

Interprofessional collaboration within integrative healthcare clinics through the lens of the relationship-centered care model

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Teamwork is a contemporary way to try to improve the healthcare system, not only for the patients but also for the practitioners involved. A new type of interprofessional working arrangement, integrative healthcare (IHC) clinics, has emerged in the last two decades. The literature on interprofessional collaboration is steadily increasing, but little is known about the collaborative organization of the biomedical and complementary and alternative medicine (CAM) practitioners that make up the teams in these clinics. The relationship-centered care model was used to guide an exploration of the interprofessional teamwork within a Canadian IHC setting. A sample of 31 IHC clinics and 228 biomedical and CAM practitioners were included. Eighty-nine questionnaires were returned from 25 clinics, representing a 62% practitioner response rate (within clinic responders). This study established that within the analytical model, practitioners behaviors and skills are the main factors associated with job satisfaction and inter-practitioner conflicts in interprofessional IHC practice. The results of the study also suggested the importance of interprofessional exposure for healthcare practitioners who are being expected to serve a clientele that is increasingly interested in being both *cured* and *healed* by the integration of biomedical and CAM paradigms and approaches.

Keywords: Integrative healthcare; complementary and alternative medicine; interprofessional teams; interprofessional collaboration; survey; health services

INTRODUCTION

Teamwork, defined as “the interaction between health professionals who work interdependently to provide care”, has received considerable attention over the last two decades and is now recognized as a key strategy in the renewal of the Canadian healthcare system (Oandasan et al., 2006, p. 3). Nonetheless, there is limited evidence

regarding the impact of a collaborative working arrangement on both the healthcare system and patients and, that available is generally applicable to teams that include only physicians and nurses. From an organizational perspective, Oandasan et al. (2006) found that collaboration is likely key to addressing problems such as staff shortage, work-related stress, and burn-out in the healthcare workforce. Their report underlined that interprofessional collaboration was a function of the complexity of patient healthcare needs, the number of members in the team, and the members' expertise. That observation provides compelling reasons to believe that results obtained from the physicians/nurses models might not be transferable to other models of interprofessional collaboration.

In North America, the 1990s saw the emergence of a new type of healthcare team within integrative healthcare (IHC) clinics. The novelty of these clinics lies in the wide-ranging array of services and products offered to users, incorporating both biomedical and complementary and alternative medicine (CAM) therapies. The appearance of IHC clinics coincided with a significant demand from individuals for healthcare that goes beyond curing, focusing on healing and wellness (Baer, 2004; Foley, 1999; Peters, 2000; Weil, 2000).

Although there is a steady increase in the number of such clinics in the Canadian healthcare system, little is known about their functioning, especially from an organizational perspective (Hollenberg, 2006; Shuval, Mizrahi, & Smetannikov, 2002). In the present era of cataloguing the potential outcomes of IHC with respect to patients' health and wellness (Mulkins, Verhoef, Eng, Findlay, & Ramsum, 2003; Scherwitz, Cantwell, McHenry, Wood, & Stewart, 2004; Verhoef, Mulkins, & Boon, 2005), we think it is important to better understand the interprofessional process as experienced by practitioners before we attempt to explore any possible links to improved health. Indeed, the mechanics of interprofessional collaboration in an IHC context remain ill-defined in the literature.

Analytical framework

The relationship-centered care (RCC) model delineates potentially important constructs relevant to interprofessional collaboration within IHC clinics (Tresolini & Pew-Fetzer Task Force, 2000); it was used as the theoretical and analytical framework. The RCC model focuses on three different dimensions: relationships between each practitioner and (1) his/her patients, (2) his/her team, and (3) his/her patients' communities. In each dimension of the RCC model, collaboration involves significant and productive relationships to achieve an optimal shared understanding of the patient's experience of illness (Beach & Inui, 2006). These relationships require practitioners to acquire and develop certain collaborative knowledge, attitudes, and skills. The second dimension of the model (the relationship between practitioners and their teams) is the focus of this project.

The objectives of the study were to assess the extent to which practitioners working in IHC clinics practice according to the RCC model, exploring the relationship between knowledge, attitudes and personal characteristics, behaviors and skills, plus outcomes central to the definition of RCC and pertinent to an IHC setting (Figure 1).

METHODS

Sampling strategy

Participants were recruited from Canadian IHC clinics. For the purpose of this project, an IHC clinic was defined as at least three different practitioners working together in the same location, including at least one physician plus one or more healthcare practitioners practicing a variant of CAM including (but not limited to): naturopathy, massage therapy, chiropractic, and traditional Chinese medicine, including acupuncture. To be included in the sample, the clinic had to have been in operation for at least a year at the time of data collection.

Various methods used to compile a comprehensive list of clinics included: querying a Canadian network for CAM research (IN-CAM, www.incamresearch.com) and a discussion forum on health promotion and disease prevention (Passeport Santé, www.passeportsante.net); personally contacting the president of the Association of Complementary Physicians of British Columbia; networking with experts and key Canadian opinion leaders, including at conferences that attract IHC practitioners; searching the Internet using the keywords "integrative clinic or center", "integrated clinic or center", "chelation", and "integrative or integrated" along with the names of every major city in Canada. When necessary, clinics were screened by telephone to ensure that they met the study inclusion criteria.

One week prior to the survey launch, the administrative assistant and/or healthcare coordinator of each identified clinic was sent an introductory letter to inform them of the survey. These clinic representatives were subsequently contacted by telephone by a member of the research team

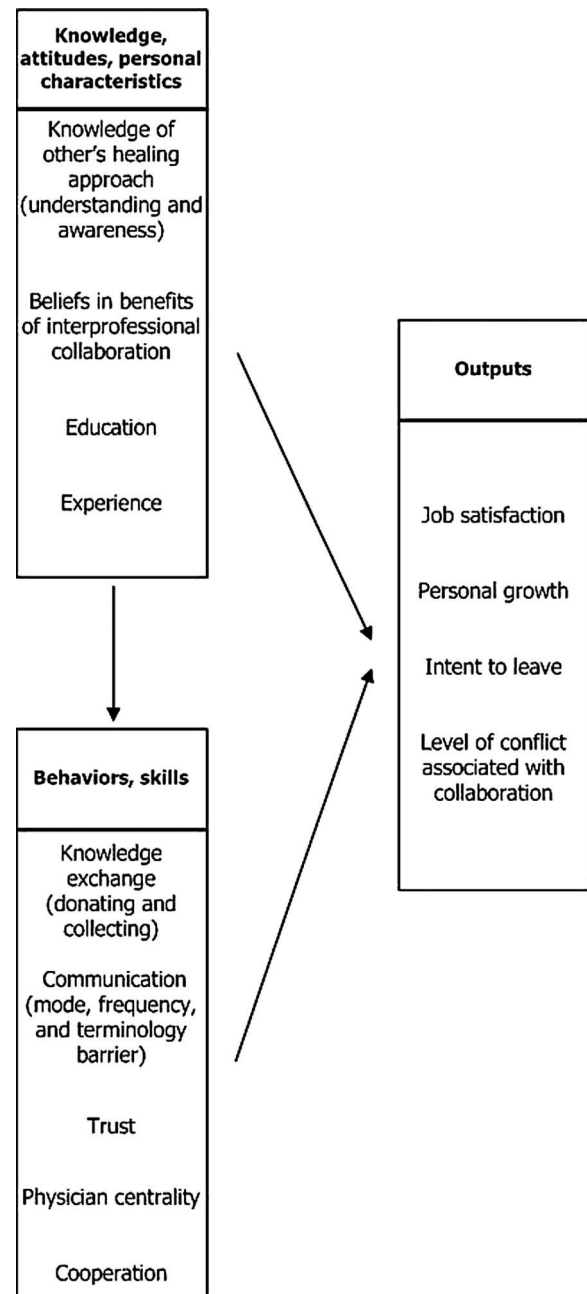


Figure 1. Analytical framework of the RCC model applied to Canadian IHC clinics.

(IG) to review the survey procedures. The questionnaires were then administered through that contact person to each practitioner of the clinic to ensure the anonymity of the respondents. Follow-up telephone calls were made with the contact person 2 weeks following the survey launch. Ethics approval was obtained from the local institution ethics board prior to contacting clinics.

Questionnaire

The selection of the variables included in the questionnaire was based on the key themes of collaboration within IHC clinics that had emerged in prior qualitative research (Gaboury, Bujold, Boon, & Moher, 2009), and a review of

the literature on interprofessional collaboration that maps out the elements of the RCC model (knowledge, attitudes and personal characteristics, behaviors and skills, and outputs). A brief description of the scales used to measure the variables as well as reliability estimates for the current project is provided in Table I.

Two scales (knowledge of each other's healing approach and cooperation) were created using selected items from existing scales and quotes from a previous study since no suitable tools were identified in the literature (Gaboury et al., 2009). Factor analysis with a principal axis factor extraction method and oblimin rotation was used to identify the factors associated with their respective scales (Costello & Osborne, 2005). Two sub-scales of knowledge of each other's healing approach were extracted: understanding of each other's healing approach, and awareness of the limitations of both biomedical and CAM paradigms. These two factors regrouped five items (three and two items, respectively) and accounted for 69% of the total variance present in the scale. Similarly, three items were retained for the

cooperation scale that accounted for 38% of the variance across all three items.

Respondents' demographic characteristics such as gender and number of hours worked at the clinic in a typical week were also collected. The questionnaire was pilot-tested with three biomedical and four CAM practitioners not involved in an IHC clinic but working in collaboration with other practitioners. Minor modifications were made to the final version. A copy of the questionnaire may be obtained from the lead author upon request.

Statistical analysis

Cronbach's α was used to estimate each scale's internal reliability. Descriptive statistics were used to summarize the respondents' characteristics. The respondents' profiles on the different study variables were compared between biomedical and CAM practitioners using Fisher's exact and Mann-Whitney tests. Thirteen regression models were tested. Knowledge, attitudes, and personal characteristics were simultaneous independent variables of each of the behaviors and skills variables (five models) and outputs

Table I. Questionnaire content.

RCC elements	Survey variable	Description	Cronbach's α for current study
Knowledge, attitudes, and personal characteristics	Knowledge of each other's healing approach	Combination of selected items of Hsiao's sub-scale of openness and awareness (Hsiao et al., 2005) with quotes from the first phase of this research project (Gaboury, 2009). Composed of two sub-scales: understanding of each other's healing approach (UA) and awareness of the limitations of both biomedical and CAM approaches (AL)	0.824 (UA), 0.808 (AL)
	Believes in benefits of collaboration	Extent to which practitioners see strengths in multidisciplinary collaboration (Sicotte et al., 2002)	0.882
	Education	Certificates and degrees obtained by the respondent. Dual education and/or training, defined as some credential or training in both biomedicine and CAM, was subsequently determined.	N/A
	Experience	Number of years worked at the IHC clinic	N/A
Behaviors and skills	Knowledge exchange	Perception of the extent to which knowledge is shared between the individuals of a given environment (Van den Hooff & De Ridder, 2004). Composed of two sub-scales: knowledge donating (KD) and knowledge collecting (KC)	0.815 (KD), 0.751 (KC)
	Communication	Assessment of whether interprofessional meetings take place (yes or no) and frequency of those meetings	N/A
		Information with regards to sharing patients' chart between biomedical and CAM practitioners (yes or no)	
		Experience of communication barriers (with respect to terminology) with biomedical and CAM colleagues (dichotomized for analyses purposes: never, not very often vs. often, very often)	
	Trust	Interpersonal trust in colleague (Cook & Wall, 1980)	0.911
	Physician centrality	Level of acceptance of sharing of authority and leadership amongst the members of the team (Heinemann, Schmitt, Farrell, & Brallier, 1999)	0.682
	0.682	Combination of two items of the Chatman and Flynn (2001) cooperative team norms scale and four items of the Torres work-related behavior in nursing scale (Torres, 1990). The final scale developed for this paper resulted into a three item scale	0.750
Outputs	Job satisfaction	Overall satisfaction with work (Cammann et al., 1983)	0.713
	Personal growth	Perception of the opportunities for achievement and challenge in their working milieu (Hackman and Oldham 1974)	0.792
	Intent to leave	Intention to leave the clinic in the following year (Bishop, Scott, & Burroughs, 2000)	0.787
	Level of conflict associated with collaboration	Extent to which issues related to IC could lead to conflicts (Sicotte et al., 2002)	0.886

variables (four models). The behaviors and skills variables were also considered as simultaneous independent variables of each of the outputs variables (four models). For scale variables, logit regression models were considered, but the Pearson goodness-of-fit test (chi-square statistic/degrees of freedom) substantially departed from 1 for all models, indicating a poor fit. Due to a “ceiling effect” observed in the dependent variables, and to help improve the fit of the data, nonlinear logistic sigmoid regression models were used to analyze the relationship between the variables of the framework (Bates & Watts, 1988). These models fit the data using a method of successive approximations, with the estimates obtained by the logit model (a more common model of generalized linear regression) used as a point of departure. Multivariate logistic regression models were used when the communication barrier variable was included as a dependent variable. For both types of models, odds ratios (OR) are presented.

RESULTS

Response rate and sample

The survey was administered by postal mail between February and March 2008. In total, 31 clinic coordinators and/or administrative assistants were contacted to distribute the questionnaires among 228 healthcare practitioners within their respective clinics. One clinic refused to participate due to time constraints. Eighty-nine questionnaires were returned from 25 clinics, representing a 39% overall response rate (41% and 34% for biomedical and CAM practitioners respectively) and a 62% response rate among the clinics that participated. Two questionnaires were incomplete, so 87 were used for the analysis.

Demographic characteristics of the respondents, broken down by expertise, are shown in Table II. Eighty-seven respondents were evenly split between biomedical and CAM expertise (principal occupation at the clinic was missing for two respondents). A fair proportion of respondents (61%) reported never having received formal education/training in a complementary area other than on the job training. The biomedical participants were more likely to be working currently (or formerly) in a hospital setting ($p = 0.007$ and $p < 0.001$, respectively). More than three-quarter of the sample (78%) reported having some experience of working elsewhere in a group setting (hospital or clinic setting), currently or at some point during their career. The median number of years worked at the clinic was 4.5 years. The typical week averaged 24 h of work at the IHC clinic.

Survey variables

Scores of the survey variables were not found to differ between the biomedical and CAM respondents with the exception of dual education and communication barriers (specialized terminology) for CAM practitioners (Table III). Indeed, biomedical respondents were more likely to have pursued extra-curricular training to complement their

Table II. Respondent demographic characteristics.

Characteristic*	Biomedical respondents, <i>n</i> = 43	CAM respondents, <i>n</i> = 42	Total†, <i>n</i> = 87
Male, <i>n</i> (%)	18 (41.9)	20 (47.6)	38 (44.7)
Dual education/training, <i>n</i> (%)	21 (50.0)	11 (27.5)	32 (39.0)
Experience at this clinic in years, median (range)	5 (1, 31)	3 (1, 32)	4.5 (1, 32)
Work solo, <i>n</i> (%)			
In the past	14 (32.6)	21 (50.0)	36 (41.4)
Currently	6 (14.0)	14 (33.3)	21 (24.1)
Work in a hospital, <i>n</i> (%)			
In the past	20 (46.5)	4 (9.5)	25 (28.7)
Currently	10 (23.3)	1 (2.4)	11 (12.6)
Work in a group setting, <i>n</i> (%)			
In the past	27 (62.8)	21 (50.0)	48 (55.2)
Currently	15 (34.9)	16 (38.1)	31 (35.6)
First position as healthcare practitioner, <i>n</i> (%)	5 (11.6)	9 (21.4)	14 (16.1)
Number of hours worked in a typical week, median (range)	25 (2, 60)	22 (2, 50)	24 (2, 60)

*Frequencies may not add up to the total number of respondents due to non-response.

†The expertise (biomedical vs. CAM) of two respondents was missing.

biomedical education ($p = 0.041$). However, 17% of them reported experiencing no difficulty communicating with their CAM colleagues (versus 40% of the CAM respondents, $p = 0.044$).

Regression models

Only one variable from the knowledge, attitudes, and personal characteristics was found to be significantly correlated with the behaviors and skills of the RCC model adapted for Canadian IHC clinics. A higher score for belief in the benefits of collaboration positively predicted knowledge exchange (OR = 1.24, 95% CI: 1.15, 1.34 for knowledge donating and OR = 1.16, 95% CI: 1.06, 1.26 for knowledge collecting), trust (OR = 1.18, 95% CI: 1.05, 1.32), and cooperation (OR = 1.12, 95% CI: 1.01, 1.25).

When the relationships between the knowledge, attitudes, and personal characteristics and the outputs of the RCC model were explored, only one variable yielded a statistically significant relationship. A higher score on the belief in the benefits of collaboration positively predicted the practitioner's job satisfaction (OR = 1.15, 95% CI: 1.02, 1.30) and personal growth (OR = 1.10, 95% CI: 1.01, 1.19). That same variable was inversely correlated with the level of conflict associated with collaboration (OR = 0.87, 95% CI: 0.78, 0.97).

Among the four regression models designed to investigate relationships between the behaviors and skills and outputs of collaboration selected for the RCC model, several associations were found to be significant. Higher trust was correlated with all of the outputs: positively with job

Table III. Descriptive statistics of the survey constructs.

RCC elements	Construct	Results*
Knowledge, attitudes, and personal characteristics	Understanding of each other's healing approach	4.54 (0.59)
	Awareness of limitations of biomedicine and CAM	4.81 (0.36)
	Beliefs in benefits of interprofessional collaboration	4.76 (0.44)
	Dual education/training, <i>n</i> (%)	32 (39.0)
	Experience at this clinic in years, median (range)	4.5 (1, 32)
Behaviors and skills	Knowledge exchange	
	Knowledge donating	4.33 (0.62)
	Knowledge collecting	4.50 (0.59)
	Physician centrality	8.89 (4.84)
	Interdisciplinary meetings organized at the clinic, <i>n</i> (%)	46 (54.1)
	Patients' charts are shared among all staff, <i>n</i> (%)	48 (57.8)
	Experienced terminological barriers with biomedical colleagues, <i>n</i> (%)	
	Never	25 (29.4)
	Not very often	48 (56.5)
	Often	11 (12.9)
	Very often	1 (1.2)
	Experienced terminological barriers with CAM colleagues, <i>n</i> (%)	
	Never	24 (28.6)
	Not very often	55 (65.5)
	Often	5 (6.0)
	Very often	0 (0.0)
Outputs	Trust	22.7 (3.4)
	Cooperation	4.76 (0.38)
	Satisfaction	4.66 (0.62)
	Personal growth	4.59 (0.47)
	Intent to leave	1.38 (0.64)
	Level of conflict associated with collaboration	1.68 (0.76)

*Mean (standard deviation) presented unless otherwise mentioned. Means were calculated from the average of scale items or the total score (Trust) from a negative anchor (1) to a positive anchor (5). The sum of the items is presented for the Physician centrality scale from a negative anchor (0) to a positive anchor (4) for a maximum score of 24.

satisfaction (OR = 1.24, 95% CI: 1.12, 1.37) and personal growth (OR = 1.07, 95% CI: 1.00, 1.14), and negatively correlated with both level of conflict associated with collaboration (OR = 0.85, 95% CI: 0.80, 0.90), and intent to leave (OR = 0.79, 95% CI: 0.71, 0.87). A higher level of cooperation was also inversely associated with intention to leave the clinic (OR = 0.64, 95% CI: 0.49, 0.84). Practitioners who reported a greater level of autonomy (i.e. low physician centrality) also reported higher job satisfaction (OR = 1.27, 95% CI: 1.08, 1.50).

Various survey variables related to communication between team members were found to predict outputs of collaboration. Respondents from clinics where records are shared between both biomedical and CAM practitioners were more likely to report higher level of job satisfaction (OR = 3.16, 95% CI: 1.14, 8.73), and more opportunities for personal growth (OR = 1.92, 95% CI: 1.05, 3.52). Practi-

tioners working in clinics where interprofessional meetings are organized (regardless of the frequency) were significantly less likely to leave the clinic (OR = 0.22, 95% CI: 0.06, 0.76). Additionally, respondents who experienced communication barriers with their biomedical colleagues were more likely to score highly on the job satisfaction scale (OR = 3.10, 95% CI: 1.09, 8.82).

DISCUSSION

In this study, the RCC model was found to be useful to investigate the complex dynamics of IC within Canadian IHC clinics, and to serve as a guide to operationalize the concept of interprofessional collaboration. We also demonstrated the behaviors and skills variables described by the model are more likely to be associated with the outputs of collaboration (i.e. job satisfaction, personal growth, intent to leave, and level of conflict) than the knowledge, attitudes, and personal characteristics variables (i.e. knowledge of each other healing approach, beliefs in the benefits of collaboration, education and experience).

Our results indicate that beliefs in the benefits of interprofessional collaboration predict are correlated with the extent to which practitioners trust, cooperate, and exchange knowledge with their colleagues. This is consistent with Sicotte's results in the evaluation of interprofessional collaboration within community healthcare centers (Sicotte, D'Amour, & Moreault, 2002). Moreover, it was the only variable from the series of knowledge, attitudes, and personal characteristics of the RCC model found to be associated with the other survey variables. This is consistent with other studies in conventional primary healthcare settings (e.g. Poulton & West, 1999; Lemieux-Charles & McGuire, 2006; Sicotte et al., 2002). This suggests that in further studies on collaboration, focusing on the processes (i.e. skills and behaviors) rather than the structure of the team is more likely to show significant effects on patient outcomes.

In this study, practitioners surveyed scored relatively low on the physician centrality scale, suggesting the team members do not heavily depend on the team's physician(s) in their decision-making and collaboration process. As one could expect in an IHC context where practitioners aim for egalitarian rapport within the team despite divergence of clinical paradigms, our results confirm that physicians working in IHC might be less influential than in other perhaps less integrated healthcare settings. There are two possible explanations for this: the nature of the task, and physician socialization. It is been shown in the organizational management and interprofessional collaboration literature that the nature of the task could affect the intensity of collaboration (e.g. Gladstein, 1984). Thus, we could hypothesize that the IHC environment in and of itself, in which integration of therapies and visions is favored and medical dominance is even less encouraged than in a uni- or pluri-disciplinary collaborative setting without CAM practitioners, would account for the

differences observed. One could also hypothesize that physicians working in an IHC setting have been socialized over time to engage more actively in a collaborative process with their CAM colleagues, and have defined their roles differently, compared with biomedical colleagues not exposed to such an environment.

These findings appear to contradict what has been found in previous qualitative studies (Hollenberg, 2006; Mizrahi, Shual, & Gross, 2005). Possibly, practitioners with positive experiences of collaboration were more likely to respond to the questionnaire, or that the tool is not sensitive enough to detect differences in physician centrality. As well, this study is the first to use the Physician centrality scale in a population of non-biomedical practitioners. Validation of the scale in that population against a gold standard would aid the interpretation of the responses.

Half of the survey variables that were found to significantly predict the outputs of collaboration pertain to the theme of communication. These findings corroborate previous studies that demonstrated the importance of communication in increasing team members' level of satisfaction with their job and work place affective commitment (e.g. Levine & Moreland, 2004; Xyrichis & Lowton, 2008). Furthermore, the results underscore once again the weight of the communication theme in inter-professional collaboration, particularly in the context of IHC (Robotin & Penman, 2006). Nonetheless, in an era of digitalizing medical records, our study is (to our knowledge) one of the first to report the benefits from a practitioner's perspective of centralizing patient medical information and offering access to all clinic practitioners. It is reasonable to believe that those benefits could extend to patients' health outcomes, although mixed results have been reported in studies on the impact of electronic (shared) medical record systems (Bringay, Barry, & Charlet, 2006; Jaspers, Knaup, & Schmidt, 2006; Sanders & Marvel, 1997).

With numerous variables among all three elements of the RCC model, there is substantial potential for type-I error in assessing the relationships between those variables. This is somewhat mitigated by the fact that all relationships were hypothesized *a priori*. Given the novelty of the results in a context of IHC, we elected not to adjust the results for multiple testing so that future research project could benefit from our findings and appropriately power their study to detect significant associations between the RCC model variables. As such our results should be interpreted cautiously.

Some of the survey's variables involving communication did not vary within clinic's respondents (e.g. organization of interprofessional meetings and shared medical records). Those variables were then considered measured at the clinic level. As such an ecological fallacy may have occurred as variables measured at different levels (in this case, clinic and practitioner levels) are erroneously associated with one another. Unfortunately, the literature does not offer any optimal adjustment for that potential problem and even suggests that attempts to correct that bias may in fact worsen it (Greenland & Morgenstern, 1989; Wakefield,

2003). Moreover, with no better tool in the literature, the use of unvalidated scales (e.g. knowledge of one another's healing approaches and cooperation) may have led to spurious results. We therefore encourage the interpretation of those findings with caution.

Another limitation associated with the study lies in the relatively low response rate. Nonetheless, even when using multiple methods and repeated contacts to reach potential respondents, such a response rate is commonly obtained when surveying various populations of healthcare practitioners (Asch, Jedrzejewski, & Christakis, 1997). Nevertheless, we cannot assume that the respondents are representative of all Canadian practitioners working in an IHC setting. Clinics with a high proportion of biomedical practitioners were less likely to respond to the survey and generalization of the findings to those particular clinics is less certain.

CONCLUSION

The results of this study illustrate the importance that healthcare IHC practitioners be exposed to and recognize the benefits of collaboration. Educators should aim to increase the knowledge and awareness of future and current biomedical and CAM practitioners vis-à-vis IHC approaches, therapies, and paradigms. To date, very few concurrent educational activities are offered to Canadian medical students and CAM students. Integrating topics on integrative medicine in the curriculum of both types of students would impact not only practitioners working in an IHC context but also practitioners working in a uni-disciplinary biomedical or CAM context, since the integration of paradigms and therapies related to these two healthcare approaches are increasingly in demand by the Canadian. Additionally, we showed that strategies that stimulate communication (verbal and written) between practitioners working in an IHC clinic were found to relate positively to practitioners' job satisfaction, personal growth, intent to leave the clinic, and level of conflicts associated with collaboration. Therefore, current and future IHC clinics should explore opportunities to improve team members' interactions. Future research might explore further the role of those factors on patients' level of satisfaction and health outcomes. The use of the RCC model is recommended since it also includes a practitioner/patient relationships dimension. Analyses at the team level also warrant further inquiry.

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