


# Workforce challenges in digital health implementation: How are clinical psychology training programmes developing digital competences?

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## Abstract

**Objectives:** Digital practice in psychological services is a rapidly expanding and innovative area which is supporting continuation of clinical provision during the COVID-19 pandemic. Training the workforce to deliver safe and effective online psychological provision is key to service success and relies on accurate mapping of competences and current training needs. This paper discusses the initial stage for developing the first digital mental health competence framework for applied psychology in the UK. It reports on the digital training currently provided nationally and barriers/facilitators to acquiring these competencies.

**Methods:** Eighteen of the thirty UK Clinical Psychology Doctoral training programmes completed a 16-item survey. This mapped current digital health teaching and skills acquisition for trainee Clinical Psychologists throughout their 3-year pre-registration training. Furthermore, potential barriers and facilitators to developing these digital skills for both trainee and qualified Clinical Psychologists were investigated.

**Results:** The quantitative analysis highlighted the majority of respondents viewed developing digital mental health competencies with importance, but were not integrating this into teaching or clinical placements activity. The qualitative, inductive content analysis revealed seven key themes influencing the development of digital mental health skills, with the majority of respondents identifying with two themes; the need for practice guidelines (50% of respondents) and opportunities for digital mental health experience.

**Conclusions:** The findings suggest the need for a greater focus on developing the digital health knowledge, skills, and confidence across trainee and qualified Clinical Psychologists. Strategic analysis indicated the need to develop a framework for digital mental health competences across the curriculum and placement experience. Easily accessible learning packages may support the implementation of training nationally.

## Keywords

Digital Health, Clinical Psychology, competences, training

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## Introduction

Given the high prevalence of mental health difficulties and current levels of unmet clinical need it is vital that psychological services can respond effectively and harness technological advances in supporting wellbeing.<sup>1</sup> The rapid expansion of online practice has been critical

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in the continuation of psychological clinical provision during the COVID-19 pandemic. Beyond the current crises digital interventions have the potential to improve access to services for those in harder-to-reach communities, such as those with disabilities or caring responsibilities. Internationally, policy documents, guidelines and digital exemplar programmes have emerged exploring how technology could shape the context of mental health treatment.<sup>2,3</sup> Across the UK, the National Health Service (NHS) is set to implement evidence-based digital therapy packages for use in primary care mental health services. The long term success of these digital interventions requires considerable workforce development to ensure digital practice is ethical, safe and effective.

Current digital mental health (DMH) therapeutic interventions take many forms, including skype therapy, online psychoeducational programmes, therapist prompts or asynchronous messaging online or virtual reality interventions. Mental health mobile applications (apps) offer more client-directed interventions, providing information and support, alongside active and passive monitoring of symptoms, such as physiological symptoms of distress.<sup>4,5</sup> The degree of therapist support varies for different types of digital intervention depending on their format and whether they are supplementary to face-to-face therapy or stand-alone interventions.

The evidence base for the effectiveness of these DMH interventions is growing, with a meta-analysis of randomized controlled trials (RCTs) showing self-guided computerized cognitive behavioural therapy (CCBT) to be significantly more effective in reducing anxiety and depression symptoms when compared to usual care, waiting list or attention controls in community self-referred clients.<sup>6</sup> In primary care clinical samples these results were supported, with a systematic review of digital interventions for depression and anxiety including over 4000 patients finding small positive, statistically significant effects of digital interventions compared to control groups, and, promisingly, this was maintained at follow-up.<sup>7</sup>

These findings are not conclusive. Many studies focus on guided rather than unguided digital interventions, and although they often demonstrated strong methodological rigour, intervention effects varied considerably between studies, with a high proportion showing non-significant positive effects. Furthermore, consistency in control group comparisons and adherence to treatment was varied. The maintenance of treatment gains over time is also uncertain, with some reviews showing comparable deterioration rates between self-guided CCBT, guided interventions and face-to-face treatments.<sup>8</sup>

Hollis et al.'s comprehensive review emphasised the important role of therapist support in contributing to digital treatment engagement and effectiveness.<sup>9</sup> They found larger treatment effects for guided digital interventions as opposed to those that are unguided. It is possible there is a 'dose-response' relationship between the level of support received and the beneficial effects of the digital intervention.

Considering app interventions specifically, van Ameringen et al. reviewed mental health app efficacy and found that generally, treatment effects of apps are much smaller than for other types of digital intervention.<sup>10</sup>

There is some concern that the rate of development of digital interventions has recently outstripped their research validation, particularly in relation to apps.<sup>4,10</sup> Achieving a balance between scientific rigour and rapid technological advancement can be problematic, particularly as those with expertise in producing and commercialising engaging apps and online resources may lack knowledge about developing a clinically effective programme.<sup>4,11</sup> Consequently, there has been call for a greater collaboration between developers, health professionals and end-users in the development process to share expertise, experience and information.<sup>4,10</sup>

### *Digital interventions in clinical practice*

Based on this evidence, there is hope that digital interventions could increase uptake and accessibility of psychological therapy, allow for greater flexibility and empowerment for mental health service users through choice of how and when care can be accessed, whilst also improving the cost-effectiveness of therapy.<sup>4,9</sup>

Implementation of digital interventions is not a simple process. The recent Topol report in the UK emphasised the need to develop the current workforce in digital skills in order to ensure successful digital delivery.<sup>3</sup>

Perceived barriers to integration of digital interventions within health services include clinicians' skills, knowledge, confidence and fears about a technological divide influencing accessibility of services. In addition, data-protection considerations and obstructive IT infrastructure have all been found to limit implementation.<sup>9,12</sup>

Therapists' attitudes to implementation and subsequent effectiveness of digital interventions has been suggested as a further possible barrier, with Donovan and colleagues concluding that of 124 Australian mental health workers who completed an online survey, the majority perceived face-to-face therapy to be superior to CCBT, particularly for more complex presentations.<sup>13</sup> More recently, Meisel, Drury and

Perera-Delcourt investigated therapists' attitudes to CCBT with a small sample of 33 therapists in a UK inner city primary care service.<sup>14</sup> Though almost all clinicians felt informed about CCBT (97%) and the majority felt confident to offer it (62%), only 10% considered there to be a strong evidence base for CCBT. Again, CCBT was seen to be more effective for mild to moderate mental health difficulties, and inferior to face-to-face treatments. Particular concerns are noted in these professional surveys about service user expectations of therapy and the potential lack of a therapeutic alliance. These attitudes require further attention if digital implementation is to be successful.

### *Developing clinical competencies in digital mental health practice*

In the UK, the NHS Health & Care Digital Capabilities Framework outlines a range of professional competencies for safe and effective digital practice.<sup>15</sup> In addition, professional bodies have started to attend to the workforce development required for successful implementation of DMH interventions. General guidelines for digital practice and online working highlight the necessity for taking into account clinicians' technological competence and their practice in relation to security and confidentiality.<sup>16,17</sup>

Whilst these are useful, more exact definition of the clinical competencies involved in DMH practice are required. Some UK profession-specific competence frameworks have been developed, perhaps the most detailed being the British Association for Counselling and Psychotherapy (BACP) Telephone and E-Counselling competencies framework.<sup>18</sup> This offers a comprehensive set of guidelines for training in telephone and e-counselling to promote safe and effective practice.

There are currently no registration requirements or standardised guidelines for DMH competencies across applied psychology. Few supportive materials exist informing applied psychologists of how such skills could be integrated and encouraged in clinical practice. This absence, in combination with the expanding evidence-base for digital interventions and clinicians' concerns around broadly implementing digital interventions, suggests the necessity of exploring current workforce and training needs in relation to DMH practice within applied psychology. As clinical psychologists are the largest body of applied psychologists in the UK, the present research consists of a survey completed by UK Clinical Psychology Doctoral programmes to gain insight into perceived challenges, opportunities and ideals around digital interventions in mental health, with the ultimate aim of informing

a framework of digital competencies for applied psychologists.

Consequently, the aims of the current evaluation are:

1. What DMH competencies do UK registered clinical psychologists need?
2. What pre-registration academic and practice based training do they currently receive in relation to DMH?
3. What are the opportunities and barriers in developing DMH competencies for UK Clinical Psychologists?

## **Method**

### *Design and materials*

The study used a cross sectional, mixed methods design. The 16-item Digital Mental Health Survey (2018) was designed specifically for the study to gather information on the following key areas; integrating DMH into teaching, opportunities available for pre-registration Clinical Psychologists to practice skills on placement and potential barriers and solutions to implementing technology use in mental health treatment for trainee and qualified Clinical Psychologists. There were seven questions eliciting quantitative responses, four qualitative and five mixed. This survey was adapted from a previous questionnaire designed for purpose by HP (2016). The current authors (HP, EG & CHB) adapted and piloted the questionnaire for use in this evaluation in consultation with a Digital Interventions Expert Reference Group.

This study was granted ethical approval from the Psychology Ethics Committee at Royal Holloway, University of London, and the University of Bath.

### *Respondents*

The survey was distributed to each of the 30 UK-wide Doctoral programmes in Clinical Psychology. The survey was completed anonymously by a member of Clinical Psychology staff from each department. There was a 60% response rate, with 18 out of 30 Clinical Psychology Doctoral programmes responding. Respondents completed the survey using Qualtrics between August and October 2018.

### *Analysis*

Quantitative analysis used descriptive statistics due to the small data set.

Qualitative and questions eliciting mixed qualitative and quantitative responses were analysed using inductive content analysis, in which categories are derived

from the data and collated into systematically similar themes through an iterative process.<sup>19</sup> To ensure inter-coder reliability, one researcher was responsible for the analysis process, and then a second researcher checked the analysis and coding. Any differing opinions with regards to categorising and coding were then discussed and divergent opinions were resolved and integrated into the finalised version of the code.<sup>20</sup>

## Results

### Quantitative results

There was a 60% response rate; 18 of 30 programmes across the UK responded to the survey though not all completed each question. DMH training for the future practice of psychologists was considered to be very important by nine respondents (64.29%), or slightly important by four respondents (28.57%). There were no negative responses for this question and only one programme was undecided on the topic.

The perceived importance of training in this area was not matched by curriculum content. Of the 14 programmes detailing how they address DMH, the majority of respondents, nine in total, did not offer any academic teaching, nor had they planned any teaching for the near future (64.29%). In comparison, only three were currently teaching DMH (21.43%), and two were planning to do so (14.29%).

Similarly, placement opportunities for the development of DMH skills were low. Programmes could list all of the placement opportunities trainees had available to them. The majority had the opportunity to use mental health apps, with nine respondents asserting this (81.82%), with three programmes offering experience in delivering web-based guided self-help e.g. Big White Wall (33.33%), three giving the opportunity for conducting therapy via videoconferencing (30.00%), three via instant chat messaging (30.00%), and four using email-assisted therapy (36.36%). However, nine of the training programmes did not offer experience of virtual reality augmented therapy on placement (90.00%). These experiences were matched in the limited curricula offered, with more attention paid to offering apps to clients than virtual reality.

It is interesting to note that although programmes suggested opportunities available on placements for their trainees, more than three quarters of the training programmes were unsure what is taught to trainees on placements, with a total of ten suggesting they did not know (76.92%), indicating a lack of monitoring in relation to DMH skill development.

Programmes did have a clear idea about what might be essential elements of a digital curriculum/placement. The top three areas of digital mental health knowledge

viewed as essential were the evidence base for digital practice (92.31%), highlighted as necessary by 12 respondents, whilst 12 suggested ethical practice (92.31%) and 11 therapeutic alliance as imperative (84.62%). Clinical competencies which were considered essential in relation to digital practice were communication skills, deemed essential by 11 programmes (84.62%), with 12 emphasising managing risk (92.31%) and 12 focussing on confidentiality (92.31%), alongside 11 contending knowing what technology is suitable for different clients as crucial (84.62%) and 11 highlighting managing the therapeutic relationship (84.62%).

### Qualitative analysis

Seven themes emerged from the inductive content analysis of Clinical Psychology trainers' views about DMH competencies; the need for guidelines, opportunities for DMH experience, improving IT infrastructure, governance and support, fearful attitudes of supervisors, trainees or clients, increasing staff expertise, addressing curricula limitations, and finally the potential for collaborative learning. See Table 2 (Appendix) presenting the findings discussed below.

**The need for guidelines.** The need for guidelines for encouraging development of DMH competencies for trainee clinical psychologists was the most consistent theme, with nine out of 18 trainers raising this. A number requested teaching manuals, while others stated the need for a competence framework to shape curricula. For example, one respondent suggested: *'a consensus-based and well informed digital competence framework would be a great start'*. Another stated: *'Given our almost total lack of provision in this field and lack of skills and knowledge to develop and implement digital competencies, some sort of "starter pack" for training programmes would be highly desirable'*.

**Opportunities for DMH experience.** The second important theme was the need to integrate DMH practice across teaching and placements experience. Ten respondents drew on lack of experience as a barrier to developing digital competencies, highlighting the limited opportunity for taught skills to be connected to and built on through placements. For example, one highlighted: *'There might be lack of opportunity for trainees to be involved in the delivery of digital based interventions on current placements.'*

The idea that linking teaching to direct experience could help to capitalise on DMH skills was drawn on by one respondent who suggested: *'communicating to placements what DMH teaching is happening (and also*

asking what tools they are using) so that where possible teaching links to placement experience.'

Meanwhile, two respondents mentioned that the opportunity for practising digital skills and 'giving it a go' had been helpful in nurturing the development of digital competencies, with this allowing for a chance to 'see the possibilities and dispels myths and fears'. Two trainers referred to being able to draw on their own experience of utilising digital tools in therapy as beneficial in enhancing their teaching, for example, one described the usefulness of 'being able to ground my teaching in first-hand experience of using digital tools to deliver therapy'.

#### *Improving IT infrastructure, governance and support.*

Improvements in IT emerged as a prominent code, with respondents touching upon this as being pivotal to the success of developing digital competencies and promoting DMH. Several respondents drew attention to concerns about IT infrastructure being a hindrance, for example referring to 'obstructive NHS IT governance', whilst also highlighting a potential lack of IT infrastructure and support throughout the process of DMH implementation.

Two respondents drew on IT support as a factor that has helped with digital practices thus far. For example, one trainer highlighted: 'Co-production and good working relations with IT experts makes a substantial difference to developing digital solutions', whilst another emphasised the importance of 'good, responsive IT support'.

*Fearful attitudes of supervisors, trainees or clients.* Six respondents commented on negative attitudes towards DMH as a barrier to developing digital competencies. Several mentioned a possible 'reluctance' to engage with technologies by clinicians, noting 'negative trainee and supervisor attitudes and fears' and apprehensiveness around client preferences not to engage in digital therapy. Only one respondent highlighted that trainee interest and enthusiasm for digital interventions had been a helpful factor to developing digital competencies.

*Increasing staff expertise.* Trainers' low levels of expertise in DMH was proposed as a barrier to developing trainees' digital competencies. Several respondents raised concerns about a lack of 'relevant knowledge' and 'digital competence in supervisors and trainers', along with a 'lack of money or opportunity for training' in DMH. Similarly, a number of answers outlined that increased expertise, 'time to develop' and 'awareness raising/support for supervisors as part of supervisor training workshops' around DMH in the Doctoral programme would

be beneficial for moving forward with digital competency training.

*Addressing curricula limitations.* Significant concerns were raised by six respondents about the tightly-packed curricula, with minimal flexibility within the timetable limiting the potential for teaching and skills development in DMH. For example, one respondent explained that: 'Space in the curriculum is already heavily utilised learning non-digital but highly relevant skills and competencies'. This was echoed by five other respondents, for example another trainer emphasised the 'demands of fitting separate teaching in to an already packed curriculum'.

*Potential for collaborative learning.* The final theme that emerged through analysis was collaborative learning being important in integrating digital competencies in Doctoral programmes. This included a call for colleagues 'sharing knowledge of policy and evidence base developments. Sharing good practice around sessions to be run.' Sharing knowledge in an inter-disciplinary way was seen as helpful, for example synergising health and social care disciplines.

#### *SWOT analysis*

Based on the results of the analysis above, a strengths, weaknesses, opportunities and threats (SWOT) analysis was completed. SWOT analysis has been described as 'a tool developed for strategic analysis' (p. 34).<sup>21</sup> Here the brief SWOT analysis utilises the quantitative and qualitative findings to offer strategic direction for improvement in DMH skills across applied psychological professions. The SWOT analysis is presented in Table 1.

#### *Discussion*

The current study employed an online survey to explore the academic and practice-based support trainee Clinical Psychologists receive on UK Doctoral programmes. There were three aims, which will be explored in turn below.

1. What DMH competencies do trainee Clinical Psychologists need to deliver evidenced-based DMH interventions?

Programmes endorsed a range of knowledge and skills based competencies as essential for safe and effective digital practice. These focussed on ethical practice including knowledge of the range of digital modalities and their evidence base alongside an ability to assess clients' suitability to work digitally and make choices about digital care. Managing risk and maintaining a

**Table 1.** SWOT analysis integrating results to inform strategic directions.

Strengths	<ul style="list-style-type: none"> <li>• DMH training for future practice of psychologists considered very important (n = 9; 64.29%).</li> <li>• Need for guidelines to encourage development of DMH competencies for trainee clinical psychologists most consistent theme (9/18 trainers).</li> <li>• Three programmes (21.43%) provide DMH teaching, with two (14.29%) planning to.</li> <li>• Programmes had clear idea of possible essential elements of a digital curriculum/placement.</li> <li>• Two trainers found drawing on their own experience of digital tools in therapy as beneficial in enhancing their teaching</li> <li>• Opportunity to practise digital skills, 'giving it a go' noted (n = 2) as helpful in nurturing development of digital competencies.</li> <li>• Sharing knowledge in an inter-disciplinary way was seen as helpful</li> </ul>
Weaknesses	<ul style="list-style-type: none"> <li>• Majority of respondents (n = 9) did not offer any academic teaching, with no planned teaching in near future (64.29%).</li> <li>• Trainers' low levels of expertise in DMH was proposed as a barrier to developing trainees' digital competencies.</li> <li>• Ten respondents drew on lack of placement experience as a barrier to developing digital competencies.</li> <li>• Six respondents commented on negative attitudes towards DMH as a barrier to developing digital competencies.</li> <li>• Competing Curricula demands, concerns raised (n = 6) about the tightly-packed curricula, with minimal flexibility limiting potential for teaching/skills development in DMH.</li> </ul>
Opportunities	<ul style="list-style-type: none"> <li>• Findings on the perceived importance of future digital practice supporting further strategic action in DMH within the profession.</li> <li>• Findings in line with current policy impetus for digital training (e.g. Topol, 2019).</li> <li>• Potential to use findings to engage with professional body concerning training needs and standards specifically; (i) build communities of practice to engage wider stakeholders with the digital agenda, (ii) develop good practice guidelines and accredited framework for digital competences (iii) encourage opportunities for digital experience within training placements.</li> <li>• Established baseline data of current national training offered and map needs can be used with 2 aims; (i) to plan a comprehensive response to the needs identified through the baseline data e.g. elearning methods to achieve delivery of digital practice teaching (ii) monitor impact and outcomes of any interventions to improve professional skills.</li> </ul>
Threats	<ul style="list-style-type: none"> <li>• No current digital practice stakeholder network established within the profession</li> <li>• No accreditation requirement for digital competences in the applied psychology programme national standards (e.g. BPS accreditation standards for clinical psychology).</li> <li>• Wider scepticism about the utility of digital practice for service users and practitioners.</li> <li>• Negative views about the evidence base for online interventions.</li> <li>• Respondents drew attention to concerns about IT infrastructure being a hindrance to advancing digital practice and training.</li> </ul>

strong therapeutic alliance within the digital realm was also seen as critical.

## 2. What academic & practice-based support do psychologists already receive?

Programmes identified DMH as an important area for future practice but limited academic and placement opportunities were being offered currently by programmes across the UK. Attention to the use of apps was seen in academic teaching and on placement but there was little offered in specific delivery of online therapy or use of digitally augmented therapy using virtual reality. A contributory factor to this lack of teaching

and placement opportunity was that over three quarters of programmes were completing no monitoring of DMH skills. Further, there is no mention of digital skills or digital teaching within the British Psychological Accreditation Standards for programmes,<sup>22</sup> making this an 'optional extra' within an already dense training programme. Defining the digital competencies required for psychologists and getting DMH on the professional education agenda is an essential step if we are to ensure successful delivery of a digitally enhanced healthcare system.

## 3. What are the opportunities and barriers in developing DMH skills for UK Clinical Psychologists?

Six themes were identified as barriers to developing DMH competencies for pre-registration Clinical Psychology programmes. Primarily, programmes were concerned about the lack of guidelines and competence framework to shape the focus of their digital training. Further, training programme staff were concerned they had low levels of knowledge and experience regarding DMH, and were subsequently lacking confidence in delivering teaching in this area. Staff who were more informed about digital therapies found drawing on their own experience enhanced their teaching.

A third of respondents were concerned that staff, student and supervisors' fearful and negative attitudes towards DMH acted as a barrier to the development of DMH skills. These concerns echo previous research findings that face-to-face therapy is seen by mental health staff to be more effective than CCBT,<sup>13</sup> and even clinicians knowledgeable about digital therapies and largely confident in utilising them with clients perceived digital interventions as lacking an evidence base and suitability for a range of mental health problems and more severe disorders.<sup>14</sup>

Dissemination of the recent evidence base for DMH interventions, will support clinicians and clients to develop realistic expectations of DMH interventions and be beneficial for the development of digital competencies.<sup>5,6</sup> A comprehensive digital interventions framework, or set of guidelines, could address sceptical or uneasy attitudes, enhance clinician expertise and harness trainee enthusiasm for digital interventions, which one respondent highlighted as a helpful factor to developing digital competencies.

Practical considerations such as full curricula and opportunities for developing digital skills in placements were realistic barriers identified by trainers. Each clinical programme has a lot of essential knowledge and skill-development to nurture within a limited time-frame; however, updating programme materials to integrate digital therapeutic advancements is imperative. Such reorganisation might be necessary for placements as well as teaching, ensuring all students have the opportunity to practice utilising digital knowledge and skills acquired throughout the programme, which respondents emphasized as being very important to enhancing digital intervention skills. Perhaps the existence of a comprehensive framework of digital competencies required could help to structure digital course content in as efficient a manner as possible.

Finally, NHS IT infrastructure was drawn on as a barrier to supporting the use of digital interventions for mental health, with concerns raised about archaic IT systems within the NHS and limited IT support. This is in line with previous research on clinician attitudes to digital interventions.<sup>9,12</sup> The NHS Long Term Plan, discussed previously, makes recommendations for the

practicalities of implementing digital therapies for mental health.<sup>2</sup> For example, it recommends sufficient investment in digital infrastructure and availability of effective DMH programmes through out the NHS (NHS, 2019). Although progress and implementation of this is yet to be assessed, that this is being highlighted and advocated for is perhaps promising in itself. In line with this, effective IT support was proposed by respondents as essential to moving forward with encouraging digital competencies.

The themes identified in this study are consistent with the workforce challenges identified with in the Topol report, these may impede the implementation of DMH policy.<sup>3</sup> For example, the Topol report draws attention to potentially obstructive workforce attitudes, including staff feeling unprepared to engage with new digital systems, or perhaps fearful or distrustful of new technologies.<sup>3</sup>

The SWOT analysis completed suggests that a number of threats and weaknesses needed to be addressed in order to support future training in the DMH. Particularly, there is an urgent need to draw together stakeholders and develop profession specific digital competencies. These could be integrated into professional standards and programme accreditation criteria in order to raise digital mental health skills and placement experiences nationally. Further, that specific training resources, which are easily accessible (e.g. elearning), may facilitate implementation of digital mental health training across the profession, even where trainers' skills were low and curriculum demands were high. Additional work to address negative attitudes about DMH and IT infrastructure was also indicated.

### Limitations

The small sample size and potential for response bias through the selection process means that the representativeness and generalisability of the results of this study should be interpreted with caution. Given that individuals with greater expertise, experience or interest in DMH could have been more likely to respond to the survey means that the concerns about greater guidance and skills should be taken seriously, however.

### Future directions

Perhaps future research exploring clinicians' perceptions of opportunities, barriers and helpful techniques in encouraging DMH competencies could supplement the current findings. The current exploratory research provided an interesting and informative baseline to assist future mapping of workforce development in digital competences.

## Conclusions

It is clear from the national survey of Clinical Psychology programmes that psychological practitioners need more training to be able to work safely, ethically and effectively in delivering digital interventions to their clients.

There were significant barriers identified to the effective development of DMH competencies for Clinical Psychologists pre-registration. These included a lack of suitable guidance, paucity of existing knowledge and skills within the training community, negative attitudes towards digital practice and limited opportunities within the curricula and placement practice to include digital skills training. Half of all the respondents requested further clinical guidelines and a competence framework to support the development of DMH skills. Strategic directions indicated from the results were the development of a national digital competence framework which could be integrated into professional standards, alongside accessible learning packages to facilitate implementation of skills development across clinical psychology programmes and ensure safe and effective digital practice.

**Contributorship:** HP conceived and designed the study. AR, CHB, HP, and EG were involved in protocol development, gaining ethical approval, clinician recruitment and data analysis. AR and EG wrote the first draft of the manuscript. All authors reviewed and edited the manuscript and approved the final version of the manuscript.

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## Appendix

**Table 2.** Themes from inductive content analysis.

Theme	Quotation	Number of programmes
The Need for Guidelines (incorporating guidance and teaching materials)	<p>“A consensus-based and well informed digital competence framework would be a great start.”</p> <p>“Detailed guidance for trainers from those who have already tried this.”</p> <p>“Access to guidance about minimum competencies.”</p> <p>“Realistic guidelines on what programmes should deliver in terms of teaching and practice in this area.”</p> <p>“List of practical ideas to implement it - sharing good practice.”</p> <p>“Training manuals.”</p> <p>“Teaching resources.”</p> <p>“Teaching materials – rather than reinventing the wheel.”</p> <p>“Given our almost total lack of provision in this field and lack of skills and knowledge to develop and implement digital competencies, some sort of ‘starter pack’ for training programmes would be highly desirable.”</p>	9
Improving IT Infrastructure, Governance and Support (incorporating IT infrastructure and governance and IT support)	<p>“NHS IT infrastructure.”</p> <p>“Obstructive NHS IT governance.”</p> <p>“Lack of IT infrastructure and support.”</p> <p>“NHS infrastructure - IT is in the stone age in NHS [...] Concerns about GDPR and necessary Trust approvals for digital working.”</p> <p>“Co-production and good working relations with IT experts makes a substantial difference to developing digital solutions.”</p> <p>“Good, responsive IT support.”</p>	9

(continued)

Table 2. Continued

Theme	Quotation	Number of programmes
	<p>“Getting NHS Trusts IT governance departments to allow us to utilize email therapy, therapy by videoconferencing or instant chat.”</p> <p>“IT support.”</p> <p>“IT platforms agreed by the University for use in teaching.”</p>	
Fearful Attitudes of Supervisors, Trainees or Clients	<p>“Reluctance to engage with technology on the part of many clinicians.”</p> <p>“Negative attitudes amongst most supervisors.”</p> <p>“Reluctance of supervisors.”</p> <p>“Client preference.”</p> <p>“Negative trainee and supervisor attitudes and fears.”</p> <p>“Lack of [...]supporting clinicians wishing to work in this way.”</p> <p>“Trainees are interested in digital technology, and in my experience enthusiastic about applications to clinical practice.”</p>	7
Increasing Staff Expertise	<p>“Lack of digital competence in supervisors and trainers.”</p> <p>“Having staff with the relevant knowledge to teach it.”</p> <p>“Staff expertise. Supervisor confidence/efficacy.”</p> <p>“Lack of money or opportunity for training.”</p> <p>“Staff and supervisors being informed about these technologies.”</p> <p>“Increased staff expertise and time to develop.”</p> <p>“Awareness raising/support for supervisors as part of supervisor training workshops.”</p>	7
Addressing Curricula Limitations	<p>“Space in the curriculum is already heavily utilised learning non-digital but highly relevant skills and competencies.”</p> <p>“Finding room in the timetable.”</p> <p>“Teaching timetables are extremely full and it is difficult to add new sessions.”</p> <p>“The demands of fitting separate teaching in to an already packed curriculum.”</p> <p>“No specific teaching as part of curriculum.”</p> <p>“Time to integrate into curriculum and teaching syllabus.”</p> <p>“We could encourage visiting lecturers to mention digital competencies in their teaching and specify resources.”</p>	7
Opportunities for DMH Experience (incorporating placement opportunities and experience)	<p>“Lack of opportunities on placement to try these competencies.”</p> <p>“Linking teaching to placement experience (placements vary in how well developed they are in terms of technology).”</p> <p>“Access to clinical experience is limited to those placements offering this kind of technology (which at the moment is probably not many).”</p> <p>“Lack of exposure to options on placement.”</p> <p>“I’m not sure to what extent the placements and services within which trainees work are fully up to speed in terms of digital mental health and perhaps there might be lack of opportunity for trainees to be involved in the delivery of digital based interventions on current placements.”</p> <p>“Giving it a go and not being afraid of it.”</p> <p>“Giving it a go - this helps see the possibilities and dispels myths and fears.”</p> <p>“Being able to ground my teaching in first-hand experience of using digital tools to deliver therapy. This experience I have gained in private practice.”</p>	10

(continued)

Table 2. Continued

Theme	Quotation	Number of programmes
	<p>“I went to a University workshop on Technology Enhanced Learning. I have experience of using Moodgym, Living Life to the Full and various meditation apps.”</p> <p>“I think incorporating into existing teaching would be helpful. E.g. sessions on CBT might include some practice in using CCBT tools. I think using online flexible teaching methods to allow trainees to practice using digital mental health tools and apps outside of teaching hours would also be useful.”</p> <p>“I think communicating to placements what digital mental health teaching is happening (and also asking what tools they are using) so that where possible teaching links to placement experience.”</p>	
Potential for Collaborative Learning	<p>“Sharing of good practice and lessons learned.”</p> <p>“Sharing knowledge of policy and evidence base developments. Sharing good practice around sessions to be run”</p> <p>“I think this is a good opportunity for inter-professional learning with students from other health and social care disciplines”</p>	3