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# Measuring Teamwork in Primary Care: Triangulation of Qualitative and Quantitative Data

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This article describes the triangulation of qualitative dimensions, reflecting high functioning teams, with the results of standardized teamwork measures. The study used a mixed methods design using qualitative and quantitative approaches to assess teamwork in 19 Family Health Teams in Ontario, Canada. This article describes dimensions from the qualitative phase using grounded theory to explore the issues and challenges to teamwork. Two quantitative measures were used in the study, the Team Climate Inventory (TCI) and the Providing Effective Resources and Knowledge (PERK) scale. For the triangulation analysis, the mean scores of these measures were compared with the qualitatively derived ratings for the dimensions. The final sample for the qualitative component was 107 participants. The qualitative analysis identified 9 dimensions related to high team functioning such as common philosophy, scope of practice, conflict resolution, change management, leadership, and team evolution. From these dimensions, teams were categorized numerically as high, moderate, or low functioning. Three hundred seventeen team members completed the survey measures. Mean site scores for the TCI and PERK were 3.87 and 3.88, respectively (of 5). The TCI was associated will all dimensions except for team location, space allocation, and executive director leadership. The PERK was associated with all dimensions except team location. Data triangulation provided qualitative and quantitative evidence of what constitutes teamwork. Leadership was pivotal in forging a common philosophy and encouraging team collaboration. Teams used conflict resolution strategies and adapted to the changes they encountered. These dimensions advanced the team's evolution toward a high functioning team.



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There has been a longstanding interest in what constitutes teamwork in primary health care (Craigie & Hobbs, 2004; Drinka & Clark, 2000; Grumbach & Bodenheimer, 2004; Lemieux-Charles & McGuire, 2006; Long, 1996; Molyneux, 2001; Payne, 2000). Studies have explored both the instrumental and relational aspects of teamwork in primary health care (PHC). Instrumental aspects include sustaining activities both formal and informal (Brown et al., 2010; Craigie & Hobbs, 2004; Freeth, 2001; Hodson, 2004) and communication strategies to resolve conflict (Baxter & Brumfitt, 2008; Brown et al., 2011; Zwarenstein & Reeves, 2002); whereas relational aspects have addressed recognition of team members' scope of practice or the role of leadership on primary health care teams (Goldman, Meuser, Roger, et al., 2010, Goldman, Meuser, Lawrie, et al., 2010; Ragaz, Berk, Ford, & Morgan, 2010).

The Ontario Ministry of Health and Long-Term Care responded to the call to reform the delivery of primary health care by establishing Family Health Teams (FHTs). This initiative began in 2005, and by 2014 there were 200 FHTs serving approximately 22% of the provincial population (Accreditation Canada, 2013; Hutchison & Glazier, 2013). These interprofessional health care teams commonly include family physicians, registered nurses, social workers, nurse practitioners, dietitians, pharmacists, and registered practical nurses (Accreditation Canada, 2013; Hutchison & Glazier, 2013). FHTs serve as patient-centered medical homes and are intended to effect improvement in access to primary health care, quality and comprehensiveness of care (with an emphasis on chronic disease management, health promotion and disease prevention), interdisciplinary teamwork, patient engagement, and integration and coordination of care (system navigation) (Accreditation Canada, 2013). Physicians working in FHTs are remunerated through blended capitation or blended salary payment models, which include additional payments for priority services and pay-for-performance (Accreditation Canada, 2013; Hutchison & Glazier, 2013).

With the implementation of FHTs in Ontario 10 years ago, there has been a renewed research interest in this model of PHC delivery. Prior research has assessed primary health care teams from both quantitative (Howard, Brazil, Akhtar-Danesh, & Agarwal, 2011; Poulton & West, 1999) and qualitative perspectives (Brown et al., 2009; Brown et al., 2010; Brown et al., 2011; Conn, Oandasan, Creede, Jakubovicz, & Wilson, 2010; Goldman, Meuser, Roger, et al., 2010, Goldman, Meuser, Lawrie, et al., 2010), but rarely have they used a mixed methods approach. To our knowledge no study of FHTs has of yet triangulated the findings of both methodologies from one study. This article redresses this gap.

## Overall Methodology

The overall study used a mixed methods design to assess teamwork based on an examination of 19 FHT practice sites. This article describes the triangulation of the qualitative characteristics, reflecting high functioning teams, with the results of standardized measures of teamwork. The purpose of triangulation is to bring together different data to promote rigor, develop a deeper meaning of the data, and finally to gain a more complete picture of the topic under inquiry (O'Cathain et al., 2010). In this study, we applied methodological triangulation bringing together qualitative and quantitative data to reveal the complementarity or dissonance of the evidence (Creswell, Fetters, & Ivankova, 2004; Guion, Diehl, & McDonald, 2011). Additionally, this study sought to validate two quantitative measures in FHTs, an emerging model of PHC.

The article describes specific themes elucidated from the qualitative phase of the study and two quantitative measures of teamwork also used in the study, the TCI (Kivimäki & Elovainio, 1999) and the PERK scale (MacLean et al., 2007). We begin by first describing the qualitative methods and results, second, describing the quantitative methods and results, and finally describing the triangulation of these

data sets. This sequence mirrors the order in which the data were collected and analyzed.

Ethics approval for this study was received from the University of Western Ontario's Review Board for Health Sciences Research Involving Human Subjects.

## Family Health Team Site Recruitment

Nineteen practice sites were recruited by the Ontario College of Family Physicians (OCFP), and were selected to represent maximum variation in terms of location, year of FHT approval, mix of health professionals, practice configuration (e.g., single site, multisite), and community being served by the FHT. To ensure provincial perspective, at least one site in each of the 14 Local Health Integration Network (LHIN) areas was included. The demographics of the 19 FHT practice sites were as follows: nine urban (including large and smaller city sites), three urban/rural mix, three rural, two suburban, and two northern (including both urban and more rural populations).

## Qualitative Method

### Purpose

Grounded theory was the chosen qualitative methodology for this study. Grounded theory has the potential to reveal social processes and to explain the integration of these processes (Charmaz, 2006). The research team used a grounded theory approach to explore and identify the issues and challenges to teamwork and teambuilding within the participating practices (Charmaz, 2006). The ultimate goal was to identify dimensions reflecting high, moderate, and low functioning teams.

### Participant Recruitment

Participants were recruited from each of the 19 participating practices most often by the Executive Director or office manager. They were asked to recruit volunteers from the practice who would reflect the overall team composition such as dietitians, the executive director, family physicians, nurse practitioners, pharmacists, registered nurses, and social workers. Informed consent was received from each participant before the interview began.

### Data Collection

A semistructured in-depth interview was conducted with each participant by one of three interviewers (J.B.B., B.L.R., C.T.). The interviews began with broad questions: *Tell me about your team*, *What makes your team work?*. Further questions explored participants' ideas and perceptions regarding topics such as scope of practice, conflict resolution, and leadership. Interviews were conducted at the practice site and lasted 30 minutes on average. A brief description of each practice was developed to document the context (staff complement, size, physical plant), and field notes were generated after each site visit.

### Data Analysis

Interviews were audio-recorded and transcribed verbatim. Data collection and analysis occurred simultaneously, following an inductive, iterative process. Coding was framed by three progressive stages: open, axial, and selective (Charmaz, 2006). Open coding consisted of researchers independently reviewing transcript line by line to determine codes. As each new transcript was analyzed, data were compared with existing codes and either an existing code was assigned or a new code was created. Axial coding constituted the second stage of analysis, in which codes were compared with each other. Selective coding was the final stage, in which categories were examined and compared with each other resulting in the emergence of nine dimension related to team functioning.

Further analysis was conducted to discriminate among the 19 teams and identify them as *high functioning*, *moderately functioning*, or *low functioning*. Exemplar quotes were used from each site to construct a case vignette which was organized by the nine dimensions. From these vignettes, the three researchers reached a consensus and developed a matrix for each team by assigning numeric values of 3 (*high*), 2 (*moderate*), and 1 (*low*) to each of eight dimensions. The ninth dimension, team evolution, was categorized as *advanced* (3), *progressing* (2), or *stalled* (1). This transfor-

mation of qualitative findings is consistent with the protocol for triangulation analysis (Creswell et al., 2004).

## Qualitative Results

The final sample consisted of 107 participants (4 to 6 team members per site) from 19 FHT practices in both rural and urban locations. Team size ranged from 9 to 80 team members. Participants included family physicians (27), nurses (16), nurse practitioners (12), executive directors (11), social workers (10), dietitians (9), administrative assistants (8), management personnel (5), pharmacists (3), psychologists (2), physician assistants (2), occupational therapist (1), and respiratory therapist (1). The average age was 41 years, with a median age of 42 years (range, 23 to 72 years). There were 87 female and 20 male participants. The participants had been in their current positions an average of 5.5 years, ranging from less than a month to 36 years.

From the qualitative analysis, we identified nine dimensions related to high team functioning: 1. common philosophy toward teamwork; 2. scope of practice: (a) recognizing each member's scope of practice and (b) utilizing each member's scope of practice; 3. EMR use; 4. physical environment: (a) team location and (b) space allocation; 5. activities for team building: (a) formal and (b) informal; 6. conflict resolution; 7. change management strategies; 8. effective leadership: (a) family physician leadership and (b) executive director leadership; and 9. team evolution. Table 1 provides exemplar quotes illustrating each dimension.

Table 2 reports the frequencies of the qualitatively derived scores for high, moderate and low functioning teams on each of the nine dimensions. All teams but one were identified as high functioning on the "EMR use" dimension. With the exception of space allocation, formal and informal activities, conflict resolution, and executive director leadership, the majority of teams were identified as high functioning for the remaining dimensions. The dimension of team evolution was categorized as *advanced* (3), *progressing* (2), or *stalled* (1) and the majority of teams were either progressing (47.4%) or advanced (36.8%) in their evolution, with only three teams (15.8%) categorized as stalled in their team evolution.

## Quantitative Method

### Purpose

The purpose of the team member survey data collection was to administer the TCI and PERK scale to members at the 19 FHT practice sites to assess teamwork.

### Participant Recruitment

All team members at each site were sent an e-mail invitation on behalf of the researchers from their Executive Director or Lead Physician. The invitation provided a site-specific link to an online, anonymous survey using Google Docs. The Executive Director or Lead Physician provided the researchers with the number of team members who received the invitation so that response rates could be calculated for each site.

### Data Collection

Team members at the 19 FHT practice sites completed surveys online with the exception of one site that completed them by computer and paper. The survey included demographic questions, the validated 14-item TCI Scale, and the four-item PERK scale. The TCI measures 4 dimensions of teamwork: (a) team objectives, (b) participation, (c) task orientation, and (d) support for new ideas. The PERK examines the contribution of management to teamwork: (a) promoting teamwork, (b) knowledge about how to promote teamwork, (c) providing opportunities and time for teambuilding, and (d) committing financial and other resources to support teamwork. For each of the items in the TCI and PERK surveys, the team member clicked on the most appropriate response ranging from a score of 1 (lowest teamwork) to 5 (highest teamwork). The mean TCI score was calculated by summing the responses to the 14 items and dividing by 14 with higher scores indicating more teamwork. Similarly, the four PERK items were summed and divided by four to obtain the mean PERK score.

### Data Analysis

For both the TCI and PERK scales, the mean scores, standard deviations, medians, and ranges of scores were calculated. Bivariate analyses using *t* tests and ANOVA with

Table 1
*Exemplar Quotes for Each of the Team Dimensions*

| Dimension | Quote |
|---|---|
| 1. Common philosophy toward teamwork | *"The team works best with people who really care about what they're doing . . . We're proud to be part of this team. We want to provide excellent service, excellent care, excellent teamwork; we're all on the same page where we all have the same goals."* |
| 2. Scope of practice | |
| (a) Recognizing each members' scope of practice | *"The things that make it* [the team] *work are mutual respect and mutual understanding of one another's scope of practice, then trying to do what's best for patients."* |
| (b) Utilizing each members' scope of practice | *"They didn't really understand the scope for Nurse Practitioners or how to use them because they've never used them before. So there were two physicians that were sort of more advanced in what they understood about the Nurse Practitioner role . . . but there was a bit of animosity between physicians and Nurse Practitioners. A bit of a turf war almost."* |
| 3. EMR use | *"We all communicate through the computer. It's much more efficient than having a weekly team meeting . . . We have a virtual team meeting through the computer and I'm so impressed with how it works."* |
| 4. Physical environment | |
| (a) Team location | *"One of the biggest problems with our Family Health Team right now is the geographic thing. The docs and the allieds are totally separate. And as a result of that . . . there's not that sense of team."* |
| (b) Space allocation | *"It's an upstairs, downstairs and it would be so much easier* [to communicate] *if it was just one floor."* |
| 5. Activities for team building | |
| (a) Formal | *"We do have weekly meetings . . . that's a very effective strategy."*<br>*"So this is the dysfunctional part of our Family Health Team, so our lead physician has stopped having meetings."* |
| (b) Informal | *"We're having, we're trying to do a few things, the bigger group, we're having a barbeque in June, there's a Christmas party, unfortunately the Christmas party is always very poorly attended. The barbeque last year was poorly attended."* |
| 6. Conflict resolution | *"I mean the barriers come when somebody can't see your point of view and, or says they see it, but nothing changes."*<br>*"If something is not working, then we deal with it pretty quickly because we want to get good outcomes for the clinic . . . and for the patients."* |
| 7. Change management strategies | *"Change has been so normal here that people are just sort of used to it. Because we were one of the earlier Family Health Teams, there's been lots of changes over the years . . . there's just always changes."*<br>*"It's just been exhausting and people are a bit staggered yet continue to function . . . So I think how we've managed to soldier on is just focusing on our strengths, not taking on more and just getting through."* |
| 8. Effective leadership | |
| (a) Family physician leadership | *"I appreciate their* [FP Leads] *vision of how they believe that health care should be provided . . . They re very encouraging and inspiring to work with."* |
| (b) Executive director leadership | *"I think she's an excellent executive director and I think the things that make her that way is that she's empathetic to what's going on; she asks your opinion."* |
| 9. Team evolution | *"Now because we've been operating for about a year and a half I definitely see a different Family Health Team than what we were at the beginning. There is more communication, there's more engagement, and there's a lot more collaborative care happening."* |



post hoc tests examined whether there were differences between these scores for different groups of team members.

## Quantitative Results

There were 317 team members who completed the surveys. Table 3 reports the sample demographics. Response rates ranged from 29% to 100%, with a mean response rate of 53%. The following are the mean TCI and PERK scores for the 19 FHT practice sites.

The mean TCI practice site score was 3.87 of a possible 5, with a standard deviation of 0.39. Practice site scores ranged from 3.03 to 4.49. Male team members reported significantly

Table 2
*Frequencies of the Qualitatively Derived Scores for High, Moderate, and Low Functioning Teams on Each of the Nine Dimensions (n = 19 Teams)*

| Level of team functioning | Low | | Moderate | | High | |
|---|---|---|---|---|---|---|
| Dimension | *n* | % | *n* | % | *n* | % |
| 1. Common philosophy toward teamwork | 5 | 26.3 | 2 | 10.5 | 12 | 63.2 |
| 2a. Scope of practice – recognizing each member's scope of practice | 2 | 10.5 | 5 | 26.3 | 12 | 63.2 |
| 2b. Scope of practice – utilizing each member's scope of practice | 4 | 21.1 | 4 | 21.1 | 11 | 57.9 |
| 3. EMR use | 0 | 0 | 1 | 5.3 | 18 | 94.7 |
| 4a. Physical plant/team environment – team location | 5 | 26.3 | 4 | 21.1 | 10 | 52.6 |
| 4b. Physical plant/team environment – space allocation | 7 | 36.8 | 6 | 31.6 | 6 | 31.6 |
| 5a. Activities for team building – formal | 8 | 42.1 | 3 | 15.8 | 8 | 42.1 |
| 5b. Activities for team building – informal | 5 | 26.3 | 5 | 26.3 | 9 | 47.4 |
| 6. Conflict resolution | 3 | 15.8 | 11 | 57.9 | 5 | 26.3 |
| 7. Change management strategies | 4 | 21.1 | 5 | 26.3 | 10 | 52.6 |
| 8a. Effective leadership – family physician leadership | 3 | 15.8 | 6 | 31.6 | 10 | 52.6 |
| 8b. Effective leadership – executive director leadership | 6 | 31.6 | 4 | 21.1 | 9 | 47.4 |
| 9. Team evolution | 3 | 15.8 | 9 | 47.4 | 7 | 36.8 |

higher mean TCI scores (4.06) than did females (3.77) $p = .001$. Team members who had worked in teams for three to seven years had lower team scores than those who had been there one year or less. There was no statistically significant difference across TCI scores for the other team member characteristics (i.e., age, number of hours worked, provider type).

The mean PERK practice site score was 3.88 of a possible 5 with a standard deviation of 0.49. Scores ranged from 2.90 to 4.67. There was no statistically significant difference across the PERK scores for any of the team member characteristics.

## Triangulation Analysis

For the triangulation of the qualitative and quantitative results, described above, a bivariate analysis was conducted in SPSS v.21 (IBM SPSS Statistics) using analysis of variance (ANOVA) to compare means. The mean scores of the TCI and the PERK were compared with the qualitatively derived ratings for eight of the nine dimensions of team functioning: 1. common philosophy toward teamwork; 2. scope of practice: (a) recognizing each members' scope of practice and (b) utilizing each members' scope of practice; 4. physical plant/team environment: (a) team location and (b) space allocation; 5. activities for team building: (a) formal and (b) informal; 6. conflict resolution; 7. change management strategies; 8. effective leadership: (a) family physician leadership and (b) executive director leadership; and 9. team evolution. It was not possible to examine the association between the level of team functioning on EMR use and either the TCI or the PERK due to lack of variability in the teams concerning the dimension of EMR use (18 out of the 19 teams scored as high functioning on EMR use).

## Triangulation Results

The TCI was significantly associated with the following qualitatively derived team dimension ratings: common philosophy, recognition of scope of practice and utilization of scope of practice, formal and informal activities for team building, conflict resolution, change management strategies, effective family physician leadership, and team evolution (see Table 4).

The PERK score was significantly associated with the qualitatively derived team dimension ratings: common philosophy, recognition and utilization of the scope of practice, space allocation, formal and informal activities for team building, conflict resolution, change management strategies, effective family physician and executive director leadership, as well as team evolution (see Table 4).

## Discussion

This article demonstrates how triangulating qualitative and quantitative results from the same study can enrich our understanding about

Table 3
*Team Member Surveys: Respondent Characteristics (n = 317 Team Members)*

| Characteristic | *n* | Percent |
|---|---|---|
| Sex | | |
| Male | 51 | 16.1 |
| Female | 266 | 83.9 |
| Total | 317 | 100.0 |
| Age | | |
| <25 years old | 15 | 4.7 |
| 25–34 years old | 79 | 24.9 |
| 35–44 years old | 74 | 23.3 |
| 45–54 years old | 88 | 27.8 |
| 55–64 years old | 55 | 17.4 |
| 65+ years old | 6 | 1.9 |
| Total | 317 | 100.0 |
| Years employed | | |
| ≤ 1 year | 45 | 14.2 |
| 1.01–3 years | 73 | 23.0 |
| 3.01–7 years | 119 | 37.5 |
| > 7 years | 78 | 24.6 |
| Missing | 2 | 0.6 |
| Total | 317 | 100.0 |
| Hours worked per week | | |
| ≤ 23 hours | 31 | 9.8 |
| 24–35 hours | 35 | 11.0 |
| 36–39 hours | 74 | 23.3 |
| ≥ 40 hours | 173 | 54.6 |
| Missing | 4 | 1.3 |
| Total | 317 | 100.0 |
| Profession | | |
| Administrative lead/ED | 29 | 9.1 |
| Administrative support | 92 | 29.0 |
| Allied providers | 51 | 16.1 |
| Nursing | 65 | 20.5 |
| Physician | 77 | 24.3 |
| Missing | 3 | 0.9 |
| Total | 317 | 100.0 |

the topic under investigation. The results of the triangulation revealed both complementary findings and some dissonance (Creswell, Fetters, & Ivankova, 2004; Guion, Diehl, & McDonald, 2011). Triangulation demonstrated how qualitatively derived dimensions of high functioning teams were related to teamwork as measured by the TCI and PERK. These dimensions were both relational and instrumental in nature.

Sites that reflected strong teamwork, as measured by the TCI, demonstrated a shared philosophy regarding the value of teamwork and both recognized and utilized team members' scope of practice. They also participated in both formal (e.g., staff meetings) and informal (e.g., potluck lunches) team building activities. These teams demonstrated conflict resolution strategies and were adaptive to change. Strong leadership provided by the family physician, in particular, promoted teamwork. High functioning teams in this study were progressing well in their evolution as an interdisciplinary team.

Prior studies have identified these dimensions as important characteristics of teamwork. For example, researchers have found a shared philosophy regarding the value of teamwork as a key dimension (Brown et al., 2006; Goldman, Meuser, Roger, et al., 2010; Howard et al., 2011), whereas others have highlighted the importance of "rethinking traditional roles and scopes of practice" (Goldman, Meuser, Roger, et al., 2010, p. e370).

We were unable to determine an association between the TCI and EMR use. Eighteen of the 19 FHTs in our study were identified as high functioning with respect to EMR use. This finding suggests that EMR use is now part of everyday practice for these FHTs. This may reflect the current increase in the adoption and implementation of EMRs in primary care in Ontario (The College of Family Physicians of Canada, Canadian Medical Association, The Royal College of Physicians and Surgeons of Canada, 2013).

Our qualitative findings revealed the challenges FHTs experienced in optimizing their physical environment for teamwork and is supported by prior research with FHTs (Goldman, Meuser, Roger, et al., 2010). However, there was no association between this qualitative dimension of teamwork and the TCI.

The importance of formal and informal team building activities has been cited in the literature (Brown et al., 2010; Conn et al., 2010; Craigie & Hobbs, 2004; Goldman, Meuser, Roger, et al., 2010), as has conflict resolution strategies and adaptation to change (Baxter & Brumfitt, 2008; Brown et al., 2011). The crucial role of leadership has been documented in recent research (Beaulieu et al., 2014; Goldman, Meuser, Roger, et al., 2010).

In a similar way to the TCI, the PERK was associated with a number of the qualitatively derived dimensions of high functioning teams. The association of the PERK with a common philosophy as well as recognition and utilization of team members' scope of practice suggests that management has a role to play in

Table 4
*Mean Team Climate Inventory (TCI) Scores and Providing Effective Resources and Knowledge (PERK) Scale Scores for Teams, by The Qualitatively Derived Scores, For High, Moderate and Low Functioning Teams (n = 19 Teams)*

| Dimension | TCI scores | | | | PERK scores | | | |
|---|---|---|---|---|---|---|---|---|
| Level of team functioning | Low | Moderate | High | *p* value[a] | Low | Moderate | High | *p* value[a] |
| 1. Common philosophy toward teamwork | 3.52 | 3.70 | 4.04 | **.025** | 3.40 | 3.71 | 4.10 | **.012** |
| 2a. Scope of practice – recognizing each member's scope of practice | 3.54 | 3.57 | 4.05 | **.017** | 3.39 | 3.55 | 4.09 | **.025** |
| 2b. Scope of practice – utilizing each member's scope of practice | 3.48 | 3.68 | 4.08 | **.008** | 3.35 | 3.67 | 4.14 | **.005** |
| 3. EMR use | n/a | [b] | 3.92 | — | n/a | [b] | 3.93 | — |
| 4a. Physical plant/team environment – team location | 3.89 | 3.96 | 3.83 | .862 | 3.78 | 3.94 | 3.90 | .876 |
| 4b. Physical plant/team environment – space allocation | 3.63 | 4.01 | 4.01 | .110 | 3.53 | 4.08 | 4.09 | **.044** |
| 5a. Activities for team building – formal | 3.63 | 3.84 | 4.13 | **.026** | 3.56 | 3.91 | 4.19 | **.023** |
| 5b. Activities for team building – informal | 3.48 | 3.82 | 4.11 | **.006** | 3.35 | 3.73 | 4.25 | **.001** |
| 6. Conflict resolution | 3.27 | 3.89 | 4.20 | **.001** | 3.17 | 3.85 | 4.37 | **.001** |
| 7. Change management strategies | 3.48 | 3.69 | 4.12 | **.003** | 3.35 | 3.63 | 4.21 | **.001** |
| 8a. Effective leadership – family physician leadership | 3.25 | 3.85 | 4.07 | **.001** | 3.26 | 3.74 | 4.14 | **.007** |
| 8b. Effective leadership – executive director leadership | 3.66 | 3.74 | 4.07 | .094 | 3.55 | 3.77 | 4.15 | **.048** |
| 9. Team evolution | 3.31 | 3.84 | 4.15 | **.002** | 3.17 | 3.84 | 4.23 | **.001** |

*Note*. n/a no sites had a "low" score.
[a] Significant *p* values bolded. [b] Too few sites, therefore not listed because of confidentiality.

promoting these two important dimensions of teamwork.

As mentioned above, it was not possible to examine the association between the PERK and EMR use because of lack of variability in the teams' scores on EMR use. The association between the PERK and space allocation may be a reflection of management's attention to the environmental needs of their teams. Similarly, the association between team building activities and PERK scores suggests management's understanding of the importance of these activities. Teams that scored higher on the PERK were also those that scored well on conflict resolution and change management.

The correlation between the PERK score and both qualitatively derived dimension ratings of executive director and family physician leadership suggest that strong leadership is linked to supporting team building and promoting teamwork. Prior work has also identified how physician leadership is central to fostering team cooperation (Beaulieu et al., 2014; Goldman, Meuser, Roger, et al., 2010). Unique to our study was the important role also played by the team's executive director, an essential position in the administration of FHTs.

In summary, this study has shown how the TCI and the PERK are associated with the qualitatively derived dimensions of a high functioning teams, thereby providing additional validation of these tools within FHTs, an emerging model of primary health care delivery. This supports the use of the TCI and the PERK as straightforward tools for measuring the team's progress toward becoming high functioning. Furthermore, they can assist in tracking the evolution of interdisciplinary teams. Additionally, the PERK can assess management's clinical and administrative support for team building in FHTs. Together, the TCI and the PERK can provide useful information for both health care practitioners and administrators.

## Limitations

A challenge in this study was the unit of analysis. For some FHTs, the unit of analysis was the entire FHT group, whereas in others it was one particular site within the FHT, and for

a few others it was at the practice level. Another limitation to consider is that the participants in the qualitative portion of the study varied by profession; however, given the large numbers ($n = 107$) in this component, saturation appears to have been achieved. Although the data in this study were collected in only one province, there was wide geographic variation across the province. The data were collected at one point in the teams' history and are therefore limited in fully documenting the teams' evolution. This calls for future research that may use a more ethnographic approach allowing for a more intense and prolonged engagement with the team(s) under study. Furthermore, an ethnographic methodology could include direct observation of teamwork to examine specific processes and activities rather than relying solely on data from individual interviews.

## Conclusion

Triangulation of the data in this study provided qualitative and quantitative evidence of what constitutes teamwork in an emerging model for delivering primary health care. The identified dimensions of teamwork were relational and instrumental in nature. The role of leadership, both family physician and executive director, was pivotal in forging a common philosophy of teamwork and encouraging team member collaboration. With this foundation, teams used conflict resolution strategies and collectively adapted to the many changes they encountered. All these dimensions advanced the team's evolution toward a high functioning team.

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