Self-reported teamwork in family health team practices in Ontario

Organizational and cultural predictors of team climate

Michelle Howard MSc PhD **Kevin Brazil** MA PhD **Noori Akhtar-Danesh** MSc PhD **Gina Agarwal** MB BS MRCGP

Abstract

Objective To determine the organizational predictors of higher scores on team climate measures as an indicator of the functioning of a family health team (FHT).

Design Cross-sectional study using a mailed survey.

Setting Family health teams in Ontario.

Participants Twenty-one of 144 consecutively approached FHTs; 628 team members were surveyed.

Main outcome measures Scores on the team climate inventory, which assessed organizational culture type (group, developmental, rational, or hierarchical); leadership perceptions; and organizational factors, such as use of electronic medical records (EMRs), team composition, governance of the FHT, location, meetings, and time since FHT initiation. All analyses were adjusted for clustering of respondents within the FHT using a mixed random-intercepts model.

Results The response rate was 65.8% (413 of 628); 2 were excluded from analysis, for a total of 411 participants. At the time of survey completion, there was a median of 4 physicians, 11 other health professionals, and 4 management and clerical staff per FHT. The average team climate score was 3.8 out of a possible 5. In multivariable regression analysis, leadership score, group and developmental culture types, and use of more EMR capabilities were associated with higher team climate scores. Other organizational factors, such as number of sites and size of group, were not associated with the team climate score.

Conclusion Culture, leadership, and EMR functionality, rather than organizational composition of the teams (eg, number of professionals on staff, practice size), were the most important factors in predicting climate in primary care teams.

EDITOR'S KEY POINTS

- Interprofessional teamwork, by way of family health teams (FHTs), shows promise as a strategy to facilitate optimal primary health care.
- This study aimed to understand how organizational factors influenced team climate and to determine whether there were modifiable factors that predicted a better team climate in the FHT setting.
- Team climate is positively predicted by strong leadership, group or developmental culture, and use of electronic medical records within the FHT.
- The lack of relationships found between most organizational factors, such as governance or mix of health professionals, and team climate suggests that interpersonal aspects of teamwork override organizational aspects, and that individuals who commit to working in this environment will engage in teamwork regardless of other factors in the environment.

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Le travail en équipe dans les cliniques de médecine familiale de l'Ontario : l'opinion des membres

Facteurs organisationnels et culturels permettant de prévoir le climat de travail en équipe

Michelle Howard MSc PhD **Kevin Brazil** MA PhD **Noori Akhtar-Danesh** MSc PhD **Gina Agarwal** MB BS MRCGP

Résumé

Objectif Déterminer les facteurs organisationnels qui permettent de prévoir des meilleurs scores à l'évaluation du climat de travail en équipe, comme indice du fonctionnement d'une équipe de santé familiale (ÉSF).

Type d'étude Étude transversale à l'aide d'une enquête postale.

Contexte Équipes de santé familiale de l'Ontario.

Participants Vingt et une des 144 ÉSF sollicitées consécutivement; l'enquête a porté sur 628 membres des équipes.

Principaux paramètres à l'étude Scores pour la mesure du climat de travail en équipe, qui évaluait le type de culture organisationnelle (de groupe, de croissance, rationnelle ou hiérarchique); perceptions du leadership; et facteurs organisationnels tels que l'utilisation des dossiers médicaux électroniques (DMÉ), la composition de l'équipe, la direction de l'ÉSF, sa localisation, ses réunions et la période écoulée depuis sa création. Toutes les analyses ont été ajustées en fonction du regroupement des répondants à l'intérieur de l'ÉSF à l'aide d'un modèle mixte à intercepts aléatoires.

Résultats Le taux de réponse était de 65,8 % (413 sur 628); 2 ont été exclus de l'analyse, pour un total de 411 participants. Au moment de l'enquête, il y avait une médiane de 4 médecins, 11 autres professionnels de la santé et 4 membres du personnel administratif et clérical par équipe. Le score moyen pour le climat de travail était de 3,8 sur une possibilité de 5. L'analyse de régression multivariée a montré que les scores pour le leadership, pour les types de culture de groupe et de croissance et pour une meilleure utilisation des possibilités des DMÉ étaient associés à des scores plus élevés pour le climat de travail. Les autres facteurs organisationnels, comme le nombres de sites et la dimension du groupe, n'étaient pas associés au score pour le climat de travail.

Conclusion Les facteurs les plus importants permettant de prévoir le climat de travail dans les équipes de santé familiale étaient la culture, le leadership et l'utilisation optimale des DMÉ, plutôt que la composition organisationnelle de l'équipe (p. ex. le nombre de professionnels dans l'équipe, le nombre de clients de la clinique).

POINTS DE REPÈRE DU RÉDACTEUR

- Le travail en équipe interprofessionnelle, sous la forme d'équipes de santé familiale (ÉSF), est une stratégie qui devrait permettre d'optimiser certains soins de santé.
- Cette étude voulait comprendre comment les facteurs organisationnels influencent le climat du travail en équipe et déterminer s'il existe des facteurs modifiables qui permettraient un meilleur climat de travail dans le contexte de l'ÉSF.
- Un leadership fort, une culture de groupe ou de croissance et l'utilisation des dossiers médicaux électroniques sont des facteurs qui favorisent un meilleur climat de travail en équipe.
- L'absence de relation observée entre le climat du travail en équipe et la plupart des facteurs organisationnels, comme la direction de l'équipe ou la diversité des professionnels de la santé, suggère que les aspects interpersonnels du travail en équipe sont plus importants que les aspects organisationnels, et que les individus qui choisissent de travailler dans un tel milieu vont se consacrer au travail en équipe quels que soient les autres facteurs présents.

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Approaches to improving the quality of health care have shifted from focusing on individual health professionals' behaviour to understanding how health professionals can best work in systems and cultures that facilitate optimal care.[1] One such strategy that shows promise is interprofessional teamwork.[2] Teamwork in health care has been defined as an "explicit decision by the team members to co-operate in meeting the shared objective."[3] Interprofessional teams in primary care, among other organizational and funding reforms, have been of interest in Canada for several decades[4] and will also constitute a large component of the emerging patient-centred medical homes in the United States[5] and Canada.

Frameworks of quality improvement emphasize the importance of teamwork in health care settings.[2,6-8] A conceptual model put forward by Shortell et al[2] has confirmed empirically that team effectiveness is an intermediate outcome of organizational culture, quality improvement changes, and the essential elements of leadership, supportive culture, and team development through organizational facilitators such as information technology.

In primary care, some studies have shown associations between teamwork and disease management and outcomes,[9,10] while others have not.[11,12]

In Canada, since the early 1990s, there has been substantial restructuring of primary care services, including changes to physician remuneration models and efforts to improve access for patients through the formation of virtual primary care teams and after-hours scheduling. To enhance the provision of multidisciplinary primary care, the Government of Ontario committed to creating 150 family health teams (FHTs) from 2006 to 2009. The FHT model was implemented to include allied health professionals in primary care practices with the hope of achieving higher-quality, accessible primary health care. Family health teams vary in size, composition, and organizational characteristics. An FHT can comprise either a group of health professionals at a single clinic (ie, single site) or multiple offices that share health professionals, programs, electronic medical records (EMRs) management, and governance (ie, multiple sites). Unlike traditional family practices, FHTs are initiated and governed by physicians, other health care providers, community organizations, or combinations (mixed governance). In 2009, FHTs in the province of Ontario were caring for approximately 2.5 million people. Working in teams is new for most family physicians[13] and new for the other health professionals practising in FHTs.

Given the variability in the organization of FHTs and the novelty of Canadian primary care interprofessional teams, we wished to understand how organizational factors influenced the team climate and to determine whether there were modifiable factors that predicted a better team climate in the FHT setting.

METHODS

Sample selection

At the time of recruitment, 144 FHTs were listed in Ontario, all of which were eligible for the study. A sample size of 90 was calculated to allow for an estimated 5 independent variables in a model, with significance set at .05 and a power of 80%.[14] An inflation factor of 3.4 was applied to adjust for clustering of staff within FHTs, using an intracluster correlation coefficient of 0.14 based on a previous survey about quality of work life[15] in 7 FHTs in Ontario (D. Price et al, unpublished data, 2007), and an estimated FHT size of 18 (Ontario Ministry of Health and Long-Term Care, oral communication, 2007), making the sample size 306. Estimating a 60% response rate, the final target sample size was 510 based on 28 FHTs.

The list of FHTs in Ontario was randomly ordered by region and each was approached by telephone. There were few outright refusals, but typically after 3 failed attempts to reach the FHT manager or executive director to discuss the study, the next FHT was approached. Nearly all 144 FHTs were contacted, and 21 were recruited within a reasonable time frame. Participating FHTs provided their staff lists and practice mailing addresses.

A survey was mailed to all staff of participating FHTs in the fall of 2008. The survey was first mailed in November 2008, and second and third mailings to nonrespondents were sent in December 2008 and January to February 2009, respectively.

Survey development

A conceptual framework was used to guide measurement. An expert panel comprising primary care researchers and providers knowledgeable about the topic and about primary care reforms in Ontario helped customize the conceptual framework to our setting. Two surveys were developed. The first, which was administered to all FHT staff, included measures for team functioning, organizational culture, leadership, EMR use, and demographic information. The second survey included practice-level variables and required completion by 1 manager or executive director at each FHT. The surveys were developed with the guidance of the conceptual framework and the expert panel. Nearly all of the survey sections were taken from published instruments, as described below. The expert panel worked with the authors to develop relevant questions where additional organizational variables specific to the FHT model in Ontario were desired. Drafts were reviewed for clarity by the expert panel, along with 2 family practice managers and 1 family physician.

Team climate, culture, and leadership. Part of the survey included a 14-item team climate inventory

questionnaire, which was validated in hospital settings.[6,16] The survey reflected markers of team climate, namely vision, participative safety, support for innovation, and task orientation. Items were rated on 5-point scales with varying anchors (eg, strongly agree or strongly disagree, to a very little extent or a very great extent); an example of an item would be, "There are real attempts to share information throughout the team."

A validated 20-item questionnaire for organizational culture was also included.[17] Respondents distributed 100 points among 4 culture descriptions: group culture, based on norms and values associated with affiliation, teamwork, and participation; developmental culture, based on risk-taking, innovation, and change; hierarchical culture, based on the values and norms associated with bureaucracy; and rational culture, based on efficiency and achievement.

To examine leadership, a subscale from the caregiver interaction survey by Shortell et al[17] was adapted. It consisted of 8 items addressing decision making, expectations, and problem solving, rated on a 5-point scale (strongly agree to strongly disagree). An example of an item would be, "The leadership effectively adapts its problem-solving style to changing circumstances."

Team meetings. We asked about frequency of meetings (annually to semi-annually, quarterly to every other month, monthly, twice a month, and weekly), who participates in meetings (clinical staff, administrative staff, or both), and content of meetings: clinical (eg, reviewing cases), administrative (eg, goals, planning, evaluation), educational (eg, presentations, learning), and academic (eg, resident education, research).

Structure and organization of the practices. This section of the survey included questions about the mix of health professionals in the practice, length of time as an FHT, governance type (community, provider, mixed), whether the FHT comprised several practice offices or a single site, use of an EMR fully or partially in place of paper records, and number of capabilities on the EMR used. The survey items used for EMR description were based on the Institute of Medicine's framework for electronic health records and a Delphi consensus process[18] that proposed 4 domains of a fully functional record, namely recording patients' clinical and demographic data, viewing and managing laboratory and imaging results, managing order entry, and supporting clinical decisions. It was hypothesized that a highly functional EMR might be associated with team climate.

Data analysis

The primary outcome variable was score on the team climate inventory. This was presented as an average score on the 5-point scale across all items for each respondent. Basic descriptive and bivariate analyses were conducted to determine associations between independent and dependent variables.

All analyses of associations were adjusted for clustering using a mixed random-intercepts model. Independent variables that were associated with team climate at the .10 significance level in the bivariate analysis were entered into a multiple variable regression model to determine independent predictors of the outcome. Analyses were conducted using Stata SE/10 statistical software. Results are expressed as coefficients from linear regression, in which the value represents the increase in the team climate scale score corresponding to a 1-unit increase in the independent variable. In the final model, statistical significance was set at .05 (2-sided).

The study was approved by the Hamilton Health Sciences and McMaster University Faculty of Health Sciences research ethics boards.

RESULTS

At the time of FHT recruitment, 628 staff from 21 FHTs were mailed surveys. By the time the surveys were returned, some of the FHTs had grown. Managers or executive directors from each FHT completed the second survey on practice-level variables; in the 21 participating FHTs, there were 221 physicians (range 1 to 73 per FHT), 258 other health professionals (eg, nurses, social workers, dietitians, pharmacists; range 1 to 44 per FHT), and 167 administrative or executive staff (range 2 to 25 per FHT). There was a total of 74 sites, ranging from single-site FHTs (n=7) to 1 large 19-site FHT.

Of the 628 individual staff surveys mailed, 413 responded (65.8%). Two of the returned surveys were without identification numbers and could not be assigned to an FHT; therefore they were removed from further analysis. Only 410 respondents indicated their roles in the FHT; the response rate by role was 45.3% (91 of 201) for physicians, 84.3% (210 of 249) for allied health professionals, and 61.2% (109 of 178) for administrative and executive staff.

Table 1 describes the characteristics of the FHTs based on the region of the province. The median number of staff was 19. Half (52.4%) had governance that was not exclusively made up of health professionals. All but 1 FHT had a fully implemented MER and used it at least partially in place of paper records; the 1 practice that did not use an EMR was in the process of implementing one and answered the questions relating to its capabilities. The mean number of EMR capabilities used was 9.4 (minimum 6, maximum 12). Two-thirds (66.7%) reported having meetings with clinical and nonclinical staff combined, at least monthly.

Table 1. Description of the FHTs included in this study: *N* = *21.*

DESCRIPTION	ONTARIO REGION			
	WEST (N = 11)	NORTH (N = 4)	CENTRAL (N = 4)	SOUTH (N = 2)
Median no. of sites (range)	1 (1-7)	2 (1-6)	7 (1-19)	1 (1-1)
Median no. of staff* (range)	11 (6-46)	13 (2-50)	25.5 (5-156)	9.5 (8-11)
Median no. of staff* hired since inception of FHT (range)	10 (6-23)	11 (1-50)	16 (6-65)	11 (9-13)
Governance, n†				
• Provider	7	1	2	0
• Mixed	3	3	1	0
• Community	1	0	1	2
Median no. of patients per physician (range)	1572 (499-3200)	1307 (765-1833)	1863 (1000-2927)	2716 (2100-3333)
No. of sites in operation for more than 1 year at time of study	8	1	3	2
Median no. EMR capabilities used‡ (range)	10 (6-12)	9 (7-10)	9.5 (7-11)	8 (6-10)
Total no. of FHTs having monthly clinical and support staff meetings	6	0	3	0
Mean team climate inventory score, out of 5 (range)	4.0 (2.6-4.2)	3.9 (3.7-4.4)	3.7 (3.6-3.8)	3.8 (3.6-4.0)

EMR—electronic medical record, FHT—family health team.
*Health care professionals working on site.
†Governance is divided into 3 categories: *provider* refers to health care professional–initiated and governed FHTs, *community* refers to community organization–initiated and governed FHTs, and *mixed* refers to a combination of provider- and community organization–initiated and governed FHTs.
‡Of a possible 22, including scheduling appointments, billing, within-clinic messaging, clinical notes, prescribing information (drug interactions, warnings, direct-to-pharmacy prescribing), laboratory or radiology requisitions, viewing laboratory and imaging results (history and follow-up notes), patient demographic information, patient problem lists, medications, disease registries, decision-support tools, queries, and reminders for guideline-based interventions.

The mean score of the team climate inventory averaged across the 14 items was 3.8 of a possible 5 (**Table 2**). There was little variation across the different subscales, except for a slightly lower average for agreement with team objectives. Each respondent was assigned a predominant organizational culture type, with most (68.6%) indicating a group culture. The next most common culture was hierarchical (14.4%). The mean score on the leadership scale was 3.7 of a possible 5 (minimum 1.9, maximum 4.6).

Leadership score, number of EMR capabilities used by staff, and characterizing the practice as having a group or developmental culture were positively associated with team climate score in the bivariate analysis; months operational as an FHT, perceptions of the EMR's effects, and characterizing the practice as having a hierarchical or rational culture were negatively associated with team climate score in the bivariate analysis (**Table 3**). In the multiple variable regression analysis, leadership score, EMR capabilities, and group and developmental cultures remained positively associated with team climate score, and months operational as an FHT and hierarchical culture remained negatively associated with team climate score. Associations with rational culture and EMR perceptions were no longer significant.

DISCUSSION

Team climate in this sample of 21 FHTs was similar to other primary care studies that have used the same instrument.[11,19] There was little variation in outcomes across different FHT organizational attributes, such as size, number of sites, team composition, and governance model. Poulton and West[6] found significant negative correlation between team size and participation in the team ($P<.05$). Alexander et al[20] found that in hospital-based multidisciplinary teams, larger and more diverse teams were associated with lower perceived team functioning. Conversely, Borrill et al[21] found that larger primary care team size was associated with more innovation; however, beyond 40 members, this relationship no longer held.

Other studies of teamwork and successful collaboration have also found that leadership was a predictor of collaboration.[22,23] Leadership in primary care might contribute to teamwork through unifying the team's differences and providing support for innovation.[21] We found that group and developmental cultures predicted higher team climate scores, whereas hierarchical culture predicted lower team climate scores. Hann et al[11] found that in primary care teams, group culture was positively associated with team climate. Another study found that strong group culture

Table 2. Team climate inventory subscale scores of FHT staff: *N=411; 68.6% (n = 282) of respondents identified their organizational cultures as group cultures; 8.3% (n = 34) were part of developmental cultures; 14.4% (n = 59) were part of hierarchical cultures; and 8.8% (n = 36) were part of rational cultures.*

SUBSCALE	MEAN (SD) SCORE
Participative safety*	3.8 (0.8)
Team objectives*	3.5 (0.8)
Vision*	3.9 (0.7)
Support for innovation*	3.7 (0.8)
Leadership*	3.7 (0.7)
Perception of EMR†	
• Quality of clinical decisions	3.9 (0.7)
• Communication with providers	4.3 (0.7)
• Communication with patient	3.7 (0.8)
• Prescription refills	4.4 (0.8)
• Timely access to medical records	4.2 (0.8)
• Avoiding medication errors	4.0 (0.7)
• Delivery of preventive care that meets guidelines	4.1 (0.7)
• Delivery of chronic illness care that meets guidelines	4.0 (0.7)
Overall team climate score*	3.8 (0.6)

*Lowest 1, highest 5.
†Major negative impact 1; major positive impact 5.

in primary care practices was negatively associated with quality of care for diabetes, but culture that was more balanced across the 4 types was associated with higher quality of care.[12] Our study suggests that relationships among people working together in a practice rather than the surrounding factors are most important for perceptions of teamwork. This resonates with the findings of Lanham et al[24] who brought to light the importance of trust, mindfulness, respect, and common ground in social and professional communication settings.

The negative association between length of time as an FHT and team climate score might have occurred because some FHTs, especially those who joined the model in the earliest round, already had several professionals working together in a practice and might have had higher expectations of teamwork.

Use of more EMR capabilities in the practice was associated with higher team climate score. At the time of this study, there was emphasis in Ontario on implementing EMRs in family practice. The use of EMRs has been found to be associated with improved quality of care[25]; however, some studies have shown no association.[26,27] Implementation of an EMR is a complex and laborious process, and it might be that high-functioning practices are better able to accomplish this, making use of the benefits more quickly.

Limitations

Our results might reflect response bias of FHTs that were interested in teamwork. However, in another study

Table 3. Associations between organizational or cultural factors for participating FHTs and team climate scores

FACTOR	UNIVARIATE ANALYSIS β (95% CI)	*P* VALUE	MULTIPLE VARIABLE ANALYSIS β (95% CI)	*P* VALUE
Leadership scale score	0.63 (0.56 to 0.69)	< .001	0.48 (0.40 to 0.55)	< .001
Organizational culture				
• Group	0.13 (0.11 to 0.16)	< .001	0.04 (0.001 to 0.07)	.04
• Developmental	0.08 (0.03 to 0.13)	.002	0.05 (-0.005 to 0.10)	.08
• Hierarchical	-0.20 (-0.23 to -0.16)	< .001	-0.06 (-0.10 to -0.009)	.02
• Rational	-0.08 (-0.13 to -0.03)	.001	NA	NA
No. of EMR capabilities used*	0.07 (-0.01 to 0.15)	.10	0.03 (0.003 to 0.06)	.03
Months operational as an FHT	-0.012 (-0.02 to -0.004)	.002	-0.003 (-0.0006 to -0.006)	.04
EMR perceptions	-0.05 (-0.10 to 0.003)	.07	NA	> .10
No. of staff in FHT	0.001 (-0.003 to 0.006)	.60	NA	NA
Full team meetings at least monthly	-0.12 (-0.47 to 0.22)	.50	NA	NA
No. of patients per physician (< 1000, 1000-1999, ≥ 2000)	0.04 (-0.21 to 0.30)	.75	NA	NA
Single site versus multiple sites	0.09 (-0.23 to 0.41)	.59	NA	NA

CI—confidence interval, EMR—electronic medical record, FHT—family health team, NA—not applicable.
*Of a possible 22, including scheduling appointments, billing, within-clinic messaging, clinical notes, prescribing information (drug interactions, warnings, direct-to-pharmacy prescribing), laboratory or radiology requisitions, viewing laboratory and imaging results (history and follow-up notes), patient demographic information, patient problem lists, medications, disease registries, decision-support tools, queries, and reminders for guideline-based interventions.

of several primary care models across Ontario in 2009, many of which were part of the same physician funding model as this study, the description of practice characteristics was not dissimilar to our study,[28] suggesting that these FHTs were representative of others in the province. This study represents the opinions of health care teams that were all relatively new. Two to 3 years might be a short time for organizational and cultural changes to take place. Another limitation is that the cross-sectional nature of the study does not allow us to conclude the order of causation with respect to the factors that influence team climate.

Conclusion

The lack of relationships found between most organizational factors and team climate suggests that interpersonal aspects of teamwork override organizational aspects, and that individuals who commit to working in this environment will engage in teamwork regardless of other factors in the environment.

This study found that strong leadership, group or developmental organizational culture, and use of more EMR capabilities predicted higher team climate scores. All 3 of the factors might be interrelated, and all are likely amenable to targeted enhancements that could potentially lead to improved care through improved teamwork. Similar studies should be repeated to investigate changes over time as primary care teams become solidified.

Dr Howard is Assistant Professor in the Department of Family Medicine at McMaster University in Hamilton, Ont. **Dr Brazil** is Associate Professor in the Department of Clinical Epidemiology and Biostatistics at McMaster University and Director of St Joseph's Health System Research Network in Hamilton. **Dr Akhtar-Danesh** is Associate Professor in the School of Nursing at McMaster University. **Dr Agarwal** is Associate Professor in the Department of Family Medicine at McMaster University.

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Contributors

Drs Howard, Brazil, Akhtar-Danesh, and **Agarwal** all contributed to the concept and design of the study; data gathering, analysis, and interpretation; and preparing the manuscript for submission.

Competing interests

None declared

Correspondence

Dr Michelle Howard, McMaster University, Department of Family Medicine, 175 Longwood Rd, South St 201A, Hamilton, ON L8P 0A1;
e-mail **mhoward@mcmaster.ca**

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