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Informal and formal learning of general practitioners

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Abstract

Purpose – The purpose of this study is to understand the influence of formal learning from a web-based training and informal (workplace) learning afterwards on the behaviour of general practitioners (GPs) with respect to prescription of antibiotics.

Design/methodology/approach – To obtain insight in various learning processes, semi-structured interviews were conducted with 19 GPs. These interviews were transcribed and analysed with a theory-based template, that had been defined beforehand, but with an open mind for emerging themes.

Findings – The web-based training was perceived by GPs to change their prescription behaviour, mostly as a result of informal learning processes. Being a research participant and being a supervisor appeared to create most opportunities for informal learning.

Practical implications – The current research shows that being a research participant and/or a supervisor enhance informal learning activities, for example, reflection and social interaction, and thereby formal training becomes more effective. It is recommended to remind GPs regularly to reflect on their prescribing behaviour and to stimulate them to reflect and seek social interaction besides participating in formal training.

Originality/value – Our study adds to the existing literature by considering informal learning processes in an evaluation of the perceived effects of formal training. Our findings have implications for the design and evaluation of formal trainings with the purpose of behavioural change of doctors.

Keywords Informal learning, Behavioural change, Formal learning

Paper type Research paper

Introduction

Lifelong learning is important to keep track of developments in professional domains because knowledge and insights develop fast, leading to a transition in professional's work routines (Fenwick, 2013; Tynjälä, 2008). Even though opinions differ about the boundaries of formal and informal learning (Fenwick, 2010; Malcolm *et al.*, 2003), learning that takes place while performing the job seems to be more efficient than formal training alone to learn job-related skills because skills are often situation-specific and need practice at the workplace (Eraut, 2004a). Formal learning is not sufficient for solid transfer of training and as a consequence, formal learning alone is probably not the most efficient way to accomplish behavioural changes (Boud and Middleton, 2003). Informal learning provides the learner with opportunities to practice the knowledge from the formal training in an everyday, workplace situation. Studies in informal learning have been done in many professional contexts, (Bjørk *et al.*, 2013; Goldman *et al.*, 2009; Wofford *et al.*, 2013), but studies about informal learning of general practitioners (GPs) are scarce (Campion-Smith *et al.*, 1998; Stanley *et al.*, 1993).



Self-directed learning, based on experience, has been advocated to be at the centre of continuing professional development for general practice (Stanley *et al.*, 1993). Continuing learning is needed because guidelines frequently change, medical developments progress rapidly and social contexts change. As an example, GPs have to learn to be restrictive in antibiotic treatment of respiratory tract infections (RTIs), as is recommended in recent guidelines. Previous studies showed that antibiotics are often over-prescribed (*authors removed for review*), which leads to antibiotic resistance, patient medicalization and unnecessary side-effects and costs. An intervention with a web-based training could help to change the prescribing behaviour of GPs for RTIs in children.

The present study aims to help understanding prescribing behaviour of GPs and how this is influenced by formal learning, through a web-based training as part of a broader intervention and by informal learning afterwards. In contrast to previous research (Cals *et al.*, 2009; *authors removed for review*; Welschen *et al.*, 2004), this study uses a qualitative methodology to find out how formal and informal learning may strengthen each other. A better understanding of how GPs learn and gain new skills after the formal training, by performing informal learning activities, will be valuable for understanding and accomplishing behavioural change processes. This could be used in the design and evaluation of future formal GP-directed educational interventions.

Informal learning at work

Learning at work is different from learning at school in the way that learning at school is more formal and planned intentionally, whereas learning at work is of an informal nature (Eraut, 2004a; Tynjälä, 2008). According to Tynjälä (2008), workplace learning can take many different forms. It can be informal and incidental as a side-effect or consequence of work, intentional non-formal as activities related to work and formal as in training (Eraut, 2004a, Tynjälä, 2008). Marsick and Watkins (2001) described informal learning as experiences from outside formal training which can be planned. Informal learning is implicit, unintended, opportunistic and not structured by a teacher (Eraut, 2004a). Even when informal learning occurs mainly unintentional, still the willingness to learn is helpful for achieving learning outcomes (Kyndt and Baert, 2013). The definition used in our study is informal learning takes place by experience, is mostly unstructured, takes place after the formal training and is in the control of the learner (Marsick and Watkins, 2001; Eraut, 2004a).

The implicit nature of informal learning makes it difficult to observe, or assess what has been learned, especially when evaluating unintentional informal learning (Berg and Chyung, 2008). Different activities or processes of workplace learning can be observed by researchers, such as learning during the job, through cooperation and interaction with colleagues, through observing and listening to others, by dealing with novel and challenging tasks, through reflection and evaluation, through formal training, through extra-work contexts and through working with patients (Collin, 2002; Eraut, 2004a; Tynjälä, 2008, 2012). Working with patients gives more context to learning, by specific and individual knowledge about the patient, their problems and the consultation. Relations at work are also important for the success of workplace learning, where informal relations appear to be more important than formal relations. Also much can be learned as a result of learning from mistakes and asking about the experience of a colleague and short- and long-term feedback appear to be helpful. Thus, the concept of

workplace learning implies social activity in which interaction, dialogue, challenging tasks and reflection of learning and planning of future learning are necessary (Tynjälä, 2008). The engagement in informal learning was, among other factors, shown to be dependent on access to computer technology and less on physical proximity to colleagues (Berg and Chyung, 2008). This could be interesting in GP education because they mainly work independently.

Learning could benefit from the combination of formal training with informal learning at the workplace (Slotte *et al.*, 2004). This could be because of the more individual nature of formal learning in contrast to the more social nature of informal learning at the workplace. Formal training only supports individual knowledge transfer but lacks the benefits of learning from social interaction. Therefore, this study takes informal learning into account to explore the combination of formal and informal learning in the behavioural change of GPs.

Formal and informal learning by general practitioners

To guarantee the professional development of GPs formal training is provided and often mandatory, but their work mostly consists of patient consultations and, therefore, these encounters with patients are an important source of learning (Stanley *et al.*, 1993). However, consultations are generally done alone, without colleagues. Professional isolation might influence informal learning activities negatively (Cooper and Kurland, 2002), although Berg and Chyung (2008) found that physical proximity to colleagues was not that important for engagement in informal learning. Differences can be expected between informal learning activities by GPs working in a group practice, or working in a solo practice, because interaction was shown to be important in informal learning (Kyndt *et al.*, 2009). It is known that GPs value opportunities for informal learning during formal educational activities (Campion-Smith *et al.*, 1998). In addition, positive experiences with online learning of GPs have been described (Rebbeck *et al.*, 2013; Skye *et al.*, 2011) but whether GPs themselves combine a formal online training with self-directed informal learning is yet unknown.

Changing antibiotic prescribing behaviour

Antibiotics for RTIs are often over-prescribed, also for children (*authors removed for review*). The [*name of study*] study at the [*location of the research study*] aims to improve the antibiotic prescribing behaviour of GPs for children with RTIs. To achieve this an intervention was designed. Part of this is a web-based training developed to be used as formal education. This web-based training consists of an introduction about antibiotic-related problems, the prescribing guidelines for RTIs, training in communication skills and an explanation on how to use the written information material for parents (*authors removed for review*). The anticipated outcomes of the intervention are an attitude change towards prescription of antibiotics, by better knowledge of the prescribing guidelines, more awareness of antibiotic-related problems and improved communication skills. Although much research into interventions for behavioural change towards antibiotic prescribing exists (Arnold and Straus, 2006), none of those studies have looked into the learning processes involved or self-initiated afterwards.

The current research aims to explore GPs opinions on how their prescribing behaviour was affected by the intervention (especially the formal web-based training) and by subsequent informal learning processes. It was expected that informal learning

activities of GPs would also help them to change their prescribing behaviour because the learned knowledge, skills and attitude are directly connected to activities performed at the workplace (Slotte *et al.*, 2004). In addition, we wanted to know which informal learning activities they had undertaken during and after the intervention. It was expected that GPs learn mostly during their consultations with patients because this is the major part of their profession (Stanley *et al.*, 1993).

Methods

For this study we chose a qualitative design to obtain insight in learning processes that might have changed prescribing behaviour of GPs. What and how the GPs thought they had learned during and after the online training was investigated with an interview. The script of the interview was first tested during a pilot with one GP to test whether the questions were understandable and made sense for GPs. A convenience sample was used (Neuman, 2009). During the process of interviewing the number of participants was determined (Glaser and Strauss, 1967). After nineteen interviews it was decided that saturation was reached and no other GPs were interviewed. The Netherlands Association for Medical Education (NVMO) and the Ethical Review Board gave permission for this research design.

Data collection

All GPs who had followed the web-based training by participating in the [*name of study*] study (trial) were invited to participate in the current study. Besides this online training, the GPs received printed information booklets to discuss and give to the parents and a memory aid with all the guidelines recommendations with respect to antibiotic prescribing. As part of evaluating the [*name of study*] intervention, the GPs had to register children presenting with an RTI on a form, with questions about signs and symptoms, whether they thought the parent had a request for antibiotics and whether they prescribed antibiotics.

When GPs were interested in participating, they were invited for an interview and an information letter and informed consent were sent to them a week before the interview. A handout of the online training was also included to bring the web-based training back into their memories. A total of 19 GPs consented to participate in the interview study, of which 11 were females and eight males. The GPs all worked in different practices; two worked in a solo practice, ten in a group practice and seven in an educational practice with a doctor in training (trainee). The interviewer visited the general practice of the interviewees. The interviews lasted about half an hour (maximum).

The instrument used in this study was a semi-structured interview. The script of the interview, based on our research questions, was the starting point for the interview. The first part questioned the ways GPs had learned from the intervention, through the different components of the formal intervention: *the problem description*, *the guidelines* and *the communication skills*. The second part, including the topic list, was based on literature of the informal activities people undertake at work (Eraut, 2004a; Tynjälä, 2008). The topics were: *reflection*, *dialogue*, *collaboration*, *consultation*, *planned learning*, *observing*, *listening*, *challenging tasks or situations*, *giving feedback* and *receiving feedback*.

Data analysis

After the interviews, recordings were transcribed and imported in NVivo (10). Participants' names were coded. A template was developed using the literature of Tynjälä (2008) and Eraut (2004a) containing codes about acquired knowledge, skills, changed attitudes and awareness and on the formal and informal learning activities. Subsequently, the transcribed interviews were coded using the template, with an open mind for emerging themes (Brooks *et al.*, 2015). Coding was an iterative process, where the template was revised during the analysis through reflecting on and discussion about the research with two other researchers (*initials of authors, removed for peer review*). The mentioned informal learning activities were counted and organized in tables. If the GPs themselves mentioned having carried out an informal learning activity or agreed having carried out an informal learning activity after asking them explicitly using the topic list, this was counted as an informal learning activity. When the GP mentioned having carried out an informal learning activity but not in relation to the intervention under study or if they were not certain, this was not regarded as an informal learning activity.

Results

During the analyses of the interviews themes were identified and those most relevant for the research questions were selected. Quotes illustrate the findings. The web-based training was thought to have influenced prescribing behaviour, also as a result of several informal learning activities. Additionally, being a research participant and/or a supervisor appeared as themes that influence prescribing and consultation behaviour. In the following sections these themes will be discussed.

Informal learning

All participants had performed informal learning activities after or during the web-based formal training. Frequencies of informal learning activities are shown in Table I. The informal learning activity mentioned the most was *consultation*, followed by *transfer in other contexts*, *reflection* and *dialogue*. The informal learning activity *planned learning* was not mentioned by any of the GPs. This suggests that the GPs had

Informal learning activity	Frequency
Consultation	16
Transfer in other contexts	13
Reflection	12
Dialogue	10
Giving feedback	8
Observing	7
Reading	5
Collaboration	3
Receiving feedback	3
Listening	2
Planned learning	0
Total	79
<i>M</i>	4,16

Table I.
Number of informal
learning activities

not planned moments for future learning induced by the formal training or after finding out what they still regarded difficult on this topic. All informal learning activities are briefly discussed below.

The web-based training provided the GPs with some useful tools, with which they experimented and learned informally during subsequent *consultations*. This learning was supported by the booklet and the memory aid. They used the booklet to explain the information to the parents which could support their decision not prescribing antibiotics. The aid with the guidelines summarising the patient groups for which antibiotics are indicated was also used to show to parents or to brush up their own memory. Asking explicitly about the aim of the parent for the consultation and/or expectation of antibiotics was also mentioned being done during the consultation, as part of informal learning. They were taught in doing this through the communication training which was part of the formal learning:

I notice that I'm more conscious about the reason of the appointment if parents are worried and then asking about it directly. So that has changed. (G)

Transfer in other contexts was often mentioned by the GPs. The formal training was about prescribing for children, but elements of the learning were also applicable to adults. They used for example the communication skills, such as asking about the patients' expectations regarding antibiotics, in consultations with adults too. The knowledge about the specific indications for antibiotic use and the duration of complaints was also used in communication with adult patients. Furthermore, the GPs were also more critical about antibiotics and better aware of antibiotic-related problems when they had an adult with an RTI.

The GPs mentioned that they not only had *reflected* on their own prescribing behaviour during their trial participation but also were not really aware that they attained specific new knowledge, apart from brushing up existing knowledge. They referred to being more aware of their own prescribing and consultation behaviour and, therefore, wondered whether this had indeed changed their prescribing behaviour. With respect to *dialogue*, the GPs referred to talking to people about the web-based training and their participation in the research project. Most of them talked to colleagues about the content of the training and discussed particular patient cases to learn how colleagues felt about treatment with antibiotics. These interactions were mostly during coffee breaks or other casual moments during the day:

So I think yes, it has regularly been discussed informally. We didn't make it structural, but it comes up regularly because it is a common problem. (E)

They also discussed the topic with others than colleagues such as friends. With them they talked more about their participation in the trial and the general topic of antibiotics, for example, increased antimicrobial resistance. Learning something really new from talking with others was not the most important to them but becoming more aware about prescription of antibiotics was. The other informal learning activities were mentioned less. When *collaboration* was mentioned, this happened within groups of GPs together in a practice and during pharmaceutical therapeutic consultation meetings with the pharmacists. In these groups, the GPs talked about antibiotics using the information and knowledge they had learned from the web-based training:

[...]and in this meeting this was useful, that I had all the guidelines in my memory and I could share it very well and easily with others, such as when you prescribe which antibiotics and which definitely not. (B)

Feedback came up mostly in discussing the approach of the consultation and particular patient cases. Especially the GPs with a trainee in their practice provided feedback to each other because in educational practices consultations are discussed between GPs and trainees. GPs without trainees did not mention feedback because of a lack of time or opportunities for this. These GPs referred to working mainly on their own, with their own patients:

[...] not a lot of feedback within the practice, we all do our own thing and we have our own patients. It is not that we are having coffee to discuss each other's consultations each week. No, that doesn't happen. (C)

The GPs ($n = 6$) who thought their prescribing behaviour had changed because of the intervention participated in more informal learning activities ($M = 5.7$) than the GPs ($n = 10$) who did not think their prescribing changed ($M = 3.4$), as is shown in [Table II](#).

Being a research participant

The intervention as a whole seemed to be important for the GPs. The booklet, the web-based training and participating in the trial were all mentioned separately as being useful to them. For example, while participating in the trial, the GPs were asked to register children with RTIs and whether they did or did not prescribe antibiotics; this stimulated reflection:

[...] you do that all the time. And the [*name of study*] research stimulates that. Because every time you see someone with an RTI you have to fill in whether you prescribe antibiotics or not, and you think why? So that's a reflective moment for every patient. (J)

Particularly, the question whether they thought the parents were expecting antibiotics for their child created awareness and led some GPs to change and reflect on their consultation behaviour:

You have to fill in on this form whether you thought the parent wants antibiotics. That is a nice realization moment, because then you write down your expectation about it. It would be easier if you just directly ask the parents about it. And sometimes I do that now. (G)

One GP mentioned the feeling that someone, as part of the research team, was checking on him, whereas another referred to more interaction with colleagues because of their mutual participation in the project, as well as more looking into the guidelines because of being a research (trial) participant. Being reminded now and then to include patients also helped them to apply the training more:

If you participate in a research project, you talk about it with each other. (R) Look, by participating in research like this you get stimulated to look up some things again. (O)

Being a supervisor

Some GPs were supervisor during the intervention and indicated that this also helped them to integrate the intervention better into their behaviour. Supervision consultations are being recorded and evaluated which helped the GPs to also reflect on their own behaviour and communication skills, besides that of their trainee. After being asked

Type of GP	Giving feedback					Planned learning			Total	M	
	Collaboration	Consultation	Dialogue	Listening	Observing	Reading learning	Reflection	Transfer			
Single practitioner ($n = 2$)	1	2	1	0	0	0	0	0	2	9	4,5
Health practice ($n = 10$)	1	8	2	2	2	0	4	1	7	32	3,4
Educational practice ($n = 7$)	1	6	7	6	5	0	1	2	3	38	5,43
Total	3	16	10	8	7	0	5	3	12	79	4,16

Informal and
formal
learning

Table II.
Number of informal
learning activities
and the kind of
general practitioner

whether they learned something from it, they confirmed using the intervention during supervision:

[...] because you are looking consciously at how a consultation must be and things you could improve, but you also realise that you see “mistakes” that you make yourself as well. For that matter you apply the changes or give feedback you could also apply to yourself. (E)

GP supervisors also need to follow modules to supervise their GP trainee with a beneficial side-effect that they gain the awareness of applying this knowledge and skills in their own consultations. Also noticing the prescribing and consultation behaviour of a GP trainee was helpful and made them remember this knowledge:

Yes, that is of course the case with a lot of knowledge [...] first knowledge is conscious and at a given moment knowledge becomes unconscious and you're naturally applying it. But, then in this routine you are developing blind spots, and when working with a GP trainee you have to explain and discuss why you are doing particular things. (O)

Particularly, the informal learning activities *dialogue*, *giving feedback* and *observing* are typical for a supervisor. Table III shows that supervisors undertook more informal learning activities ($M = 5.4$) than GPs who work alone ($M = 4.5$) or in a group practice ($M = 3.4$). It therefore seems that being a supervisor provides more opportunities for informal learning.

Discussion

In our study, we explored the ways GPs had learned from a web-based training, through formal and/or informal learning. The results indicate that GPs who undertook more informal learning activities expected that their prescription behaviour had changed more and that GPs mostly learned from the content provided in the formal training during interaction with patients in routine consultations. This way of informal learning has been indicated already by Stanley *et al.* (1993). These results support the notion that it is most efficient to combine formal training with informal learning activities (Slotte *et al.*, 2004). Furthermore, it became clear that the complete intervention was important for a behavioural change of GPs, not only the formal web-based training, but also the information booklet for parents, being a research (trial) participant and the informal learning activities afterwards. GPs supervising a GP trainee had more informal learning opportunities at their disposal because these GPs proved to be more used to reflection and open for discussions about prescribing decisions.

The current research shows that being a research participant and/or being a supervisor enhances informal learning activities, for example, by reflection, and, as a result, the participants expect the formal training to be more effective. Reflection is sometimes difficult for professionals because of a lack of time during routine consultations but our results suggest that filling in a form registering the prescribing decision seems to induce this reflection at every moment the GP has an encounter with a patient from the target group. Eraut (2004b) suggested that an open culture stimulates reflection and experiential learning, which may be the case for GPs in their role as supervisor. Supervisors are encouraged to think consciously about behaviour, their own and of their trainee. To provide the trainee with feedback and to explain one's own view an open culture of reflecting and expressing concerns is essential (Wofford *et al.*, 2013). Whether formal and informal learning should be seen as two distinct categories or more as inseparable is open for debate (Fenwick, 2010; Malcolm *et al.*, 2003). In our work,

<i>p</i> -behaviour changed?	Planned learning										Total	M
	Collaboration	Consultation	Dialogue	Giving feedback	Listening	Observing	Reading	Receiving	Reflection	Transfer		
No (<i>n</i> = 10)	2	9	5	4	1	2	0	2	4	5	34	3,4
Yes (<i>n</i> = 6)	1	6	4	3	1	3	0	1	5	6	34	5,67
Doubtful (<i>n</i> = 3)	0	1	1	1	0	2	0	0	3	2	11	3,67
Total	3	16	10	8	2	7	0	3	12	13	79	4,16

Informal and
formal
learning

Table III.
Number of informal
learning activities
and the extent of the
changed prescription
behaviour of the
general practitioners

categorizing these two types of learning was helpful for exploring the learning activities the GPs have undertaken.

The results of the present study contribute to literature about learning conditions for different kinds of groups because of differences in opportunities for informal learning. Opportunities for reflection, as well as for communication and interaction are important learning conditions (Kyndt *et al.*, 2009). Being a supervisor and research participant are situations where reflection, communication and interaction are naturally enhanced, as became apparent from the interviews. Furthermore, most GPs mentioned the consultation and dialogues with patient as important learning activities. This makes sense because part of the training was to teach enhanced communications skills. GPs indicated having practiced these during routine patient consultations and having evaluated the effects of these tips during many patient encounters. As such, this social interaction undertaken at the workplace after the formal learning seems to play an important supportive role in learning. Other professionals play an important role in informal learning and helping others with handling complex problems (Wofford *et al.*, 2013).

Furthermore, this social interaction is evident for supervisors and can be explained by the theory of legitimate peripheral participation of Lave and Wenger (1991). In the work on communities of Bjørk *et al.* (2013), it was evident that not only the newcomer learns to become a full participant in a sociocultural practice through learning about the community but also the already full member of the community does as well. In our study, qualified GPs also learn from discussing with trainees and receiving feedback. Sharing knowledge is more important than ever because knowledge is not stable. The changing knowledge used for the profession of GP is asking for new responsibilities and new opportunities for engagement (Fenwick *et al.*, 2012).

Especially with a concise web-based training, the informal learning activities learners consciously or unconsciously undertake afterwards are important because the training itself does not provide practice at the workplace. Informal learning combined with the formal training might help to turn tacit knowledge into explicit knowledge and combine academic knowledge with practical experience. The intervention, including registrations of patient consultations, helped the GPs to reflect and think about their prescribing decision. These registrations, also promoting reflection, might have enhanced the effects of the web-based training.

Implications for practice

A review of Arnold and Straus (2006) concluded that multi-faceted interventions are most effective in reducing inappropriate use of antibiotics for RTIs; simple interventions are not enough. In our study as well, it appeared that the complete intervention, including registrations and informal learning afterwards, contributed to the effect the GPs expect regarding their antibiotic prescribing. For a better or longer effect of a formal learning intervention, it is therefore recommended to support and evoke informal learning, for example, by inclusion of tasks stimulating GPs to undertake informal learning activities and to help them to regularly evaluate their prescribing behaviour. Furthermore, when evaluating a formal learning intervention, it is useful to not only consider outcome variables but also investigate informal learning as well. This will give a better understanding what might have contributed to the learning outcomes and behavioural change in the longer run.

The findings illustrate how GPs learn at the workplace and which formal and informal activities they perform, consciously and unconsciously. As GPs mainly work alone with patients in a consultation, the main informal learning activity they perform are their consultations. Some GPs talked with others about the content of the training, but others did not, even if they worked in a group practice. Because of the importance of social learning, web-based training needs to stimulate social interaction afterwards. This could be supported for example by providing the participants with access to an online learning community where they can discuss topics and share experiences. The latest insights, new research and guidance how to obtain prescribing data and personal feedback at online platforms of communities with healthcare professionals might support GPs' engagement (Aramo-Immonen *et al.*, 2015; Berg and Chyung, 2008).

To support and evoke informal learning, more awareness about informal learning is needed for designers of future formal learning interventions for GPs. In primary care in [country, removed for peer review], the [country, removed for peer review] College of General Practitioners (NHG) organises post-doctoral training and develops online learning for GPs. GPs are assisted and motivated by NHG quality consultants in oversight in prescribing data and implementation and quality assurance processes. The NHG and consultants should be made aware of the importance to support and evoke informal learning activities within and after the formal training.

Limitations and further research

The interviews were held six months after the GPs had followed the web-based training, and some GPs did not memorize the training clearly, even though they received a brief reminder in advance. It would have been interesting to know the opinions of GPs about the training sooner to learn more about the aspects of the e-learning itself. On the other hand, the "delayed" interview allowed for more information on the long-term process for more time for informal learning activities. Another limitation is that sample selection is possible; many of the self-selected GPs had the impression to be conscious already about antibiotics and related problems (*authors removed for review*), which is perhaps not true for all GPs. Furthermore, the sample was relatively small, but our study is merely claiming transferability and not generalisability. This research analysed GPs opinions and beliefs and did not intend to determine whether behaviour indeed had changed. This will be analysed as part of reporting the complete trial.

Further research should focus on how to create optimal situations and possibilities for informal learning after having offered formal training and on studying, for example, how to enhance reflection, not only during research participation but also for every busy GP during training and implementation processes. In addition, it is recommended to investigate how to effortlessly stimulate informal learning activities after formal training. Our research underlines the importance of informal learning activities, such as reflection and social interaction, after formal intervention aiming for a behavioural change of healthcare professionals.

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