Quality Improvement Project (QIP)

Tully, Vicki; Cairns, Declan; Kilgariff, Julie

Published in:
BMJ Open Quality

DOI:
10.1136/bmjoq-2023-002718

Publication date:
2024

Licence:
CC BY-NC

Document Version
Publisher's PDF, also known as Version of record

BMJ Open Quality

Quality improvement project (QIP): evaluating a pilot suicide awareness, screening and signposting training intervention for dental care professionals in a dental teaching hospital and school

Declan Cairns ,[1] Julie K Kilgariff,[2] Vicki Tully[3]

To cite: Cairns D, Kilgariff JK, Tully V. Quality improvement project (QIP): evaluating a pilot suicide awareness, screening and signposting training intervention for dental care professionals in a dental teaching hospital and school. *BMJ Open Quality* 2024;**13**:e002718. doi:10.1136/bmjoq-2023-002718

► Additional supplemental material is published online only. To view, please visit the journal online (https://doi.org/10.1136/bmjoq-2023-002718).

Received 13 December 2023
Accepted 1 September 2024

[1]University of Dundee, Dundee, UK
[2]University of Dundee College of Medicine Dentistry and Nursing, Dundee, UK
[3]Healthcare Improvement Team, NHS Tayside, Dundee, UK

Correspondence to
Mr Declan Cairns;
declan.cairns@nhs.scot

ABSTRACT

Scotland's 2022 suicide prevention strategy recommends building skills and knowledge among healthcare staff who play a role in preventing suicide. A quality improvement project (QIP) in relation to this was initiated because several patients attending dental appointments disclosed suicidal thoughts and/or plans to attempt death by suicide. Dental staff and students involved expressed feeling ill-equipped at how to manage this situation. This initial QIP aimed to establish routine screening, identification and signposting of dental outpatients identified as having an increased risk of suicide during attendance at any dental clinic within the Dental Hospital. Several Plan-Do-Study-Act (PDSA) cycles ensued. First, to understand the problem, a scoping literature search on the role of dental professionals in preventing suicide and the availability of suicide risk awareness training frameworks for non-medical healthcare staff revealed few publications and no identified training frameworks. This was PDSA1. To gain insight into the local culture in relation to the QIP aims, two further cycles were undertaken. These examined whether dental patients were routinely screened for mental health conditions, and dental staff and student attitudes. Screening activity was measured, a new medical history intervention was implemented and a significant improvement in the number of patients being screened was seen (PDSA2). At the time of writing, the newly introduced medical history form is now used routinely to screen all outpatients attending the Dental Hospital, where 60 000 outpatients' appointments are delivered annually. PDSA3 sought dental staff and student views on whether suicide risk awareness is part of their role. This found suicide risk awareness is considered part of the dental professionals' role, but a lack of training, and a desire for training was expressed. With no suitable training frameworks, PDSA4 aimed to design, implement and evaluate a pilot training educational intervention by a clinical psychologist. Sixteen dental care professionals attended the workshop. To measure training effectiveness, participants completed pre-training (baseline) and post-training questionnaires to assess their self-efficacy around suicide awareness. Improvements in self-efficacy following training occurred across all domains, demonstrating a successful intervention which can be upscaled.

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ The prevalence of suicide is significantly higher in Scotland than in the rest of the UK and is continuing to rise. All healthcare professionals have a role and responsibility for suicide risk awareness, screening and appropriate signposting. Dental healthcare staff are reported as expressing a lack of skills or confidence to discuss suicide with patients. Although healthcare policy and vision encourage training of staff in suicide awareness, there appear to be no evidence-based evaluated frameworks to use.

WHAT THIS STUDY ADDS

⇒ This project assessed the effectiveness of a pilot educational intervention (training workshop) designed to equip dental staff with the skills and confidence to screen patients for suicide risk and signpost appropriately.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ The findings advocate for more widespread suicide awareness training of all frontline healthcare staff, evaluating the effectiveness of training. The model reported can be applied to all non-medically qualified healthcare staff.

PROBLEM AND BACKGROUND

Recent evidence indicates an increase in suicidal ideation among the general population in the UK, following the COVID-19 pandemic.[1] Dental care professionals (DCPs) routinely screen medical health of dental patients to ensure safe provision of dental care. As part of screening for other health disorders, mental health conditions should be screened for because strong connections exist between oral and mental health.[2] There are often additional barriers to maintaining a healthy mouth while experiencing mental health issues, including anxiety or phobia of

attending dental appointments, poor nutrition, comorbid substance misuse and dry mouth.[3] In recent years, a number of patients have attended the dental hospital and revealed an intention to attempt death by suicide. These occurrences caused significant concern and distress for all staff and students involved and a perception of feeling 'ill-equipped' (in terms of training and knowing what to do) was highlighted. Staff and students expressed a desire to 'do the right thing' and following local discussions, it appeared that the appropriate way to manage such disclosures was not widely understood by dental staff and students.

The Scottish Government's Suicide Prevention Action Plan, published in 2018, outlines that healthcare professionals should be comfortable carrying out an individualised needs assessment to identify specific needs and develop tailored solutions.[4] The 2021 General Dental Council (GDC) Mental Health Wellness in Dentistry framework builds on this, encouraging staff to feel comfortable discussing mental health wellness.[5] These documents indicate that all healthcare professionals have a role to play in routine mental health screening and suicide awareness.

The overarching aim of this quality improvement project (QIP) is to establish the routine screening, identification and signposting of dental outpatients at increased risk of suicide. The project has been undertaken in a dental teaching hospital and school in Scotland. The Dental Hospital serves a population of approximately 688 000. Around 60 000 outpatient appointments/year are seen by a workforce of over 200 dental staff and over 300 students. In pursuit of the QIP goal, four Plan-Do-Study-Act (PDSA) cycles have been undertaken thus far.[6 7]

The PDSA cycles which preceded and informed cycle 4 were as follows: PDSA1 sought to understand the wider context. A scoping literature search was undertaken to identify previous publications relating to the role of dental professionals in preventing suicide. Furthermore, electronic databases were searched to identify if suicide risk awareness training frameworks existed for non-medical healthcare staff. Very few publications were found, and no training frameworks were identified highlighting an apparent absence of evidence-based training resources tailored to non-medical healthcare professionals, such as allied health professionals and the dental workforce. The literature searches were undertaken within PDSA1. In the absence of published evidence, the team concluded more local evidence was required regarding whether DCPs in the dental Hospital were already screening for mental health problems and if DCPs perceived suicide prevention to be within their role, this stimulated the subsequent two PDSA cycles.

PDSA2 sought to better understand the local culture and discover if patients were being routinely screened for mental health conditions alongside physical health screening. This was measured using an audit of 100 dental patient records drawn from across all dental hospital clinics. This showed suboptimal screening activity (5% of patients screened). A new medical history form was designed by an in-house short life working group with specific mental health-related questions. This new form was piloted initially in one clinical area only and feedback was sought from users (patients and staff). Feedback was positive and recommendations for small amendments to the form were made, which were actioned. The amended form was circulated to a wider group in the dental hospital for further feedback, prior to finalising and implementing this across the entire dental hospital (the intervention). A second audit cycle of 40 patient records demonstrated a significant improvement in the number of patients (100%) having mental health screening carried out at their dental outpatient appointments. This was a positive impact from introducing evidence-based and updated medical history forms, which has been sustained over the last 2 years, thus far. One aspect of the QIP aim had been achieved, the routine screening of mental health conditions. Enabling staff to identify and signpost at-risk patients still required addressing.

Having established that there was little evidence about the DCPs' role in suicide awareness, but that national drivers outline the need for all frontline healthcare professionals to become actively engaged in suicide prevention, PDSA3 continued the exploration into the local culture by seeking views (via a survey) on whether dental staff and students regard suicide risk awareness as part of their role. Questions regarding prior training and perceived need for training were included. Both staff and students felt suicide risk awareness was part of their job role, but few had had training in this, and most wished to be trained.[6 7] Results from these previous PDSA cycles are available in references 2+3, and the baseline measure was informed and developed using these results.

The next step, therefore, was to trial a new training intervention for a small group and measure whether it was perceived as effective or not by the staff attending (PDSA4). The aim of the PDSA4 cycle was to measure the effectiveness of an educational intervention for training dental staff how to screen, identify and appropriately signpost patients at risk of suicide.

This cross-speciality endeavour was supported by a clinical psychologist who designed the content and delivered a 2-hour suicide awareness pilot training intervention. Evaluation was planned separately and carried out by the authors, measuring changes in self-efficacy[8] by gathering pre-intervention and post-intervention measurements.

Measurement

The model for improvement (MFI)[9] was chosen because its cyclical nature encourages reflection on the intervention's success and failures and allows refinement according to results. Once improvements are made, the cycles are repeated to ensure the intervention is developing and continuously improving.[10] MFI asks three questions to focus development of QIPs, which can then be enacted using a series of PDSA cycles. For PDSA4, these were addressed as follows:

What are we trying to accomplish?

To deliver an effective educational intervention to improve the self-efficacy and confidence of dental staff around screening, identifying and appropriately signposting patients at higher suicide risk.

How will we know this change is an improvement?

A questionnaire survey will be developed to assess staff confidence (self-efficacy) pre-intervention (baseline measure) and a further, repeated measure collected post-training. Improvements in self-efficacy will indicate the effectiveness of intervention.

What change can we make that will result in improvement?

In delivering and evaluating a pilot training intervention to an initial cohort of staff, the training effectiveness can be assessed, and amendments to the intervention made prior to upscaling.

The rationale for the design is Kirkpatrick's model of evaluation, considered one of the most effective and useful frameworks in the evaluation of training interventions.[11] In this model, evaluation of training interventions is key. Self-efficacy is defined as 'people's perceived beliefs or judgement in their capabilities to carry out certain tasks'.[12] Measuring changes in self-efficacy scores before and after the intervention will evaluate the perceived effectiveness of the intervention.

Design

As described, the preceding PDSA cycles had shed light on understanding the problem. A project charter was compiled, literature searched and audit and attitudinal survey carried out. For the training intervention content, the PDSA3 survey results were looked to as this had served as a learning needs assessment.[13] In addition, expert knowledge was required for appropriate content and provided by a clinical psychologist. Content included ensuring understanding of the definitions and terms associated with suicide, such as ideation and intent. The General Dental Council guidance for Continuing Professional Development (CPD) was referred to[14] and an interactive format was selected to include role play because of the advantages this offers, such as enhanced insight, reflection and self-efficacy for those taking part, and for peers observing, when done in supervised groups.[15] In this way, a pilot 2-hour suicide awareness training intervention content and format was developed. The session was advertised to staff using posters and active email promotion. Staff booked onto the session via email and were offered 2 hours of CPD for attending.

To evaluate the effectiveness of the pilot intervention, the intended learning outcomes were used to inform development of a pre-intervention questionnaire, to gain a baseline measure and a post-intervention questionnaire to measure changes in self-efficacy because of the training. Both questionnaires recorded qualitative and quantitative data, using a combination of a Likert scale and open text boxes. No published validated questionnaire had been identified in the literature to assess self-efficacy of dental clinicians relating to suicide awareness, and therefore, a 7-point Likert was agreed as an effective way to measure change. Scores of 0–7 were used for participants to assess their self-efficacy, related to mental health screening and suicide awareness. A score of 0 indicated low confidence and a score of 7 that the participant was confident in their ability. Online supplemental appendix 1 contains the pre-intervention questionnaire used in the intervention.

Eighteen dental care professionals attended the pilot training workshop and completed the pre-intervention questionnaire; however, due to the training taking part during the working day, only 16 post-intervention questionnaires were returned as two staff had to leave to return to the clinics. Therefore, for data analysis, the two questionnaires completed by staff leaving early were discarded and the 16 pre-training and post-training questionnaires were included in the data. The data collected in the pre-intervention and post-intervention questionnaires was stored in Microsoft Excel. Anonymity was ensured by numbering both questionnaires, thus, avoiding the need to record names.

At the training event, engagement was high among participants, particularly, around the dissemination and explanation of an example suicide risk pathway. In particular, participants found this prompt easy to follow and provided them with a list of organisations to suggest to a patient that may be at risk of suicide, which they felt was helpful for initiating a conversation about how to get support.

The interactive element of the training session, in particular, the workshop and role play section, encouraged participants to ask questions and reinforce their learning through putting themselves in 'real life' situations.

The statistics that were shared on suicide were helpful for some to understand just how prevalent suicide and suicidal ideation is among the general population. However, others found the use of statistics to be confusing and preferred the idea of being walked through more case examples. This was highlighted in several of the feedback forms requesting additional time to practice the role play sessions to reinforce the learning from the workshop.

Because all members of the dental team were encouraged to attend this workshop, not only nurses and clinicians, some participants found there was a significant focus on engaging with patients in a clinical setting. However, suggestions for improvement focused on having more discussions on how to support colleague's friends and family instead of only patients.

Patient and public involvement

No patient and public involvement exercises were undertaken in the development of this quality improvement (Figure 1).

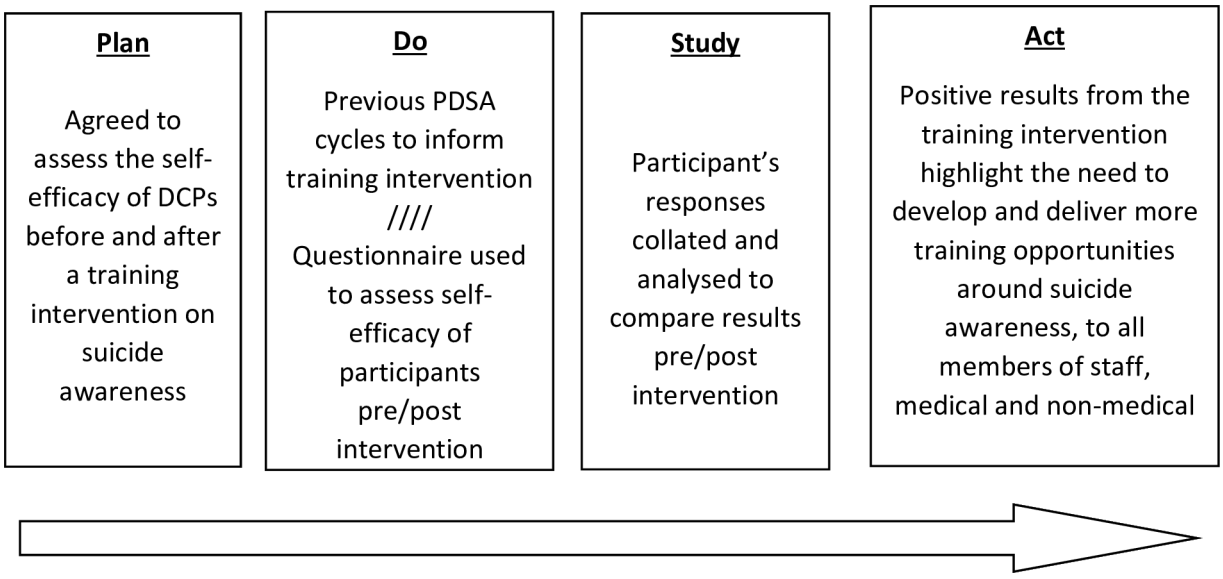

Figure 1 Stages of PDSA cycle for quality improvement project. Figure 1 represents the different stages in the PDSA (Plan, Do, Study, Act) cycle used for this quality improvement project. Previous PDSA cycles identified a need for suicide awareness training to be delivered to the dental team. This intervention was developed and delivered in a secondary care dental setting, with participants assessing their self-efficacy on issues around suicide before and after the training. The results for the responses are shown in table 1.

RESULTS

Although 18 staff participated in the pilot training intervention, only 16 completed both questionnaires; therefore, a convenience sample of 16 was used for the results. This comprised of 5 dentists, 6 dental nurses, 3 dental technicians and 2 clinical support staff.

Table 1 shows the mean self-reported self-efficacy score of the staff cohort attending, before and after the educational intervention for each category assessed, alongside the average change in self-efficacy scores for the cohort.

The pre-intervention, baseline data (table 1) found participants lacked confidence across most domains

Table 1 Self-reported self-efficacy

	Baseline/pre-intervention measurement = mean of 16× participants' responses (0–7)	Post-intervention measurement = mean of 16× participants' responses (0–7)	Average change in reported self-efficacy
Describe how you feel:			
1. Discussing mental health issues with patients	3.3	5.2	**+1.9**
2. I can describe the difference between suicidal ideation and suicidal intent	2.6	5.6	**+3**
3. I can screen patients for mental health problems	1.5	4.5	**+3**
4. I can carry out suicide prevention as part of my daily job	1.8	4.9	**+3.1**
5. I know what is meant by 'suicide prevention'	3	6	**+3**
6. I can list three or more risk factors for identifying individuals more likely to be at suicide risk	3.1	5.9	**+2.8**
7. I can identify a patient who is potentially at risk of suicide	2.4	6	**+3.6**
8. Knowing whom to contact for support if I am concerned a patient is at risk of suicide	2.7	6.6	**+3.9**
9. I know of services I can signpost patients to in need of mental health support	2.4	6.5	**+4.1**

assessed, only 3 out of 9 questions scored a mean of 3 or higher on the 0–7 Likert scale. Most questions were scored significantly lower than this, indicating no confidence levels. These findings were not unexpected given the survey results from PDSA3.

Immediately following the training intervention, a further measure was recorded using self-efficacy. Across all domains, each participant showed an increase in their confidence levels compared with the pre-training intervention. This indicated an effective training session. The greatest increase in confidence gained was in relation to knowing what services are available for DCPs to highlight, and ultimately signpost patients to, if they feel the patient is in need of mental health support.

Additional feedback relating to learner satisfaction with the event was also sought. The role play was well received and gave an opportunity to mimic a realistic situation that DCPs may find themselves in when managing a patient. The cohort attending requested role play examples be developed that were not entirely clinically focused to enhance learning and application of their new skills.

DISCUSSION

Overall, the improvement in self-efficacy identified across all domains is a positive reflection of training effectiveness. It would be useful to re-measure self-efficacy in the future to discover if the same staff cohort has been able to use this training clinically (ie, a behaviour change in relation to clinical practice) and if the positive improvements in confidence levels identified on the day have been retained longer term. In considering the QIP thus far, dental staff and students view suicide prevention as part of their job role;[2 3] however, many have never received any form of training on the topic nor does a training framework for DCPs appear to exist. It is important to acknowledge that it is not the dental team's role to diagnose or treat mental health issues but to screen and signpost appropriate available support services. Findings from this cycle (PDSA4) of the wider QIP suggest the training was perceived as relevant and effective at improving their self-efficacy and confidence around suicide awareness. There was also an overall trend of improved staff knowledge of available services and how to identify a patient 'at risk'. Most staff (67%) thought the training was clinically useful and 87.5% reported they would attend further suicide awareness training. Staff appeared to consider the training important and made requests for it to be more widely available, and suggestions it be considered mandatory for staff to attend, to keep DCPs up to date and confident discussing such matters with friends, colleagues and patients.

The results from this PDSA cycle will inform the next steps in the following ways: The training intervention itself will be modified to incorporate non-clinical role play and arranged to take place at a time when clinical responsibilities compete less, improving accessibility. It can then be upscaled and rolled out to more staff and trialled with students. In addition, staff attending highlighted that it would be useful to have a recognised resource pack or leaflet and a specific place on clinics in which to find signposting resources to share with patients. This need will be addressed in a fifth PDSA cycle which, using experience-based codesign methodology, will involve dental staff, students and dental patients to assess existing resource awareness and suitability and develop these as required. In doing this, patient views will be invited regarding discussing mental health concerns with the dental team.

Lessons and limitations

Staff volunteered to attend the session, potentially only those with an interest attended, which may have affected results. The cohort was small and results were not generalisable, although useful for developing this educational intervention moving forward.

Feedback highlighted the session was engaging, but participants wished for more opportunities to practice role play and scenario situations to improve confidence. These limitations may be resolved by having a full-day course. The training was held in the afternoon and during clinical time. Unfortunately, two participants had to return to the clinic, without completing the post-intervention questionnaire. This could be addressed by using electronic feedback forms in the future and/or arranging training during non-clinical time.

The training intervention was developed by a clinical psychologist who had worked alongside colleagues in the dental hospital as part of another project. This prior knowledge allowed the training to be tailored to the specific needs of DCPs, which would limit the repeatability of this study. However, this could be addressed through close collaboration between dental and psychology colleagues when developing any interventions in the future.

This QIP was not able to determine the impact this training might have on future practice or the subsequent impact on patient outcomes. Using the Kirkpatrick model for outcome assessment, demonstrating level 4 (results) or level 3 (behaviour change) was not achievable within the scope of this QIP. As such, the level 2 assessment of learning evaluation (learning) was most suitable for this project, through pre-evaluation and post-evaluation of self-efficacy.

However, evidence indicates that having conversations with patients who are at risk of committing suicide can improve prevention.[16] The improvements in self-efficacy following the training session demonstrated an increase in confidence in bringing this topic up with patients and how to signpost appropriately. More investigation is needed to understand the impact this has on clinical outcomes and practices.

CONCLUSION

It is essential that dental care professionals are adequately trained to meet the needs of today's patients.

Building on the GDC Mental Health Wellness Framework and Scottish Government Suicide prevention plan, there is a need to develop a formal training pathway for suicide prevention in dentistry. Before this can be implemented at a strategic policy level, more work is required to identify the effectiveness of this local training intervention by making the identified changes to the training, using a larger sample and evaluating the statistical significance of the results.

The PDSA cycle discussed is part of an ongoing QIP and demonstrated a successful training intervention for improving the confidence of dental staff for screening, identification and signposting of patients at higher risk of suicide. This model could be applied to all non-medical healthcare professionals. Further investigation is also required to assess the impact the training has had on participants' behaviour clinically and how this translates into patient outcomes.

Acknowledgements Thanks are extended to Dr Lindsay-Jo Sevier-Guy (Clinical Psychologist, NHS Tayside) who provided the educational intervention and to Gavin Revie for advice on data processing.

Contributors JK—coauthored and guarantor for the manuscript, provided support, guidance and advice in study development and submission of article. VT—critically reviewed the study and final manuscript. L-JS-G—developed the education intervention to support quality improvement. GR—provided guidance and advice on data processing.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Not applicable.

Ethics approval This study involves human participants. This was a test of change quality improvement project; no ethical committee approval required. Participants gave informed consent to participate in the study before taking part.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement All data relevant to the study are included in the article or uploaded as supplementary information.

ORCID iD

Declan Cairns http://orcid.org/0009-0000-2009-898X

REFERENCES

1 Vinnakota D, Parsa AD, Arafat SMY, *et al*. COVID-19 and risk factors of suicidal behavior in UK: A content analysis of online newspaper. *J Affect Disord Rep* 2021;4:100142.
2 Kisely S. No Mental Health without Oral Health. *Can J Psychiatry* 2016;61:277–82.
3 Beaton L, Coles E, Freeman R. Homeless in Scotland: An Oral Health and Psychosocial Needs Assessment. *Dent J (Basel)* 2018;6:67.
4 Scottish Government. Suicide prevention action plan: every life matters. The Scottish Government; 2018. Available: https://www.gov.scot/publications/scotlands-suicide-prevention-action-plan-life-matters/
5 Plessas A, Paisi M, Bryce M, *et al*. Mental health and wellbeing in dentistry: a rapid evidence assessment. General Dental Council; 2021. Available: https://www.gdc-uk.org/about-us/what-we-do/research/our-research-library/detail/report/mental-health-and-wellbeing-in-dentistry-a-rapid-evidence-assessment
6 Kelly N, Kilgariff J, Toner R, *et al*. Do dental professionals have a role in managing suicide risk in dental patients? *J Disabil Oral Health* 2022;100–107.
7 Kelly N, Kilgariff JK. Should suicide risk assessment be embedded in undergraduate dental curricula? *Br Dent J* 2023;234:601–5.
8 Lawrance L, McLeroy KR. Self-efficacy and health education. *J Sch Health* 1986;56:317–21.
9 Langley GJ, Moen R, Nolan KM, *et al*. *The improvement guide: a practical approach to enhancing organizational performance*. San Francisco: Jossey-Bass, 2009.
10 NHSEL. Model for change - quality improvement. NHS East London NHS choices; 2022. Available: https://qi.elft.nhs.uk/resource/the-model-for-improvement/
11 Falletta S. Evaluating training programs: The four levels Donald L. *Am J Eval* 1996;19:229.
12 Cherry K. How self efficacy helps you achieve your goals. Verywell Mind; 2022. Available: https://www.verywellmind.com/what-is-self-efficacy-2795954
13 Grant, Janet. Learning needs assessment: assessing the need. *BMJ* 2002;324:156–9.
14 General Dental Council. Enhanced CPD guidance for providers. 2018. Available: https://www.gdc-uk.org/docs/default-source/cpd/cpd-provider-guidance883326cbaaba41619e5abd1125e4c08a.pdf?sfvrsn=b5a2e4a8_5
15 Rønning SB, Bjørkly S. The use of clinical role-play and reflection in learning therapeutic communication skills in mental health education: an integrative review. *Adv Med Educ Pract* 2019;10:415–25.
16 Pisani AR, Cross WF, West JC, *et al*. Brief Video-Based Suicide Prevention Training for Primary Care. *Fam Med* 2021;53:104–10.