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Confidence matters: A Self-Determination Theory study of factors determining engagement in self-management support practices of UK clinicians

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Within a national quality improvement programme for self-management of long-term conditions, we surveyed clinicians working with patients with diabetes, chronic obstructive pulmonary disease, musculoskeletal pain and depression. We applied the Self-Determination Theory framework to explore what factors can facilitate and impede the clinicians' engagement in clinical self-management support (SMS), patient centredness and organizational support for self-management. We also investigated whether attending professional training for clinicians in the practice of self-management (SM) increases motivation to support SM and reported use of SM practices. The study included 482 clinicians who were surveyed once (cross-sectional design) and 114 clinicians who were surveyed before and after training (longitudinal cohort). We found that the high level of satisfaction of competence need predicts practising SMS in all three areas (clinical SMS: β coefficient = 0.21; $p < 0.0001$; patient centredness: β coefficient = 0.50; $p < 0.001$; organizational SMS: coefficient = 0.20; $p < 0.0001$). Internalized regulation to support SMS increases engagement in clinical and organizational SMS. Upon comparing the two samples we explored the possible predictors of clinicians' self-referring to attend the training. Clinicians who volunteer to attend the training spend more time working directly with patients with long-term conditions ($\chi^2 = 4.8$; df = 1; $p = 0.02$), had less previous relevant training ($\chi^2 = 4.77$; df = 1; $p = 0.02$), and they have less autonomy to support SM ($t = 5.0$; df = 476; $p < 0.0001$). However, they report more engagement in patient-centred practices ($t = 1.9$; df = 585; $p = 0.05$). These factors are a good fit with the aims of the programme. We confirmed that attending the training had a significant, positive impact on clinicians' engagement in clinical SMS and patient centredness, as well as their overall confidence to support SM. We conclude that to facilitate clinicians to practice SMS it is very important to provide relevant professional training, professional support and incentives to foster clinicians' perceptions of their competence in relation to these practices. Organizations should develop a culture that values SMS, offer training to clinicians to enhance their sense of competence to effectively deliver SMS and support clinicians in finding their own way of supporting SM; in other words to create an optimal context to internalize regulation to support SM.

Keywords: long-term conditions; self-management; professional training; self-determination theory

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Introduction

In UK, 17,500 million people report to be having long-term conditions (LTCs) and this number is increasing (Department of Health, 2007). Healthcare systems must change in response to the growing demand to provide optimal, continuous care for patients living with LTCs, in which patients themselves have a key role to play. Effective self-management (SM) of LTCs requires patients to be activated, informed and empowered, but at the same time they need the support of clinicians who are willing and skilled to engage in productive interactions, and work in partnership with their patients to develop mutually accepted and followed treatment plans (Epping-Jordan, Pruitt, Bengoa & Wagner, 2004; Hibbard, Collins & Baker, 2008).

Although there are many theories and studies on how to educate patients to elicit optimal behavioural change in relation to healthcare goals (Bandura, 1977; Janz & Becker, 1984; Prochaska & Velicer, 1997; Rollnick, Kinnersley & Scott, 1993), very little is known about how to train clinicians to provide effective self-management support (SMS), perhaps because there is no consensus on the behavioural skills required. We conducted a literature review to define what skills clinicians need to develop, to enable them effectively to support patients to self-manage their LTCs. The literature suggests some practical principles to facilitate patient SM, which includes the four behaviour change processes (Wagner et al., 2001): (1) *joint agenda setting* (agreeing with a patient on the purpose of consultations, on what he/she would like to achieve during the consultation, as well as building the relationship with a patient and establishing the communication pattern that is mutually satisfactory); (2) *problem solving*; (3) *collaborative goal setting* (collaborating with patients on setting short- and long-term healthcare and lifestyle goals that are realistic, achievable and consistent with patients' beliefs and values) and (4) *goal follow up* (agreeing with patients on how, how often and why contact will be maintained to ensure progress on healthcare and lifestyle activities and goals are made, setbacks discussed and new decisions agreed upon). These principles also include other features of effective consultations that (a) allow and encourage the patient to define their health problems and purpose of consultation; (b) explore options for dealing with these problems; (c) rather than directing and controlling the patient in a prescriptive way, offer the patient with choice and respect the choice when it is made; (d) collaboratively set goals and action plans not only to address health problems but also to maintain a healthy lifestyle; (e) the clinician retaining responsibility for technical knowledge but sharing the meaning and possible utility of that expertise with the patient (Anonymous, 1997; Ciechanowski, Katon, Russo & Walker, 2001; Clark & Gong, 2000; Coulter, 1997; DiMatteo, 1994; Epstein, 2000; Holman & Lorig, 2000; Sleath, Rotter, Chewning & Svarstad, 1999; Stewart et al., 1999, 2000). Additionally, organizing services to enable clinicians to deliver care for chronic illnesses in a way that promotes and encourages patients' SM is considered to be important for clinicians' engagement (Bonami et al., 2002; Brownson et al., 2007).

We used the Self-Determination Theory (SDT) to explain how clinicians' practices that are important for effective SMS are formed and sustained, and what factors can facilitate or impede engaging in SM provision in clinical practice. According to the SDT, the likelihood that an individual would engage in certain behaviour and the quality of performance depends on the type of motivation to perform this activity. Intrinsic motivation is usually associated with spontaneous, interesting behaviours that satisfy on their own. This type of motivation is mostly associated with early

childhood when the external pressures to act in specific ways are minimal. Once social expectations and rules are being applied, most human behaviours are thought to be driven by extrinsic motivation. Extrinsic motivation can vary in the extent of relative autonomy, from being on the one hand "externally regulated" when individuals perform the behaviour to avoid punishment or to gain an external reward, to "integrated" when performance of the behaviour is congruent with one's values and needs on the other hand. The more autonomous the extrinsic motivation, the better the performance and sustainability to achieve the goals (Ryan & Deci, 2000).

The SDT proposes that people, under favourable circumstances, will internalize behaviours that are considered important, even if they are not particularly interesting or satisfying in their own rights. With internalization, people's behaviours become more self-determined and they experience greater autonomy in action. This process can be gradual when an individual progresses through each stage of internalization (from external to more internal regulation); however, it is assumed that people can readily internalize any new behaviour at any level, depending on prior experience and current context (Deci & Ryan, 1985). Positive social context together with satisfying basic psychological needs (need for autonomy, competence and relatedness) creates an optimal situation that enhances internalizing extrinsically motivated behaviours (Deci & Ryan, 2001). Based on the above assumptions, we can stipulate that the optimal conditions for clinicians to engage in SMS for LTCs is a working environment that values SM, supports clinicians in their efforts to deliver it and lets them choose the most appropriate way to do so, as well as enables them to develop and practice the skills to build up a sense of competence.

Aims

Our study applies the SDT framework to explore what factors can facilitate and impede clinicians' engagement in SMS for LTCs. We examined the relationship between satisfaction of basic psychological needs in relation to SMS, motivation to support SM and undertaking SMS. We also investigated whether attending training for clinicians in the practice of SM support increases motivation to support SM and their reported performance, and whether pre-training motivation and psychological needs satisfaction in relation to SMS influence training effectiveness. We posed the following research questions:

(1) What is the relationship between psychological needs satisfaction (autonomy, competence and relatedness) in relation to SMS and individual's motivation to support SMS and practicing SMS in three areas (clinical SMS, patient centredness and organizational SMS)?

(2) What are the demographic and professional characteristics of clinicians who work with patients with LTCs and self-refer to attend professional training addressing principles and practice of SMS (vs. those who have not volunteered)?

(3) Do clinicians who volunteered to attend professional training addressing principles and practice of SMS differ in terms of using SMS practice, their psychological needs satisfaction and their motivation to support SM from clinicians who have not volunteered?

(4) How effective is the training in the practice of SMS in increasing the range and frequency of the SMS practices, and clinicians' motivation to apply them

(i.e. improving their sense of autonomy, competence and relatedness in regard to SMS)?

(5) What psychological factors predict the effectiveness of training for clinicians in the practice of SM?

Method

Design

The research was conducted as a part of the evaluation of The Health Foundation's Co-Creating Health Initiative (CCH). CCH is a quality improvement programme commissioned by The Health Foundation that focuses on adults with LTCs and the clinicians and healthcare services that they interface with. It aims to demonstrate that increased SMS leads to improved health. CCH is made up of five interrelated and mutually supporting interventions: creation of learning community, measurement for quality improvement, advanced development programme for clinicians, self-management programme for people with long-term conditions and service improvement. The programme is delivered in eight NHS demonstration sites across England and Scotland. It currently focuses on four LTCs: diabetes, chronic obstructive pulmonary disease (COPD), chronic musculoskeletal pain and depression.

We surveyed clinicians from eight CCH demonstration sites asking them about their practices in SMS, confidence to effectively support SM, organizational context for SMS and reasons why they do or do not support SM. The study applied the following two designs, and in each we used the same measures to allow comparison.

Cross-sectional design

The inclusion criteria were: to be a clinician (working in clinical, academic or clinical support role) and to spend at least some time during the working week in direct care of patients with one of target LTCs. Clinicians included in the cross-sectional sample had not volunteered for the clinician training programme.

Longitudinal design

The inclusion criteria for the longitudinal design applied were the same as for the cross-sectional except that they had volunteered for the clinician training programme that focuses on techniques that have demonstrated an impact on the clinician–patient relationship and support patient self-management (Wagner et al., 2005). The key skills include the four behaviour change processes identified above, but with a particular emphasis on agenda setting, goal setting and goal follow up (Wagner et al., 2001). The clinician training is delivered through three workshops of three h each co-led by a clinician and a lay tutor (a person with the LTCs).

Measures

Practices in Self-Management Support

To assess the use of SMS practices in clinical consultations for patients with long-term conditions we applied the Practices in Self-Management Support (PSMS)

questionnaire developed by the authors (Kosmala-Anderson, Wallace, Turner, 2009). The PSMS is a self-report measure and comprises 25 statements on three subscales:

Clinical Self-Management Support covers building an equal doctor–patient relationship, using the four behaviour change processes and exploring the patient's self-management strategies (example statements: "share power and responsibility with the patient", "undertake joint problem solving to support patients to meet their goals").

Patient Centredness covers customizing the treatment to a patient's preferences and taking an individualized approach (example statements: "give patients individually tailored explanation of the symptoms", "discuss with each patient potential risks and benefits associated with choosing different treatment options").

Organization of Services to Support Self-Management covers clinicians' engagement in organizing services to support SM, building a care team to support SM and supporting a patient's involvement in service development (example statement: "give the patient choice about the care team member who will coordinate their care plan", "regularly ask patients about their opinions regarding service provision and proposed changes").

Respondents are asked to rate each statement on a seven-point Likert scale.

Basic Psychological Needs Satisfaction Questionnaire

We adapted the Basic Psychological Needs Scale developed from previous SDT research protocols (Deci & Ryan, 2001) to meet the purposes of our research. The adapted scales comprise eight statements regarding clinicians' competence in providing SMS, the reasons they provide SMS (autonomy scale) and the support they receive from their colleagues for these activities (relatedness scale). Respondents are asked to state how true each statement is for them using a seven-point Likert scale.

Motivational Regulation to Support Self-Management Questionnaire

The Motivational Regulation to Support Self-Management Questionnaire is an adaptation of the Self-Regulation Questionnaire developed from previous SDT research. Respondents are asked to assess to what extent each of the 23 statements reflects the reason why they help their patients to self-manage their long-term conditions. It measures how strong is each type of motivation (from intrinsic to external plus amotivation) to support SM for LTCs. They indicate their responses on a four-point Likert scale.

Procedure

Cross-sectional study

The invitations to complete an online questionnaire were sent to managers of services, clinical leads for the condition and for the CCH project managers, GP practice managers and consultants from eight acute hospital trusts and 12 primary care trusts across the UK. They were asked to forward the invitation to eligible staff

Sample	Gender		Profession				Care type			Training	
	Male	Female	Doctor	Nurse	Allied	Psych	Primary	Secondary	Both	Yes	No
Cross-sectional study	109, 22.8%	369, 77.2%	118, 30.1%	163, 42.5%	66, 17.2%	13, 3.3%	187, 53.2%	132, 37.6%	27, 7.7%	264, 55.2%	50, 43.8%
Longitudinal design	34, 30.3%	78, 69.6%	39, 40.1%	35, 36.1%	14, 14.4%	6, 6.2%	55, 59.8%	30, 32.6%	6, 6.5%	214, 44.8%	64, 56.1%

in their organizations. Respondents were also offered hard copies of the questionnaire as an alternative.

Longitudinal design

Clinicians who signed up to attend the clinician training were surveyed within a week before the first and three weeks after the last session. They were offered a choice between web-based- and paper surveys.

Sample

The invitation to complete a web-based cross-sectional survey was sent to 951 clinicians. We received 482 surveys fully completed surveys (51% response rate). Out of 286 clinicians who completed all three workshops, 114 completed both pre- and post-training surveys (40% response rate for the longitudinal survey).

Results

What is the relationship between psychological needs satisfaction (autonomy, competence and relatedness) in relation to SMS and individual's motivation to support SMS and practicing SMS in three areas (clinical SMS, patient centredness and organizational SMS)?

To test the assumption that greater needs satisfaction is associated with internalized regulation (which in turn predicts greater use of the SMS practices) we applied multiple regression to analyse the non-interactive effect of psychological needs satisfaction on practicing clinical SMS, patient centredness and organizational SMS, on the combined samples of the cross-sectional survey respondents and the pre-training (baseline) longitudinal samples ($N = 596$). We found that strongest predictors of practicing clinical SMS is satisfaction of the need for autonomy (β coefficient $= 0.15$; $p < 0.0001$) and competence (β coefficient $= 0.21$; $p < 0.0001$) but not relatedness. Strong intrinsic motivation (β coefficient $= 0.15$; $p = 0.01$), integrated motivation (β coefficient $= 0.23$; $p < 0.0001$) and identified motivation (β coefficient $= 0.14$; $p = 0.03$) were also good predictors of practicing clinical SMS. Practicing patient centredness and organizational SMS was strongly predicted by satisfaction of the need for competence (β coefficient $= 0.50$; $p < 0.001$; β coefficient $= 0.20$; $p < 0.0001$), but not autonomy and relatedness. Practicing patient centredness was not predicted by any type of internalized regulation; however, strong external motivation (β coefficient $= -0.10$; $p = 0.03$) was associated will lesser likelihood of engaging in patient-centred practices. Practicing organizational SMS was predicted by high levels of competence in relation to SMS (β coefficient $= 0.20$; $p < 0.0001$). Strong intrinsic motivation (β coefficient $= 0.14$; $p = 0.01$) and integrated motivation (β coefficient $= 0.13$; $p = 0.04$) were also good predictors of practicing organizational SMS.

We also tested for the interactive effect of psychological needs satisfaction on practicing SMS using factorial regression. The results showed that the combined effect of psychological needs satisfaction did not increase the likeliness of practicing SMS in any of the three areas (clinical SMS: β coefficient $= 0.29$; $p = 0.82$; patient centredness: β coefficient $= 1.2$; $p = 0.36$; organizational SMS: β coefficient $= -1.0$; $p = 0.42$).

What are the demographic and professional characteristics of clinicians who work with patients with LTCs and self-refer to attend professional training addressing principles and practice of SMS (vs. those who have not volunteered)?

We applied Chi square (χ^2) and independent *T*-test for to the following variables: gender, age, care type, profession, duration of working in healthcare, duration of working with patients with LTCs, previous training experience.

There were no statistically significant differences between gender ($\chi^2 = 2.81$; df = 1; $p = 0.09$) and age ($t = -0.32$; df = 587; $p = 0.75$) of respondents from in sample. There were also no significant differences between the samples in regard to sector of work (predominantly working in primary or secondary care) ($\chi^2 = 2.27$; df = 4; $p = 0.68$). There were no significant differences in the proportions of nurses, doctors and other clinicians ($\chi^2 = 5.97$; df = 4; $p = 0.20$). There were no differences in the duration of working in healthcare ($t = -0.21$; df = 584; $p = 0.83$) nor of the duration of working with patients with LTCs ($t = -0.17$; df = 587; $p = 0.86$). However, we found that clinicians who volunteered for training were less likely to have had relevant related training in the past two years ($\chi^2 = 4.77$; df = 1; $p = 0.02$). Those who volunteered were more likely to spend more than 50% of their working time in direct care with patients with LTCs (72% in this group spend over 50% of their time with patients with LTCs versus 51% in non-volunteers group). The difference was statistically significant ($\chi^2 = 4.8$; df = 1; $p = 0.02$), and hence possibly clinicians who have not had previous training experience saw this as an opportunity for them to gain new skills.

Do clinicians who volunteered to attend professional training addressing principles and practice of SMS differ in terms of using SMS practice, their psychological needs satisfaction and their motivation to support SM from clinicians who have not volunteered?

We tested whether clinicians who volunteer for training differ from the clinicians who are in the pathway of care for one of the target LTCs but have not volunteered for the training in relation to using SMS practices, their psychological needs satisfaction and motivation to support SM. We found no statistically significant differences in self-reported practices in clinical ($t = 0.8$; df = 585; $p = 0.44$) and organization of services to support self-management ($t = 1.5$; df = 585; $p = 0.15$) between clinicians who have and have not signed up to attend Advanced Development Programme (ADP) training. But we found that clinicians who volunteered for training were more likely to conduct their consultations in a patient centred way (m = 5.40) compared to those who have not volunteered (m = 5.07). The difference was statistically significant ($t = 1.9$; df = 585; $p = 0.05$). There were also no differences in clinicians' self-assessed competence ($t = -1.7$; df = 477; $p = 0.09$) and relatedness ($t = 1.7$; df = 477; $p = 0.09$) in relation to SMS; however, we found that the level of autonomy of clinicians who volunteer for the training was significantly lower compared to those who had not volunteered (m = 4.42 and m = 5.03, respectively; $t = 5.0$; df = 476; $p < 0.0001$). We have also found that clinicians who had not volunteered had stronger intrinsic and integrated motivation to support self-management in comparison to their colleagues who volunteered for the course. The mean score for intrinsic motivation amongst non-attendees was 4.09 and volunteers 3.89 ($t = 2.1$; df = 536; $p = 0.04$) and for integrated motivation 4.17

and 3.94, respectively ($t = 2.4$; df $= 537$; $p = 0.02$). These results may indicate that volunteers although they have not internalized SMS behaviours, acknowledge the importance of SMS and that attending targeted training can potentially enable them to better support their patients with LTCs.

How effective is the training in the practice of SMS in increasing the range and frequency of the SMS practices and clinicians' motivation to apply them (i.e. improving their sense of autonomy, competence and relatedness in regard to SMS)?

We found that after completing the training clinicians reported more practices in clinical SMS (pre-course m $= 4.47$; post-course m $= 5.09$; $t = -2.7$; df $= 108$; $p = 0.01$) and patient centredness (pre-course m $= 5.37$; post-course m $= 5.67$; $t = -2.4$; df $= 108$; $p = 0.02$). There were no significant changes in the clinician's scores on the scale measuring how they are involved in the organization of services to support self-management, perhaps because this was only an indirectly discussed part of the course. Clinicians' self-assessed level of autonomy in relation to SMS increased significantly after completing the training (pre-course m $= 4.95$; post-course m $= 5.27$; $t = -2.7$; df $= 71$; $p = 0.02$). Also, as expected, confidence to support SMS increased significantly (pre-course m $= 4.31$; post-course m $= 5.03$; $t = -5.7$; df $= 70$; $p = 0.001$). We did not find any significant changes in the clinicians' relatedness, perhaps because team building issues are not covered in trainings' curriculum.

We undertook additional exploratory analyses to ascertain whether the changes observed in the practices and psychological needs satisfaction of clinicians after they had attended training was comparable to the levels observed in those who had not attended. We have previously found that clinicians who have not volunteered to attend the training scored significantly higher in autonomy in relation to SMS compared to their colleagues who self-referred for ADP. After completing ADP, clinicians who volunteered to attend the training "caught up" with their colleagues. Completers' level of autonomy was higher than the non-volunteers level (non-volunteers: m $= 5.03$; completers: m $= 5.07$). Moreover, after completing ADP training, clinicians reported higher competence level compared to those who have not attended (non-volunteers: m $= 4.68$; completers: m $= 5.26$; $t = -3.6$; df $= 477$; $p < 0.001$).

Clinicians who completed ADP training were undertaking more clinical SMS and patient-centred practices compared to those who have not attended the training; however, only the difference in patient centredness was statistically significant (non-volunteers: m $= 5.07$; completers: m $= 5.67$; $t = -3.6$; df $= 582$; $p < 0.001$).

What psychological factors predict the effectiveness of training for clinicians in the practice of SM?

We tested whether pre-training SMS practices, satisfaction of the need for competence, autonomy and relatedness and motivation to support SMS influence training's outcomes (post-training practices in SMS). In accordance with the SDT assumptions, we expected that pre-training satisfaction of basic psychological needs together with internalized regulation to support SMS would predict post-training engagement in SMS. We also expected that post-training satisfaction of basic psychological needs will be associated with practicing SMS post-training.

We applied factorial regression to test the combined effect of pre-training practices in SMS and psychological needs satisfaction in relation to SMS on training outcomes. The interactive effect of pre-training satisfaction of the three psychological needs combined (β coefficient $= 36.7$; $p = 0.02$) and strong intrinsic motivation to support SMS (β coefficient $= 0.31$; $p = 0.03$) were good predictors of practicing clinical SMS after completing the training. The only pre-training predictor of post-training engagement in patient-centred practices was strong intrinsic motivation to support SMS (β coefficient $= 0.41$; $p = 0.02$). However, practicing patient centredness was strongly predicted by post-training satisfaction of three basic psychological needs: autonomy (β coefficient $= 4.49$; $p < 0.0001$); competence (β coefficient 4.49; $p = 0.001$) and relatedness (β coefficient $= 4.35$; $p = 0.01$) as well as the combined effect of all the three needs (β coefficient $= 7.02$; $p = 0.007$). Pre-training competence (β coefficient $= 13.9$; $p = 0.03$) and autonomy (β coefficient $= 9.8$; $p = 0.04$), but not relatedness were strong predictors of engaging in organizational SMS after completing ADP training. However, the combined effect of pre-training satisfaction of the three needs was also a strong predictor of post-training engagement in organizational SMS (β coefficient $= 31.4$; $p = 0.03$). Moreover, practicing organizational SMS after completing the ADP training was strongly predicted by post-training satisfaction of three basic psychological needs: autonomy (β coefficient $= 3.20$; $p = 0.01$); competence (β coefficient $= 3.92$; $p = 0.007$) and relatedness (β coefficient $= 4.48$; $p = 0.03$) as well as the combined effect of all the three needs (β coefficient $= 7.96$; $p = 0.01$).

Discussion

Limitations of the study

There are a few limitations to this research that need to be considered when interpreting its results. First of all, the size of both cross-sectional and longitudinal samples is not big enough to guarantee its representativeness. Although we received 482 completed cross-sectional surveys (51% response rate) it still may not represent the views of the thousands of practitioners who may work with patients with LTCs. Similarly, in the longitudinal survey 40% of clinicians who completed the training filled in both pre- and post-training questionnaires. We need to be cautious and assume that clinicians who responded in both surveys might have been those with particular interest in SMS and in improving their practice in SMS skills. Moreover, the secondary care sub-samples of clinicians work mainly with patients with one of four long-term conditions: diabetes, COPD, depression and musculoskeletal pain. However, it can be assumed in the UK that general practice primary care clinicians have wider caseloads, so we are cautiously optimistic that the sample represents clinicians with a wider spectrum of patients with LTCs. Finally, all the measures we used are self-report measures that are open to many self-presentational and social desirability biases. We made an attempt to minimize the impact of these factors by assuring respondents' anonymity; however, this should be considered when interpreting the results.

Predictors of practicing SMS for LTCs

According to the SDT, better satisfaction of the psychological needs and more internalized regulation in relation to the target activity increase the probability that the individual would regularly and willingly engage in that behaviour.

We found that high levels of satisfaction of competence predicts that clinicians will report practicing SMS in all three areas: clinical and organizational SMS and patient centredness. Our results suggest that the most import thing organizations can do to support their clinicians in providing SM for patients with LTCs is to offer them professional training that would improve their level of competence and confidence that they can effectively support patients in their efforts to self-manage. We found that internalized regulation to support SMS is associated with engagement in clinical and organizational SMS, which is expected. According to the SDT, people internalize certain behaviours much easier in positive social context so we can suggest that organizations would focus on building culture that recognizes an importance and values SMS and creating supportive working environment where clinicians feel free to choose the most appropriate way to support SM and feel that their efforts to provide SMS are appreciated by their colleagues and supervisors.

Predictors of volunteering for training in the practice of SMS

There were no particular demographic or professional characteristic distinguishing between clinicians who volunteered or did not volunteer for the training. However, we found that clinicians who volunteer to attend training had less previous training experience and hence perhaps they perceived this as an opportunity to develop SMS skills. The satisfaction of the need for autonomy in relation to SMS was greater amongst clinicians who had not volunteered for the training, as well as their internalized regulation to support SM. One of the explanations is that clinicians who have not volunteered already attended more training, were more skilled to provide effective SMS and thus they felt more autonomous and motivated to do it, as it was more "natural" behaviour for them. Interestingly, clinicians who volunteered for the training were more likely to engage in patient-centred practices. These include having an individualized approach to each patient, responding to patient's needs and expectations and customizing treatment to best fit patients' unique situation. Providing patient-centred care as described here requires good communication skills, certain personal features and mindset, rather than particular techniques that can be applied during clinical consultations. Clinicians who volunteered to attend the training spend more time in their working week with patients with LTCs, suggesting a greater affinity for these patients and perhaps a recognition of the need for a higher level of training.

Effectiveness of training in the practice of SMS

The training course aimed to teach skills in exploring patient's SM strategies and supporting patients in building new skills, using agenda setting, collaborative goal setting and follow up and, problem solving that can be applied during consultations. The pre–post course improvements in clinicians' engagement on clinical SMS and patient centredness suggest that these aspects of the course were effective. We did not find any changes in clinicians' engagement in organizational SMS, which is probably related to the low observed course content in this area. We also found that completing the training significantly increases clinicians' confidence to effectively support self-management and autonomy to support SM. We did not find any significant changes in relatedness, which may be a consequence of the course not being targeted on whole clinical teams but individual volunteers.

Psychological predictors of the effectiveness of training in the practice of SMS

In accordance with the SDT assumptions we found that pre-training satisfaction of the three psychological needs was a good predictor of post-training engagement in clinical and organizational SMS. Post-training satisfaction of the three basic needs predicted engagement in patient-centred practices and organizational SMS after completing the training. This suggests that training aiming to increase clinicians' engagement in SMS should not only focus on teaching particular skills but also focus on building clinicians' confidence to support SM, team building and team working and enable clinicians to find their preferred way to support their patients to self-manage.

Potential applications of the study

Our study has shown that the most important factors that determine whether clinicians provide SMS for patients with LTCs are feelings of competence in relation to SMS, autonomy to engage in SMS, followed by internalized regulation to support SM. Unfortunately, there is little research regarding the relationship between perceived competence, motivation and performance of healthcare professionals. Nevertheless, our findings are in accordance with the main assumptions of the SDT that a positive social context, together with satisfying basic psychological needs, creates a situation that enhances internalization of certain behaviours. It is suggested that supporting competence facilitates internalization and thus increases the probability that the person will engage in the activities in the future.

We conclude that to facilitate clinicians to practice SMS for patients with LTCs it is very important to provide relevant professional training, professional support and incentives to foster clinicians' perceptions of their competence in relation to these practices. Collaborative behavioural and lifestyle change skills are relevant to all clinicians; however, we identified a few factors that increased the likelihood of clinicians volunteering for this training. Clinicians who spend more than half of their working week with patients with LTCs, who already have well-developed communication skills, sensitivity to patients' needs and expectations, but at the same time they feel they lack skills and techniques to effectively support patients SMS are the group who perhaps will benefit the most from attending training. Professional training should focus not only on developing communication skills and SMS techniques but should also focus on the importance and value of SM and perhaps also cover some aspects of building clinical teams to work together to support SM for LTCs. We suggest that targeting training on whole teams is a requirement for achieving improvements in the organizational aspects of self-management. This is because fellow team members can support team learning, but moreover team members together hold the knowledge and resources to make changes in the organization of their services. From the findings of this study, we can also recommend that to support clinicians in their efforts to support SM for LTC, organizations should develop a culture that values SMS, offer clinicians training to enhance their sense of competence to effectively deliver SMS, support clinicians in finding their own way of supporting SM and ensure they know that their efforts to support SM are recognized and appreciated by their colleagues and supervisors; in other words create an optimal context to internalize SMS behaviours.

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