Evaluating postgraduate courses in Health Promotion

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Abstract

Background Evaluation of short training/postgraduate courses, with focus on measuring acquisition of new knowledge, is often limited. Therefore, the aim of this study was to develop a Multiple Choice test for evaluating how well participating staff in the clinical prevention and health promotion training course had acquired knowledge.

Methods 11 participants from a spring course and nine control persons took a pilot test, and 12 participants and 21 control persons took the final Autumn-test. A MC test was developed with 17 questions with three possible answers for each question. The participants answered the MC test as a pre-test and a post-test.

Results Results The pilot test showed that the number of correct answers in both groups resulted in a median of 13 ranging from 10-15 and 10-16 (p = 0.42), respectively. The Autumn testing showed a significant difference in number of correct answers between the pre-test and the post-test, 10.5 (6-13) versus 12 (11-13) (p = 0.016). Furthermore, there was a significant difference between the post-test of the participants and the answers of the control persons, 11 (8-14) (p = 0.02). In addition, the study found that the participants were positive towards answering the MC test, and that the test could be completed within the allocated period of time.

Conclusion A MC test can be easily developed to evaluate whether the participants acquire knowledge by participating in a training/postgraduate course in clinical health promotion. However, the MC test does not measure acquisition of new clinical skills and effect for the individual patients.

Introduction

Evaluation of short training/postgraduate courses, with focus on measuring acquisition of new knowledge, is often limited. This may be due to the length of the courses as they often vary from a few hours to a few days, and so knowledge dissemination may be prioritized over evaluation. It may also be due to lack of access to evaluation tools for measuring knowledge. However, there is a widespread tradition of evaluating the participants’ immediate overall satisfaction with the course. This may be because there are already complete test forms for this, and that the same form is applicable in many courses.

There are various evaluation methods for measuring knowledge, such as Multiple Choice questions, assignments, essays, written and oral examinations, as well as Objective Structured Clinical Examination (OSCE) (1). It is important to choose an evaluation method appropriate to the aims of the course, such as knowledge and clinical skills, while at the same time meeting the basic requirements for reliability and validity (Table 1) (1;2).

Due to the limited time in training/postgraduate courses, and especially in courses with a sizeable theoretical content, the use of a Multiple Choice test (MC test) seems natural. An MC test has high reliability when it comes to testing knowledge, but is criticised for having low validity when measuring clinical skills (2;3).

Every six months, the WHO-CC at Bispebjerg University Hospital in Denmark offers a four-day course in clinical health promotion called “Systematic Implementation of Brief Intervention”. The aim is to develop staff skills in implementing brief intervention focusing on tobacco, alcohol and physical inactivity, and also to improve the participants’ knowledge of the background, evidence and method for brief intervention (Table 2). In this article competences are defined as knowledge and clinical skills. The target group is nurses and other health care staff who
Table 1 Possible evaluation methods (Ringsted and Aspegren, 2004)1

<table>
<thead>
<tr>
<th>Knowledge</th>
<th>Skills</th>
<th>Attitudes</th>
<th>Experience</th>
<th>Habits of action</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Multiple choice tests</td>
<td>- Clinical decision making: Patient management problems (PMP)</td>
<td>- Assessment of behaviour. Can be made by supervisor, colleagues, staff, if necessary patients - singly or a combination, so called 360° assessment (multiple peer assessment or multiple source assessment)</td>
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<tr>
<td>- Essays written examination</td>
<td>- Clinical skills: direct observations of performance in simulat scenarios, Objective Structured Clinical Examination (OSCE), or observation in the clinic</td>
<td>- Assessment of statements and responds to other’s statements or behaviour. For example in groups or at conferences. Can be made by supervisor, colleagues or staff</td>
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<td>- Oral examination</td>
<td>- Communication, cooperation: OSCE, feed-back from others – if necessary patients</td>
<td></td>
<td>- Logbook (experience log) – quantitative registration of accomplished activities, for example operations, procedures</td>
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<td></td>
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<td>- Cusum-score – registration of procedures with qualitative element – registration of success rate</td>
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<td></td>
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<td></td>
<td>- General assessment of behaviour and manner. Can be made by supervisor, colleagues, staff, if necessary patients – singly or a combination (360° - assessment, multiple source assessment)</td>
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</table>

Table 2 The outline for the course in clinical health promotion: Systematic implementation of brief intervention October

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Welcome and Pre MC-testBBH as a model hospital for clinical health promotion Background for documentation in the area of clinical health promotion</td>
<td>Test in brief intervention</td>
<td>Updating of knowledge about tobacco and alcohol</td>
<td>Theory about stages of change in personal behaviourCharacteristics in the specific stagesEffort to support the process of change in the individual patientKeep the overview – Use glasses</td>
</tr>
<tr>
<td>Second hand smoke – what do we know?Presentation by participant Assessment of motivation</td>
<td>Screening for physical activityHealth risks by physical activityHealth gain by physical activity for patients with chronic diseases</td>
<td>Walk and TalkAlcohol dependence Replacement therapy and treatment of withdrawal symptomsOffers of support</td>
<td></td>
</tr>
<tr>
<td>14 – 15: Theory + training</td>
<td>12.45 – 15.00: Training</td>
<td>12:45 – 15:00: Brief intervention</td>
<td></td>
</tr>
<tr>
<td>Medical record formScreening for alcohol and tobacco</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Literature list, referencesSumming up</td>
<td></td>
<td></td>
<td>Incl. Post MC-test, and feedback</td>
</tr>
</tbody>
</table>
will be conducting the brief interventions in practice. So far, the participant evaluations have only focused on overall satisfaction with the course, but there is also a need to evaluate knowledge acquisition. Therefore, the aim of this study was to develop a MC test for evaluating how well the staff participating in the clinical prevention and health promotion training course had acquired knowledge.

The literature in the field is sparse. A search of randomized studies resulted in six articles, but none were directly relevant to this study (4-9). However, some reviews do show that medical postgraduate courses do have an effect (10;11).

**Material**

11 participants from a spring course and nine control persons took the pilot test, and 12 participants at an autumn course and 21 control persons took the final test. One participant did not complete the pre-test, and another participant did not complete the post-test due to absence. These two were not included in the comparative analysis of the pre- and post-test, and one of these was excluded from results regarding views on obtaining new knowledge and the overall attitudes towards the course. Both groups (participants and control persons) were recruited from nurses and other health care staff (Figure 1). The structure of the course was changed between the two courses in spring and autumn, making the theory part more interactive, but the content of the course remained the same. Consequently the changes would not have influenced the MC test.
Method
Development of MC test
The MC test was developed and consisted of 17 questions with three possible answers for each question. The time allowed for completing the MC test was 15-20 minutes so the number of questions was adapted to this time frame. The questions emerged from the training course material as well as from interviews with all five teachers, who were asked to identify, which knowledge they found most important for the participants to acquire during the course. There was continuous dialogue between the teachers about the formulation of the MC questions. Three nurses from Vejle Hospital were then asked to complete the preliminary MC test and comment on the formulation of the questions, which resulted in a few adjustments.

Pilot test
The preliminary MC test was given a test run by participants at the end of a previously course. Twenty minutes were allocated to the test. Participants from four departments at Bispebjerg University Hospital also completed the MC test. Their head nurse, who had been asked to pass on the MC test to four nurses, contacted them and the subjects subsequently returned the completed test within 16 days. It was not allowed for the nurses to have participated in the course before, and the MC test had to be done individually. Nine control persons returned the test. After the pilot testing, the MC test was further adjusted, leading to three to five options for each MC question.

Final Test
The final test was carried out in a subsequent autumn course, where the participants answered the MC test as a pre-test as well as a post-test. Fifteen minutes were allocated to each of the MC tests. One of the MC questions was later excluded from the analyses, as all the possible options given for this question turned out to be wrong.

The participants were not informed about the correct answers until after the post-test. The post-test included a supplementary validating question (question 18), where the participants on a scale from 1-10 were to rate the quantity of knowledge they had acquired during the course.

The control persons were recruited in the same way as the training course participants, except this time the MC test was personally handed out by the authors of this article either at the morning conference or during lunch break. The control persons were given 15 minutes to complete the MC test. Not all the control persons answered the test within this period, and a collection later in the day was arranged. Participants received a letter with information about the MC test two weeks before both the spring and autumn course, so they could decide in advance whether they wanted to participate. Before the test was handed out it was once again emphasised that participation was voluntary. All answers from the participants and the control persons were anonymised.

A Mann-Whitney test was used to compare the answers from participants and control persons, and a Wilcoxon test was used to compare the pre-test and the post-test. The significance level was 0.05.

Results
The pilot test in the spring showed that the control persons had approximately the same level of knowledge as participants completing the course (Figure 2a). The number of correct answers in both groups resulted in a median of 13 ranging from 10-15 and 10-16 (p = 0.42) respectively. The Autumn testing showed a significant difference in number of correct answers between the pre-test and the post-test, 10.5 (6-13) versus 12 (11-13) (p = 0.016) (Figure 2b), indicating that the participants had acquired new knowledge during the course. Furthermore, there was a significant difference between the post-test of the participants and the control persons.
pants and the answers of the control persons, 11 (8-14) (p = 0.02). This result indicates that participation in the course increases the level of knowledge among the staff.

The additional question (question 18) in the post-test showed that the participants generally thought that they had acquired new knowledge by participating in the course, 8 (4-10). The participants were asked to comment on the MC test, but none of them did so. Bispebjerg University Hospital’s own evaluation form showed an overall satisfaction with the training course in general, for both the spring and autumn course; 8 (5-10) and 9 (8-10) (p = 0.09).

Finally the study found that the participants were positive towards answering the MC test, and that the test could be completed within the allocated period of time.

Discussion

The study showed that an MC test could be used and utilized to evaluate the participants’ level of knowledge before and after a postgraduate/training course. There was a significant difference between the pre-test and the post-test in the autumn course and there was also a significant difference between the participants and the control persons.

Although a MC test could be used, it can be questioned whether the MC test is the optimal type to use in this context. According to Kirkpatrick’s theoretical model “The Four Levels”, an ideal evaluation would take place in the course as well as in the entire organisation, in this case the hospital (12). The model is characterised by a focus on practical use, and correspondingly one of its strengths is that the model is simple to use (13). However, the validity of the model can be contested (14). The model aims at uncovering the entire range, from the individual participant’s reaction and satisfaction with the course to an evaluation of what the hospital as a whole gains by offering this course. However, an evaluation at this scale would be time consuming and costly, especially in view of the shortness of the course.

In addition to increasing the participants’ knowledge of clinical health promotion, the course aims to improve staff skills in conducting brief interventions. With the quantity of theory involved, inclusion of an MC test for measuring knowledge acquisition in the course would be relevant.

Other possible methods include oral examinations and essays or other forms of written evaluation, but for this the course leader must spend a disproportionate amount of time.

A MC test is not suitable for measuring attainment of clinical skills, whereas OSCE would meet this demand (Figure 1). OSCE is very time consuming, and therefore barely realistic to carry out during a four-day course, but would be more suitable for use in a clinical stay of longer duration or in a larger final examination (2).

The strength of this study is its well-considered design where the developmental phase with independent pilot test has been separated from the test phase, as well as the use of control persons. The use of control persons showed the fairly high level of knowledge about clinical prevention and health promotion among the staff at Bispebjerg University Hospital. The limitation is the small number of control persons and course participants.

In many ways, the MC test is ideal for measuring knowledge acquisition at training courses. It is easy to use, but it is also necessary to develop a specific test for each course as the courses have different aims and content. In addition, a MC test must be continually adjusted, as aim and content of the course also change with time due to new evidence and new demands on the staff.

Implementation of an evaluation carries the risk of a Hawthorne effect (15), as awareness of a forthcoming evaluation alone will improve performance. This can, however, also be utilized positively by increasing the participants’ motivation. However, the Hawthorne effect has been discussed (16). The use of a MC test can possibly also have a motivating and focusing effect on the teachers.

At the same time attention must be paid to the risk of downgrading the areas of knowledge that are not part of the evaluation. The consequences of a poor test result have to be considered when evaluating courses; a realistic option could be improvement of the course and/or the participant repeating the course.

A course in clinical health promotion should ultimately benefit the patients. In a future perspective, more of the patients should be offered qualified guidance in physical activity, smoking and alcohol cessation intervention and thereby be supported to improve their health. This corresponds to Kirkpatrick’s theoretical model, which recommends evaluation of the course as well as the entire organisation (12). The organisational evaluation is independent of the course evaluation method and can be easily integrated in the quality assurance work of the hospital. A simple indicator of the process would be the number of extra patients re-
Receiving brief intervention. A simple result indicator would be the number of patients completing the patient course.

Conclusion
A MC test can be easily developed to evaluate whether the participants acquire knowledge by participating in a training/postgraduate course in clinical health promotion. However, the MC test does not measure acquisition of new clinical skills and effect for the individual patients.

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Competing interest: None declared.

Acknowledgements
We wish to thank course leader Karin Birto for her continuous inspiration throughout the project. We also wish to thank the course participants and control persons at the spring and autumn courses. Finally we wish to thank the Department of Human Resources and Development at Bispebjerg University Hospital for allowing us to use their evaluation material.

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