergraduate and post-graduate curriculum.
- Assessment should target both the knowledge base as well as the necessary skills in the areas of counselling, communication and behaviour.
- Assessment of the knowledge base should ideally be conducted in a comprehensive, multidisciplinary, centrally coordinated manner. Such an assessment would be better placed early in the curriculum (preclinical phase), to emphasise the importance of TUC interventions as part of clinical practice.

- Assessment of skills in the areas of communication, counselling and behaviour is a wider aim that should be integral throughout the curriculum. The field of TUC intervention provides authentic and realistic scenarios for the assessment of such skills in relevance to the clinics. Two complementary assessment directions could be utilised in this field - reflection/presentation and observation methods, each with specific application and strengths.
- In continuing education environments, an initial 'screening' assessment would help educators to adjust the course to participants' background and needs. Furthermore, three major assessment schemes are proposed: assessment of knowledge and skills, evaluation of the whole course by the participants and assessment of the implementation process four to six months after completion.

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Appendix – Other resources:

Bloom's Taxonomy of Cognitive skills can be found among others at: http://www.papathways.org/PDFs/BloomTax.pdf