Evaluation and uptake of an online ADHD psychoeducation training for primary care health professionals: a four-year implementation report

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Abstract

Background: Healthcare professionals seldom receive training on neurodevelopmental conditions such as ADHD. An online training was co-developed to address some of the gaps in knowledge and understanding in primary care. A randomised control trial demonstrated that the training increased knowledge and confidence and improved practice.

Objective: This report highlights the implementation of the training in practice and follow-up 4 years post-evaluation.

Methods: The online ADHD training comprises two modules: "Understanding ADHD" and "The Role of the GP in the Care Pathway," each taking approximately 45 minutes to complete. The training targets general practitioners primarily but is open to other healthcare professionals and parents. Feedback was collected through a survey at the end of the training, and the training has been widely adopted by various organisations internationally and nationally.

Results: Between December 2019 and January 2024, the "Understanding ADHD" module was accessed over 13,486 times, while the "Role of the GP" module was accessed 7,018 times, primarily by users from the US and UK. Survey results from both modules showed positive feedback with high ratings for usefulness, likelihood to inform practice, and recommendation to colleagues. Some suggestions for improvement included reducing the negative focus on ADHD consequences and incorporating more positive aspects of ADHD.

Conclusions: This ADHD online training program, despite facing implementation challenges, has seen positive outcomes, including international translation and high user ratings. Suggestions for improvement were received, but some were not feasible due to regional variations in ADHD pathways. The training's impact extended beyond GPs to other healthcare professionals, though the COVID-19 pandemic posed obstacles to dissemination efforts. Nonetheless, ongoing plans aim to expand the training's implementation globally.

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Introduction

Healthcare professionals, including general practitioners (GPs), receive little or no training on attention deficit hyperactivity disorder (ADHD). This significantly impacts access to care for many children and adults as GPs are the main gatekeepers for specialist services [1,2]. To fill this gap in ADHD training, an online training was co-produced with GPs to improve GPs' knowledge about ADHD.[3]. The stepwise, co-production approach towards developing this online ADHD training for GPs included: a preparatory workshop highlighting the relevant topics to be included in the

intervention, from which educational videos were then developed, as well as content and format for the training. Two workshops were then conducted with GPs, leading to further refinement of the video content and subsequently the final intervention. A pilot usability study (n = 10 GPs) was conducted to assess the intervention's acceptability, feasibility, and accessibility. The online training included interactive psychoeducation elements reinforced with activities and videos lasting a total of 45 minutes. The content included enough information for GPs to identify ADHD and understand this condition better. The resulting intervention was then evaluated through a randomised control trial (RCT) [4] in GP practices based in England where 221 GPs took part. The evaluation of this training demonstrated that GPs' knowledge and confidence significantly improved, misconceptions decreased, and attitudes and reported practice changed [4]. The unique aspect of this training lies in the strong coproduction element with GPs being involved throughout the development and review process and within the evaluation through an RCT, which is rarely done for education packages. The co-production element, reviews and evaluation aspect of the original project took over two years from January 2018 to March 2020. To our knowledge, no other online training package has been developed and evaluated for ADHD in primary care in the UK.

The original evaluation of this training terminated in March 2020. Since then, we have spent time implementing the training in GP practices, in alignment with the British National Institute for Healthcare Research (NIHR) priority settings in digital support for primary care [5].

This publication describes the impact, engagement and implementation of the original ADHD training program, four years beyond completion of data collection.

Methods

Aims and objectives

This project aimed to implement and evaluate the ADHD online training into practice, beyond the scope of the original project. The implementation and impact of the training are measured through website access analytics and responses to survey questions.

Blueprint summary and technical design

The online ADHD training is a psychoeducation program consisting of two modules, one on "Understanding ADHD" and one on "the role of the GP in the care pathway". The training takes approximately 45 minutes to complete and can be accessed [6] (example of an intervention page in Figure 1)

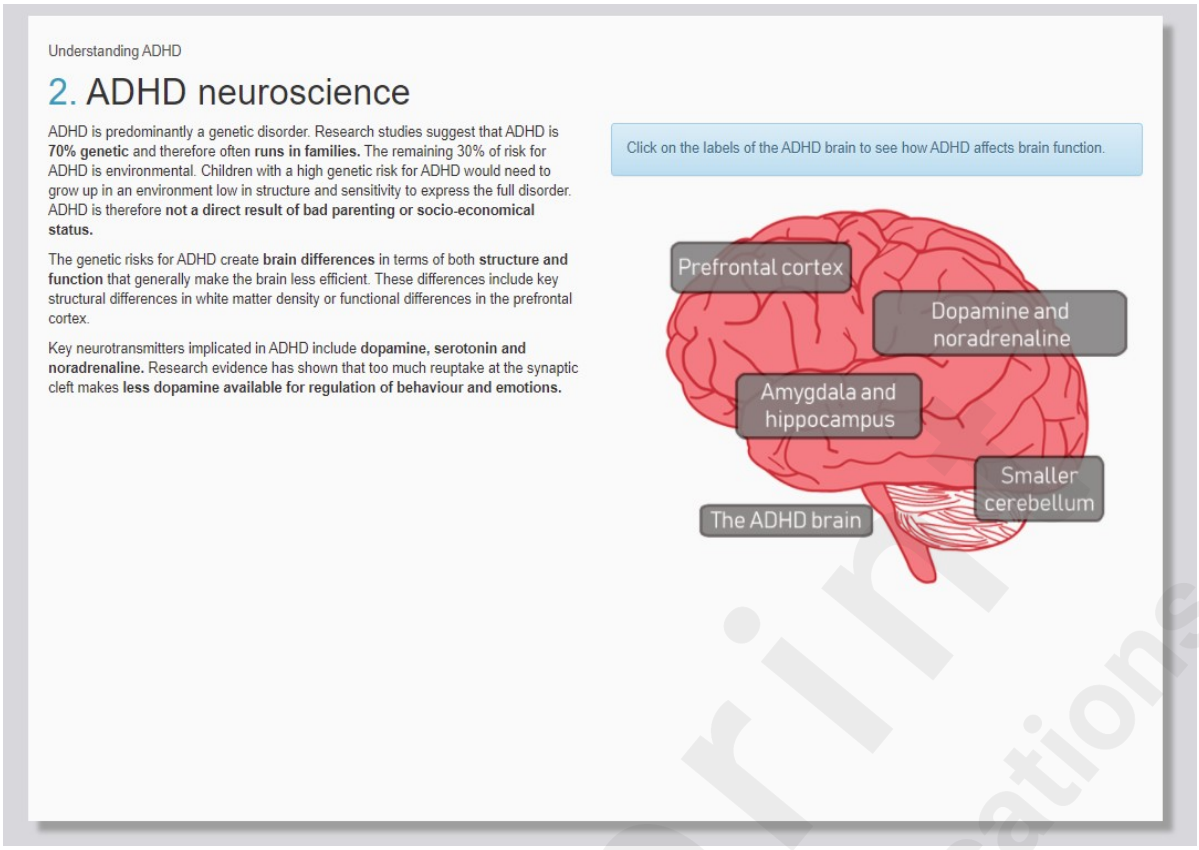

Figure 1a – Example of “Understanding ADHD” training resource

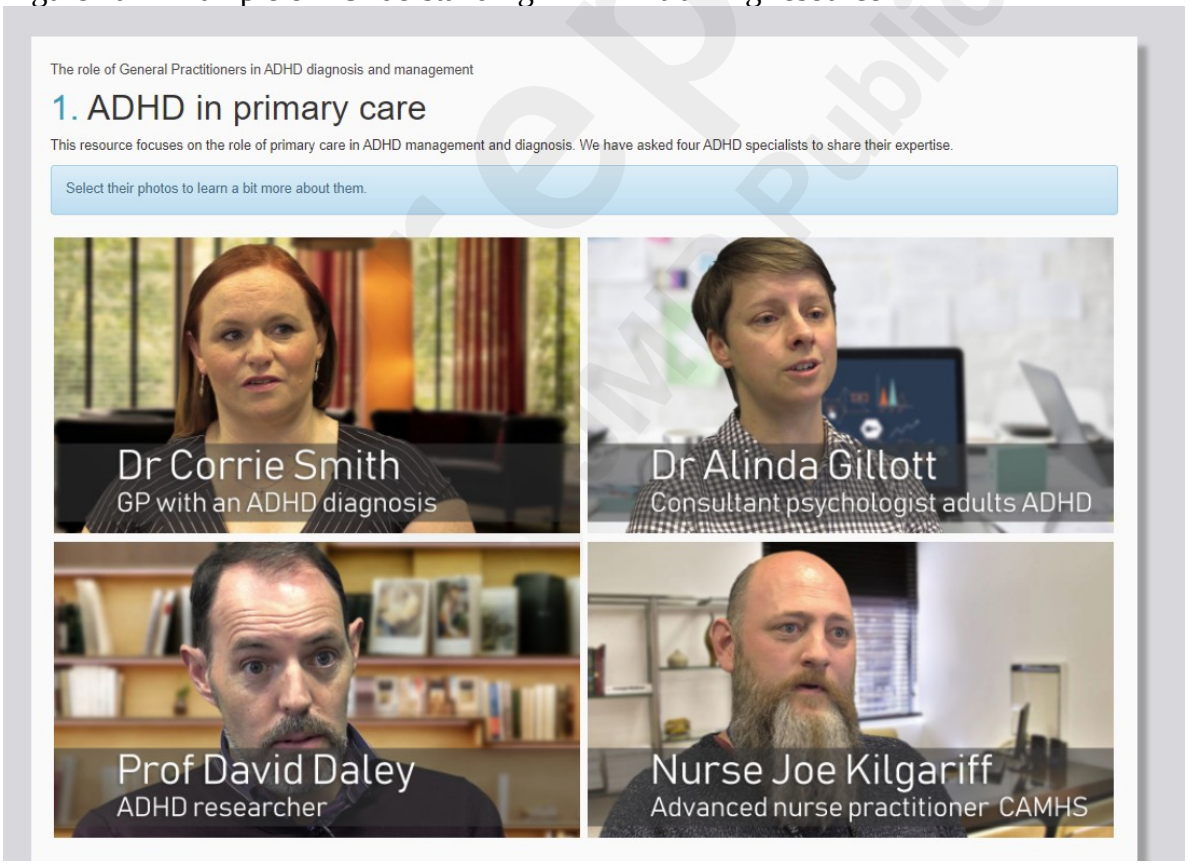

Figure 1b – Example of a page in the “role of the GP” resource

The training is hosted on a secure platform within the University of Nottingham Health E-learning and Media team (HELM). It has been developed to be easily accessible on a computer or a phone. More details on the original project can be found online [7].

The survey was developed to gain feedback from the training and asked three demographic questions: age, occupation and gender as well as four evaluation questions:

- How useful did you find the information in this program?
- How likely is this information going to inform your practice?
- Would you recommend this training to your colleagues?
- Any other comments on the intervention

Target

The training is aimed principally at general practitioners or other medical doctors. However, while the second module of the training focuses on primary care, the first module on understanding ADHD can be useful for anyone including other healthcare professionals, education professionals, parents etc. The RCT had specific inclusion criteria but for this aspect of implementation, no restrictions were implemented. The online training is freely available and hosted on a university server that is widely secure and accessible, including from healthcare servers (for example: System 1). This was essential as a lot of healthcare servers can block external links. Participants were asked to select a score on a scale of 1-10 (1: not at all and 10: extremely) to represent how much they agreed with the evaluation questions.

Data

Ethics approval for the RCT and the ongoing evaluation was received from the University of Nottingham, Faculty of Medicine Research Ethics Committee (reference: 19/HRA/1028) and from the Nottinghamshire Healthcare National Health Service (NHS) Foundation Trust Research and Development department (project ID 257567). Participants in the survey gave consent for their responses to be used. The data and analytics generated from the survey are stored online within the HELM platform and only accessible by the HELM team. The feedback questionnaire was voluntary for anyone taking part in the survey and was anonymous.

Participating entities and dissemination

Many partner organisations have adopted, distributed and implemented the training over the last four years. These include the Royal College of General Practice (RCGP), ADHD Europe, the Association for Child and Adolescent Mental Health (ACAMH), the Academic Health Science Network (AHSN), local GP training hubs, European ADHD research networks (EUNETHYDIS), the University of Montpellier, The University of Dublin and the ADHD collective.

Presentations about the training have been given to groups locally, and nationally by the lead researcher (e.g. RCGP) and internationally (e.g. ADHD Europe). The training has been accredited by the RCGP, the leading professional organisation for GP training and accreditation in the UK, as part of its Continuing Professional Development (CPD) program. Internationally, the training has been translated into three languages (German, French and Spanish) and ongoing collaboration with leading European ADHD research networks (EUNETHYDIS) has started to develop evaluation and implementation of the translated versions.

The training development and initial RCT evaluation were funded by the Economic and Social Research Council (ESRC) through a doctorate training program. The training also received a non-profit grant from Takeda (a pharmaceutical company) to support the online development and trial.

Sustainability and budget

The original project funds from Takeda allowed for the intervention to be developed and hosted on the free accessible HELM platform. A booster grant from the same funders also allowed for the translations into other languages to be completed but aside from these, no other budget was available

for the long-term implementation of the training. As a university employee, the lead researcher has driven the implementation in her own time by giving workshops, training and presentations to specific groups over the last few years.

Results

Coverage

Between December 2019 and January 2024, the “Understanding ADHD” module was accessed over 13,486 times with 11% of users returning visitors. Most users were from the US and UK (33% and 57% respectively). The “role of the GP module” was accessed 7,018 times with 10.2% of returning visitors and most users were from the US and UK (20% and 76% respectively). The training was also accessed by users based in another 120 countries (Figure 2)

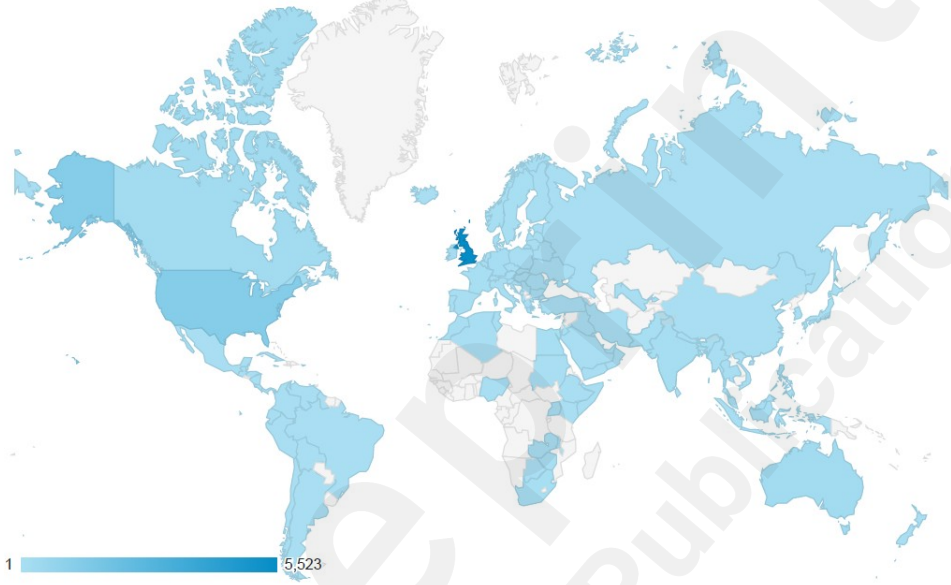

Figure 2- countries that have accessed the ADHD training from 2019-2024

Outcomes – survey results

Role of the GP module

A total of 308 participants responded to this module feedback questionnaire (Male = 64, Female = 241, Unknown = 3), with a mean age of 39.9 years (range 18-67 years).
On average (mean), participant rating was 8.12 (SD = 2.16) for usefulness, and 7.98 (SD = 2.14) on how likely this information is going to inform your practice, demonstrating that overall participants responded positively, finding the programme to be useful for their knowledge and improving their practice. Additionally, 97.3% would recommend the training resource to their colleagues.
Table 1 shows the age, gender and answers, separated by the participant’s professional group. The ratings appear to be quite similar between each occupation group. The GP group gave the lowest rating for usefulness, likelihood to inform practice and likelihood to recommend to colleagues, whereas mental health professionals the highest.
Table 1 -Demographic data and average evaluation questionnaire responses for the Role of the GP module, separated by occupation category.

Occupation	GP (n=66)	Other Healthcare Professionals (n=128)	Mental Health Professionals (n=30)	Healthcare Students (n=30)	Other occupations*** (n=54)
Gender					
Male (N=)	19	30	6	4	5
Female (N=)	46	98	24	26	47
nknown Gender (N=)	1	0	0	0	2
Mean (SD) age*	45.40 (9.59)	39.00 (10.27)	39.40 (11.15)	31.50 (12.35)	39.67 (12.42)
Usefulness rating** Mean (SD)	7.92 (2.16)	8.02 (2.02)	8.67 (1.60)	8.40 (2.04)	8.15 (2.30)
Likelihood that ormation would inform practice** Mean (SD)	7.74 (2.18)	7.93 (2.09)	8.53 (1.67)	8.50 (2.01)	7.78 (2.39)
% Respondents that ould recommend the ining resource to their colleagues	93.80%	98.40%	100.00%	96.60%	98.08%

*Data taken only from those who responded, 4 overall did not respond to age
** On a scale of 1-10, 1 being not at all, and 10 being extremely
***Other occupations include non-healthcare students, a local government manager, a homemaker and a teaching assistant.

Positive feedback

The free text response box yielded 75 responses about the resource, 61 of which were positive (81%). Many comments said that the resource was 'very interesting, 'informative' and 'useful'. There was also praise for how clear and well-presented the information was, which made it easy to follow and understand. Some respondents also commented that it was particularly insightful having a video from the point of view of a GP discussing their difficulties in getting a diagnosis, adding a unique and important perspective. These positive comments came from participants with a range of backgrounds demonstrating the benefits of this resource for GPs as well as other professions.

"Clear and well presented. So many people complicate ADHD and so it becomes difficult to learn - this was a perfect way to introduce it - and the GP with ADHD was a fantastic resource" - GP

"Very detailed, lots of information and suitable diagrams and videos of experiences also helped" – Student Mental Health Nurse

"This is a really good teaching resource. I will be recommending that all new nursing staff also have access to this." - Clinical Specialist ADHD Nurse

Suggestions for improvement

A few of the free text responses gave some suggestions for other things to include in this module. A couple of participants asked for more information about the assessment process, and specific information about the role of the GP in shared care, with the roles of nurses and support workers. There was a suggestion from a few GPs to include free resource signposting for them to give to

patients and parents to help with management.

> *"It could do with more detail and clinical scenarios. Also important is the association and differential diagnosis of other co-morbidities, addiction/personality disorders/anxiety depression. That may indeed be beyond the scope of this website." – GP*

As these participants acknowledged themselves, this module focused on the role of the GP in ADHD, so did not aim to include co-morbid diagnoses.
Another participant gave a specific suggestion for the 'What is ADHD' section to include clearer differentiation about the presentation in girls/boys or women/men and more detail of how ADHD impacts mental health when it is not diagnosed or well-treated.
A care assistant expressed their frustration about the care system in their part of the UK in referring to CAMHs or Adult mental health services for ADHD, commenting that "Your information makes going to the doctors and getting a diagnosis seem easy".
Finally, a couple of other respondents stated that this resource did not add anything new to their knowledge and would not change their practice as a GP, although this may not be reflective of the quality of the resource, but of this participant's existing knowledge being sufficient or extensive.

Understanding ADHD module:

As with the "Role of the GP" module, an identical questionnaire was given to participants after completion of the "Understanding ADHD" module. A total of 648 participants responded, (Male = 134, Female = 496, Unknown = 18), with a mean age of 40.4 years (range 16-81 years).
On average, participants rated the information in the resource 8.47 (SD = 1.93) for usefulness, and 8.26 (SD = 2.11) for how likely this information was going to inform their practice. 96.8% would recommend the training resource to their colleagues (611 = yes, 20 = no). Table 2 represents the demographics and responses given separated into different occupations.

Table 2- Demographic data and average evaluation questionnaire responses for the Understanding ADHD module, separated by occupation category.

Occupation	GP (n=66)	Other Healthcare Professionals (n=285)	Mental Health Professionals (n=91)	Healthcare Students (n=47)	Other occupations*** (n=159)
Gender					
Male (N=)	22	74	13	4	21
Female (N=)	43	209	76	41	127
Unknown Gender (N=)	1	2	2	2	11
Mean (SD) age*	44.97 (11.74)	40.89 (11.30)	40.01 (11.56)	31.85 (9.20)	40.57 (12.83)
Usefulness rating** Mean (SD)	8.36 (1.89)	8.61 (1.83)	8.69 (1.62)	8.39 (1.92)	8.13 (2.20)
Likelihood that information would inform practice** Mean (SD)	8.30 (1.83)	8.49 (1.95)	8.64 (1.66)	8.40 (2.05)	7.56 (2.55)
% Respondents that would recommend the training resource to their colleagues	96.97%	96.74%	100.00%	97.87%	94.74%

*Data taken only from those who responded, 13 overall did not respond to age
** On a scale of 1-10, 1 being not at all, and 10 being extremely
***Other occupations include non-healthcare students, Homemakers, Project Managers, Teachers and Teaching Assistants.

Positive feedback

The free text response box yielded 117 responses about the resource, 104 (89%) of which were positive. Participants felt that the resource was comprehensive and clear, and appreciated the range of mediums used, including sound bites, videos, text and interactive quizzes. Multiple comments acknowledged the benefit of including personal lived experiences to help solidify the information included.

Many commented that the resource will be valuable to them in their practice as a GP or healthcare professional, e.g. “I am better informed and ready to be more useful to my patients”, and others said it was helpful to them on a more personal level (e.g. understanding their children or colleagues with ADHD).

“This intervention is amazing and the value availed of by the public, ADHDers, teachers and medical professionals cannot be underestimated in fact I would say it is immeasurable!” – Homemaker

“Fantastic resource. Thank you so much. The simple and accessible explanations are brilliant.” – Researcher

“Easy to read, absorb and navigate. Highly informative educational resource, one of the best I have come across as an individual who suffers from ADHD, thank you!” – Carer

Suggestions for improvement

The most common critical feedback was that the module had too much of a negative focus on the

consequences and risks associated with ADHD. Participants expressed that there are positives associated with ADHD that could be mentioned and that people with ADHD can still be successful, employed, and intelligent. Some highlighted concern that the slides on the problems with ADHD "played into the stigma that often stops people from being accepted for an assessment in the NHS".

> *"It would also be good to emphasise the potential strengths in individuals with ADHD for example creativity and the benefits of hyper-focus" – Clinical psychologist.*

Another issue was the lack of representation in the videos for non-white individuals, and therefore more diversity in ethnicity was requested. A few comments suggested the need for an explicit reference to the differential presentation and diagnosis rates between males and females.

Lessons learned

Many lessons were learned from the feedback as well as from the dissemination process.
The feedback highlighted some limitations about how the training had been framed, the lack of representation and gender differences. The co-production aspect of this training aimed to maximise the accessibility and usability of the training by GPs. Service users also reviewed the training before its dissemination, but their input was not as significant as that from GPs. Some of these issues might have been avoided by more thorough service-user involvement. Striking the balance between the different stakeholders was complex as, in this instance, their input at times was not compatible.
The dissemination and implantation of the training in practice within the UK was also very complex. In the UK, there is no single training organisation that can adopt training and trickle down to all GPs in a top-down manner. Each area of the UK has separate training programs that are decided at a regional level and linking with all different regions is difficult. Therefore, the implementation had to be conducted in a bottom-up manner which is time-consuming and has limited reach.

Discussion

Overall, the implementation of this funding has been very positive, particularly in the light of no secured economic or staff resources to support this. The programme has been translated internationally, reaching over 120 countries and has been translated into three different languages. The feedback has been predominately positive, and the intervention has received consistent high ratings regarding its acceptability and usefulness.
However, as discussed in "Lesson Learned", the implementation process has not been without challenges, the UK system for training healthcare professionals is not easy to navigate. Outreach events have been useful in engaging stakeholders and generating uptake in the training, however, this led to pockets of healthcare professionals being trained but did not extend wider than the reach for the event. Part of the implementation period was during the COVID-19 pandemic when primary care was predominantly focused on physical care, and when neurodevelopmental services were curtailed or closed. The aim was to be pragmatic so that we could evaluate the implementation in routine primary care settings, for this reason, the evaluation questions were simple, and free text comments were only provided by a minority of users.
Some suggestions for improvement have been raised, which will be considered in alterations to the training, but it is important to note that these were from a minority of users (30/9,000). Additionally, some of the suggestions were not possible to implement for example in local pathways and national practices. The local pathways for ADHD vary widely between regions and countries. They also often change regularly and information quickly becomes outdated [8–10]. Therefore, while the information on pathways would be very beneficial, it is impossible to capture all regional and national variations.

While the training was primarily aimed at GPs, it was always clear that it would benefit many other healthcare professions working alongside primary care. By gaining a better understanding of the GP's role, other's roles will also become clearer. Therefore, it was very positive that so many other healthcare professionals accessed the training and gained a better understanding of ADHD, significantly widening the impact and reach of the resource.

It is also important to note that the dissemination of the training started in March 2020. In many countries including the UK, this was the beginning of the Covid-19 pandemic. This would have had significant impacts on the implementation of the training. Firstly, GPs priorities had to change very quickly, and practices adapted in a very stressful environment. Dealing with the direct consequences of the pandemic became the priority with taking part in CPD or a better understanding of ADHD less important. Although the demand for confinement significantly increased ADHD symptoms expressions and associated impairment for some [11] and an increase in referrals post-pandemic [12], it was difficult for GPs to prioritise this issue as is demonstrated by the significant decrease in referrals during lockdowns [13]. Secondly, the research team was not able to actively reach out, disseminate, and give presentations for a long time, which also impacted the implementation of the training in practice.

In conclusion, this co-produced and evidence-based training shows ongoing benefits, acceptability and usefulness in practice. The results from this implementation demonstrated a wider use to other healthcare professionals and international reach. Ongoing implementation plans aim to support further the wider implementation of this training, principally in other countries.

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