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Short report

A large-scale longitudinal study indicating the importance of perceived effectiveness, organizational and management support for innovative culture

Jane M. Cramm, Mathilde M.H. Strating, Roland Bal, Anna P. Nieboer*

Institute of Health Policy and Management, Erasmus University, P.O. Box 1738, 3000 DR Rotterdam, The Netherlands

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ABSTRACT

Teams participating in QI collaboratives reportedly enhance innovative culture in long-term care, but we currently lack empirical evidence of the ability of such teams to enhance (determinants of) innovative culture over time. The objectives of our study are therefore to explore innovative cultures in QI teams over time and identify its determinants. The study included QI teams participating between 2006 and 2011 in a national Dutch quality program (Care for Better), using an adapted version of the Breakthrough Method. Each QI team member received a questionnaire by mail within one week after the second (2–3 months post-implementation of the collaborative = *T0*) and final conference (12 months post-implementation = *T1*). A total of 859 (out of 1161) respondents filled in the questionnaire at *T0* and 541 at *T1* (47% response). A total of 307 team members filled in the questionnaire at both *T0* and *T1*. We measured innovative culture, respondent characteristics (age, gender, education), perceived team effectiveness, organizational support, and management support. Two-tailed paired *t*-tests showed that innovative culture was slightly but significantly lower at *T1* compared to *T0* (12 months and 2–3 months after the start of the collaborative, respectively). Univariate analyses revealed that perceived effectiveness, organizational and management support were significantly related to innovative culture at *T1* (all at $p \leq 0.001$). Multilevel analyses showed that perceived effectiveness, organizational support, and management support predicted innovative culture. Our QI teams were not able to improve innovative culture over time, but their innovative culture scores were higher than non-participant professionals. QI interventions require organizational and management support to enhance innovative culture in long-term care settings.

Introduction

Innovative cultures reportedly enhance the creation and implementation of new ideas and working methods in organizations (Caldwell & O'Reilly, 2003). Team involvement in quality improvement (QI) activities increases professionals' commitment to implementing change and developing new ideas, which is expected to enhance an innovative culture (Nieboer & Strating, 2012; Strating & Nieboer, 2010). Group norms that influence attitudes and behaviors by representing what 'is' or 'ought to be' in a particular situation, may be more or less conducive to creativity, risk-taking, and error toleration, thus facilitating or inhibiting innovation by generating social approval through working together effectively and acting quickly (Curry, Spatz, Cherlin, et al, 2010). Innovative cultures reflect attitudes and behaviors of teams as well as the organization and are known to provide a link between effective organizational practice and high-quality healthcare (Mickan & Rodger, 2000; St. John Burch & Anderson, 2003).

Teams in QI collaboratives are increasingly used to improve healthcare and are expected to enhance innovative culture (Cramm, Strating, & Nieboer, 2012; Nieboer & Strating, 2012). One instrument used widely by such collaboratives is the "breakthrough method" developed by the Institute of Healthcare Improvement (Institute for Healthcare Improvement, 2003). In breakthrough projects QI teams from different organizations join forces to improve a certain aspect of care within a specified timeframe. The teams develop and implement improvement actions targeted to their own organizations and client groups. Best practices or evidence-based interventions are the usual starting points; QI teams learn about them at national conferences organized for this purpose. They are then expected to act as 'learning laboratories'

* Corresponding author. Tel.: +31 10 408 2804; fax: +31 10 408 9094.
E-mail address: nieboer@bmg.eur.nl (A.P. Nieboer).

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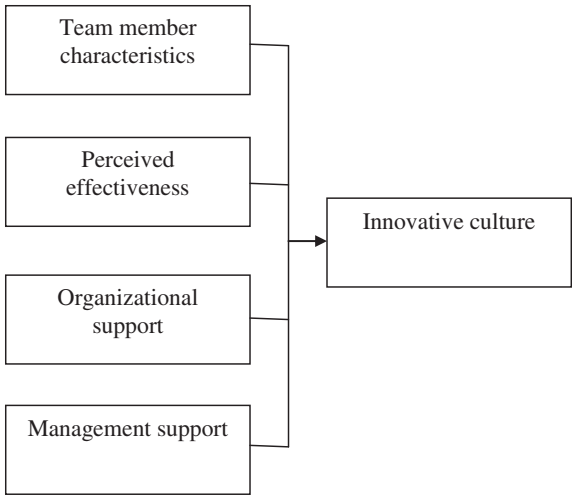

Fig. 1. Conceptual model.

(Senge & Scharmer, 2001) to enhance innovative culture by stimulating and implementing innovations and quality improvement methods (Strating, Broer, Bal, et al., 2011; Strating, Nieboer, Zuiderent-Jerak, et al., 2011; Zuiderent-Jerak, Strating, Nieboer, et al, 2009).

We currently lack empirical evidence on (i) QI teams' ability to enhance innovative culture and (ii) the determinants of innovative culture. Studies have demonstrated that perceived organizational and management support is associated with QI teams' success in enhancing innovative culture (Amabile & Conti, 1999; Kaplan, Brady, Dritz, & et al, 2010). Evidence from Amabile, Schatzel, Moneta, et al (2004) suggests that having support from the organization (e.g., time, resources, training, skills) and management (e.g., attentiveness, coaching, giving useful feedback, being open to criticism) influences employees' creative freedom and encourages intrinsic motivation to be creative, both of which are conducive to innovative culture. Support includes providing clarity of goals and establishing an environment that promotes innovation (e.g., giving time to develop new ideas, allowing teams to try new methods, promoting innovative solutions to problems) (Amabile & Conti, 1999; Amabile et al., 2004).

In addition to organizational and management support, QI team members' perception of new working methods as being effective may benefit an innovative culture. Shortell, Marsteller, Lin, et al (2004) found that the greater the *perceived* effectiveness, the greater the number and depth of changes made to improve quality of care, which indicates an enhanced innovative culture.

The objectives of our study are to explore innovative culture over time and identify the determinants of innovative culture, leading to two main research questions: Are QI teams able to improve innovative culture over the course of the improvement project? What are the predictive roles of team member characteristics, perceived effectiveness, and support (organization and management) on innovative culture? Our results will improve insight into the factors that enhance innovative culture (see Fig. 1 for our conceptual model).

Methods

Setting and design

The longitudinal study included QI teams participating between 2006 and 2011 in a national Dutch quality program (Care for Better). Each QI team was part of one of 12 QI collaboratives which focused on improving one specific quality topic varying from malnutrition to process redesign (see appendix) **[INSERT LINK TO ONLINE FILES]** (Broer, Nieboer, & Bal, 2010; Strating, Broer, et al., 2011; Strating, Nieboer, et al., 2011; Strating, Zuiderent-Jerak, Nieboer, et al, 2008). Participating long-term care organizations were nursing homes, residential care homes, home care providers, and care providers for the mentally or physically disabled. As this study included staff members only and not patients, we did not need approval from an ethics committee.

The Care for Better QI program followed an adapted version of the Breakthrough method. QI teams were invited by the knowledge institutes to attend four national conferences (called learning sessions; IHI, 2003) offering workshops and sessions in which questions could be asked of other teams or experts. During these learning sessions QI teams were brought together from each QI collaborative and the knowledge institutes to exchange ideas. Between the learning sessions the QI teams developed and executed the interventions in their own organizations (called action periods IHI, 2003) under the guidance of process counselors and using the Plan-Do-Study-Act cycle, which consists of a series of actions: planning and carrying out small-scale actions, measuring whether the actions led to the expected outcomes, and adjusting the actions if the outcomes were not achieved.

Data collection and measures

Project leaders from the 306 QI teams selected 1161 team members to fill in a questionnaire. Each selected QI team member received the questionnaire by mail within one week after the second conference (2–3 months post-implementation of the collaborative = *T*0) and final conference (12 months post-implementation = *T*1) (see flowchart) (Fig.2) **[INSERT LINK TO ONLINE FILES]**. A total of 859 (out of 1161) respondents filled in the questionnaire at *T*0 (response rate 74%) representing 259 teams (out of 306; response rate 85%) and 12 QI collaboratives (out of 12; 100% response). At *T*1 541 (out of 1161; 47% response) filled in the questionnaire representing 214 teams (out of 306; response rate 70%) and 12 QI collaboratives (out of 12; 100% response). A total of 307 team members filled in the questionnaire at both *T*0 and *T*1 (representing 158 QI teams and 12 QI collaboratives).

Age, gender and education level were assessed at *T*0. Educational level was assessed on an ordinal scale ranging from 0 to 7, with higher scores indicating a higher educational level.

Innovative culture was assessed at *T*0 and *T*1 using 15 items of the Group Innovation Inventory (GII) (Nieboer & Strating, 2012). This instrument consists of four dimensions underlying the GII. Two dimensions are 'group functioning' and 'speed of action', which are related to the team level. These two dimensions concern the extent to which group norms support cooperation and exchange of information among members of improvement teams, as well as the presence of a shared sense of the need to accomplish things quickly. Two other dimensions 'risk taking' and 'tolerance of mistakes' are related to the organizational level (see appendix). Innovative culture, therefore, reflects attitudes and behaviors of the team as well as the organization. Respondents were asked to answer statements on a 5-point scale ranging from 'strongly disagree' to 'strongly agree'. Higher scores indicated a more innovative culture. Missing values were replaced by mean subscale scores if at least two-thirds of the items were filled in. Cronbach's alpha of the scale was 0.77 at *T*0 and 0.81 at *T*1 indicating reliability.

Four questions with 5-point response scales assessed perceived team effectiveness during their project at *T*1 (Lemieux-Charles & McGuire, 2006; Lemieux-Charles, Murray, Baker, et al, 2002) by asking about the extent to which each QI team member (1) believed