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ORIGINAL RESEARCH

# Measuring Team Functioning During the COVID-19 Pandemic: Perspectives of Cancer Care Team Members

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**Background:** In a public health crisis such as COVID-19, cancer teams face significant challenges including acute work disruptions, rapid shifts in clinical practice, and burnout. Within this context, it is crucial to explore team functioning from the perspectives of multiple stakeholders.

**Objective:** This quantitative pilot study aimed to 1) measure perceptions of multi-stakeholders on key indicators of team functioning (Team Effectiveness, TE, and Team Relational Coordination, TRC) during COVID-19 and its transition, and 2) document whether patient perceptions of TE/TRC are significantly associated with their cancer care experiences.

**Methods:** A descriptive design with repeated measures was used. Through convenience sampling, participants were recruited from two outpatient cancer clinics at a large university-affiliated hospital, in Montréal, Qc, Canada. Sixty-six participants (ie, 13 healthcare professionals, 40 patients, 6 informal caregivers, and 7 volunteers) completed e-measures at T1 (years 2021–2022) and n = 44 at T2 (year 2023).

**Results:** At T1, participants reported high perceptions of Team Effectiveness (scale 1 to 6) M = 4.47; SD = 0.7 (Mdn = 4.54; IQR: 4.06–5) and Relational Coordination (scale 1 to 5) M = 3.77; SD = 0.77 (Mdn = 3.81; IQR: 3.12–4.38) with no significant differences in perceptions across the four groups. At T2, no significant changes in TE/TRC perceptions were found. At both time points, patient perceptions of TE/TRC were significantly correlated with positive cancer care experiences (Spearman rank correlation $r_s$ ranging from 0.69 and 0.83; $p < 0.01$).

**Conclusion:** To our knowledge, this is the first study documenting perceptions of cancer team functioning amidst the pandemic as reported by multiple stakeholders. Significant relationships between patient perceptions of TE/TRC and their cancer care experiences underscore the importance of including patients' views in team functioning processes. Future work should rely on larger sample sizes to further explore key elements of optimal team functioning.

**Keywords:** team functioning, team effectiveness, team relational coordination, cancer care, patient satisfaction, patient experiences, COVID-19, pandemic, health crisis

## Introduction

In the ever-evolving healthcare landscape, the provision of high-quality care hinges on the collaborative efforts of multidisciplinary members who work as a coherent team to optimize workflow, illness management processes and outcomes.[1] With rapidly increasing cancer care demands (ie, higher caseloads, various treatment options, distinct patients' needs and workforce shortages), cancer teams often report feeling ill-equipped to meet these demands.[2]

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Recruiting more cancer care professionals is likely to be insufficient to address care complexities and the emphasis is now placed on documenting promising strategies to optimize team functioning.[3–9]

Team Effectiveness (TE) and Team Relational Coordination (TRC) are key concepts in documenting overall team functioning[10–12] and significant determinants of care quality, patient safety, and overall healthcare system efficiency.[13–15] Team effectiveness refers to the ability of a team to work together effectively, have clear role delineation, efficient task allocation, shared goals, and a collective commitment to clinical excellence.[12,16–18] Relational coordination emphasizes the quality of relationships and communication among team members. For instance, optimal TRC is characterized by timely, accurate, and contextual team member communication that fosters shared understanding, mutual respect, and trust.[19,20] Maintaining optimal TE and TRC in busy cancer care settings can be challenging. For instance, cancer teams include diverse members, each bringing forth different perspectives on treatment and care. Conflicting opinions, different priorities, and communication styles complicate TE and TRC-related processes and outcomes.[21–23] In addition, cancer settings often carry high cognitive and emotional demands, putting members at risk for moral distress, emotional exhaustion, and burnout.[24,25] One-third to one-half of oncologists, for instance, are expected to experience burnout at some point in their careers.[25,26] Similarly, approximately 30% of cancer care nurses report burnout.[27] These occupational effects involve declines in cognitive functions (attention and memory) leading to poorer work performance.[2,28,29]

The COVID-19 pandemic posed additional challenges for cancer care teams causing significant strain on cancer care delivery.[30–32] Healthcare professionals (HCPs) had to quickly change their work routines including reducing in-person consultations, initiating virtual encounters, replanning treatment, and postponing various clinical activities.[30–35] The ensuing weight of these decisions often created distress including internal ethical dilemmas affecting teams' overall functioning.[31,36–38] In parallel, personal stressors caused by the pandemic restrictions, economic instability, and fear of bringing COVID-19 home added to teams' occupational burden.[39] HCPs reported burnout, fear, anxiety, depression, anger, and irritability with little supportive resources.[38–40] As such, these combined stressors significantly reduce work-related capacities including a decrease in team members' performance, deterioration in communication and teamwork and limited collaborative decision-making.[31,40–45]

The pandemic also disrupted patients' cancer care experiences. Individuals with cancer reported feeling isolated, having no or poor communication with their treating team, and limited involvement in clinical decisions.[46–52] Patients in treatment, reported significantly lower satisfaction with virtual care compared to those seen in person.[53] Engagement of cancer teams in care did not often match patients' needs.[46] Informal caregivers and volunteers also felt distant from the team, helpless, and struggled to understand changes in care processes.[54,55]

A recent narrative review by Attieh & Loiselle, 2024 summarized the literature on key elements of cancer team functioning during COVID-19 and highlighted the paucity of evidence on key indicators of team functioning and the need to document the perspectives of broader-based team members including patients and informal carers.[56] Exploring multi-stakeholders' perceptions of TE and TRC in a dynamic context, and during the pandemic is therefore vital to explore if teams are optimally responsive in these times. Given the increasing weight put on informal caregivers and volunteers to be involved in care, gathering their perspectives on team functioning is also necessary.[57–64]

Therefore, this pilot study was designed to 1) measure perceptions of multi-stakeholders on key indicators of team functioning (Team Effectiveness, TE, and Team Relational Coordination, TRC) during COVID-19 and its transition, and 2) document whether patient perceptions of TE/TRC are significantly associated with their cancer care experiences.

# Materials and Methods

## Study Design

This is a descriptive design with repeated measures during COVID-19 (T1: years 2021–2022) and its transition (T2: year 2023).

## Setting

Participants were recruited from the breast and gynecologic cancer clinics at a university-affiliated hospital in Montréal, Quebec, Canada.

## Sample and Eligibility Criteria

The study sample included HCPs, patients, informal caregivers, and volunteers. Participants had to be 18 years or older, able to complete study requirements in French or English, and have remote device and internet access.

Eligible patients should have initiated or completed treatment within the past year from recruitment.

HCPs, informal caregivers, and volunteers had to be in their respective roles for at least 3 months.

## Procedures

Following ethics approval (CIUSSS West-Central Montreal #2021-2423), the research coordinator presented the study at staff meetings (ie, tumor boards, nursing rounds). Clinic clerks were also sent e-promotional flyers to introduce the study to team members. If interested, HCPs contacted the research team by phone or email. During remote or in-person consultations, HCPs shared study details with patients and accompanying informal caregivers. A community-based volunteer organization also sent the study flyers to their service users and volunteers. Recruitment flyers were also posted in waiting rooms and clinics.

All interested participants contacted the study team by email or phone to express interest in participating. The research coordinator then contacted participants by phone to explain the study procedures and verify eligibility. If eligible and interested, participants were sent the link to the e-consent form to read and sign. After consenting to participate, they were sent a link to the T1 e-questionnaire with a unique login password. These questionnaires were distributed and completed between July 2021 and July 2022 for the pandemic-related portion of the study. The T2 e-questionnaire was sent in March and April 2023. All study documents (ie, consent, questionnaires) were collected and stored on Qualtrics-a secure electronic data capture system (https://www.qualtrics.com/research-core/).

## Measures

Study measures and timelines are summarized in Table 1.

**Table 1** Description and Timelines of Study Measures

| Measure | Description | T1 During COVID-19 | T2 Transitioning Out of the Pandemic |
|---|---|---|---|
| HCPs | | | |
| Socio-demographic and Work history | Series of questions developed by the research team (eg, gender, educational background, years of professional experience in cancer care). | X | |
| Perceptions of team effectiveness | HCP Perceptions of Team Effectiveness questionnaire (HCP-PTE)[17] | X | X |
| Perceptions of team relational coordination | Relational Coordination questionnaire[20] | X | X |
| Patients | | | |
| Socio-demographic and Medical history | A series of questions developed by the research team | X | |
| Patient cancer care experiences | Satisfaction with Cancer-related Care (PSCC)[65] | X | X |
| Patients, Informal caregivers, and Volunteers | | | |
| Perceptions of team effectiveness | Patient and Family Perceptions of Team Effectiveness questionnaire (PF-PTE)[18] | X | X |
| Perceptions of team relational coordination | Adapted version of Relational Coordination questionnaire[20] | X | X |

**Abbreviations**: T1, time 1; T2, time 2; COVID-19, coronavirus 19; HCPs, healthcare professionals.

### Sociodemographic and General Information

An author-generated self-report questionnaire included background information on age, sex, gender, education, ethnicity, medical history (for patients), work history (for HCPs) and role description (for volunteers/informal caregivers).

### HCP Perceptions of Team Effectiveness Questionnaire (HCP- PTE)

The 26-item HCP-PTE questionnaire[17] measures healthcare team perceptions of team effectiveness such as role clarity, trust, decision-making, communication, problem-solving, timely care, and patient/family focus. Response options range from 1 (strongly disagree) to 6 (strongly agree). Items were slightly revised by our team to be more specific to the cancer setting. Overall scale reliability Cronbach alpha is 0.91.[17]

### Patient/Family Perceptions of Team Effectiveness Questionnaire (PF-PTE)

This scale includes 24 items assessing patient or family perceptions of how their healthcare team functions.[18] Responses range from 1 (strongly disagree) to 6 (strongly agree). Items were slightly revised by our team to be more specific to the cancer setting. Cronbach alphas range from 0.72 to 0.84.[18]

### Team Relational Coordination (TRC)

The 7-item TRC scale[20] assesses interprofessional team functioning through communication (4 items including frequency, accuracy, timeliness, and problem solving) and relationship (3 items including shared goals, shared knowledge, and mutual respect).[19,20] Responses are on a 5-point scale "1 = never, 2 = rarely, 3 = occasionally, 4 = often, and 5 = always". Items were slightly revised by our team to be more specific to the cancer setting and different stakeholders completing the survey. Internal consistency is high with Cronbach alphas ranging between 0.80 and 0.90.[19,20]

### Patient Satisfaction with Cancer-Related Care (PSCC)

The 18-item PSCC scale[65] assesses patients' satisfaction and experiences with cancer care. Each item is rated from "1 = not satisfied" to "5 = very satisfied", with a total scale score range from 18 to 90. The PSCC has high internal consistency as indicated by Cronbach coefficient alphas ranging between 0.95 and 0.96.[65]

## Data Analysis

The collected data were exported from Qualtrics (data collection platform) to SPSS (Statistical Package for Social Sciences), version 25 for analysis.[66] Descriptive statistics and frequencies were calculated for patients' sociodemographics, and numbers were reported for smaller size groups (ie, HCPs, informal caregivers, and volunteers). For each participant, total scores for perceptions of TE and RC were computed by creating a new variable for each measure and calculating the mean for each questionnaire item. The same computation was done to obtain overall patient satisfaction. Next, Means/ Standard deviations (M; SD) and Medians/Interquartile Ranges (Mdn; IQR) of total scores were computed by stakeholders' group. IQR refers to the 25th and 75th percentiles.

We conducted the Shapiro–Wilk test to verify if our data are normally distributed. We conducted non-parametric tests given the small sample size and the non-normal distribution for some of our data. To determine if perceptions of TE or TRC are significantly different between the four groups, we conducted a Kruskal Wallis non-parametric test. To determine if patient perceptions of team functioning (independent variable) are associated with their cancer care experiences (dependent variable), Spearman rank correlations for non-parametric variables were calculated with $\alpha = 0.01$.[67] Related-Samples Wilcoxon Signed rank tests were computed to test potential significant differences between team functioning during COVID-19 and transitioning out of the pandemic with the $\alpha = 0.01$.

# Results

## Participant Characteristics

The sample included 66 participants (ie, 13 HCPs (4 oncologists, 4 nurses, and 5 allied HCPs), 40 patients, 6 informal caregivers, and 7 volunteers). Mean age for each group of participants were M = 42.4; SD = 8.3 (HCPs), M = 56.2; SD = 10.4 (patients), M = 51.6; SD = 9.6 (informal caregivers), and M = 67.2; SD = 7.5 (volunteers). Eleven HCPs, 39 (97.5%) patients, 4 informal caregivers, and 7 volunteers self-identified as female. Most participants were white/

**Table 2** Participant Sociodemographic Data

| | HCPs (n = 12)* | Patients (n = 40) | Caregivers (n = 6) | Volunteers (n = 7) |
|---|---|---|---|---|
| Age M(SD) | 42.4 (8.3) | 56.2 (10.4) | 51.6 (9.6) | 67.2 (7.5) |
| | n | n (%) | n | n |
| Gender | | | | |
| Male | 1 | | 2 | |
| Female | 11 | 39 (97.5%) | 4 | 7 |
| Non-binary | | 1 (2.5%) | | |
| Assigned sex at birth | | | | |
| Male | 1 | | 2 | |
| Female | 10 | 40 (100%) | 4 | 5 |
| No answer | 1 | | | 2 |
| Highest level of Education | | | | |
| High school diploma | | 2 (5%) | | |
| Technical/pre-university | | 3 (7.5%) | | 1 |
| Undergraduate bachelor | 2 | 18 (45%) | 2 | 2 |
| Professional degree | 3 | 1 (2.5%) | 1 | 1 |
| Masters degree | 4 | 12 (30%) | 2 | 2 |
| Doctoral degree | 1 | 1 (2.5%) | | |
| Post-doctoral degree | 2 | | 1 | |
| Other | | 3 (7.5%) | | 1 |
| Ethnicity | | | | |
| South Asian | | | 2 | |
| White (Caucasian) | 8 | 28 (70%) | 4 | 6 |
| Black | | 3 (7.5%) | | |
| Chinese | 1 | 1 (2.5%) | | |
| Filipino | | 1 (2.5%) | | |
| Latin American | | 2 (5%) | | |
| Mixed ethnicity | 2 | 3 (7.5%) | | |
| Other | 1 | 1 (2.5%) | | 1 |
| Prefer not to answer | | 1 (2.5%) | | |

**Note**: *One HCP did not complete socio-demographics questions.
**Abbreviations**: HCPs, healthcare professionals; n, number of participants; M, mean; SD, standard deviation.

Caucasian (8 HCPs, 28 patients (70%), 4 informal caregivers, and 6 volunteers). Participant sociodemographic details are reported in Table 2.

Among HCPs' participants, eight reported working full time and six had been working with the same team for more than 10 years. Sixty percent of patients (n = 24) had breast cancer, 40% (n = 14) had gynecologic cancer, 21 (52.5%) were under active treatment and 19 (47.5%) had completed treatment.

Four out of the seven informal caregivers were in that role for 2 years with duties including care management, and emotional and practical support. Six out of seven volunteers were cancer survivors and their role included greeting and guiding patients, peer/emotional support, and informing patients on available resources and programs.

## Perceptions of Team Effectiveness and Relational Coordination

At T1, participants (N = 66) provided high perception overall ratings for Team Effectiveness M = 4.47; SD = 0.71 (Mdn = 4.54; IQR: 4.06–5) and Relational Coordination M = 3.77; SD = 0.77 (Mdn = 3.81; IQR: 3.12–4.38). Each

group's perception ratings are reported in Tables 3 and 4. No significant differences in perceptions of TE/TRC were found across the 4 groups at α = 0.01 TE [$\chi^2(3) = 8.31$, p = 0.04]; TRC [$\chi^2(3) = 3.36$, p = 0.34].

As we transitioned out of the pandemic (n = 48), no significant differences in TE/TRC perception ratings were found TE t(48) = 526, p = 0.88; TRC t(47) = 396, p = 0.11. Similarly, there were no significant differences in perceptions of TE [$\chi^2(3) = 2.84$, p = 0.42] or TRC [$\chi^2(3) = 2.68$, p = 0.44] across the 4 groups.

## Patient Experiences with Cancer Care

Patients reported high satisfaction scores at T1, M = 71.58; SD = 14.28 (Mdn = 72.5; IQR: 60.5–85) (Scale range between 18 and 90), and M = 71.43; SD = 16.72 (Mdn = 72; IQR: 58–87.5) at T2. There was no significant difference in satisfaction between both timelines t(30) = 230, p = 0.54.

## Association Between Patient Perceptions of Team Functioning and Their Cancer Care Experiences

Patients' perceptions of TE and TRC were found to be significantly correlated with their cancer care experiences at T1 and T2. Figures 1 and 2 show the scatterplots of the correlations for both timelines. During COVID-19, a strong positive correlation was found between patients' perceptions of TE and their cancer care experiences, $r_s = 0.83$; p < 0.01. In

**Table 3** Perceptions of Team Effectiveness Across Study Groups During COVID-19 (N = 66) and While Transitioning Out (n = 48)

| | Perceptions of Team Effectiveness | | | | | |
|---|---|---|---|---|---|---|
| | T1 | | | T2 | | |
| | N | Mean (SD) | Median (IQR) | N | Mean (SD) | Median (IQR) |
| Overall | 66 | 4.47 (0.71) | 4.54 (4.06–5.0) | 48 | 4.48 (0.77) | 4.56 (4.10–5.03) |
| Patients | 40 | 4.62 (0.79) | 4.71 (4.14–5.33) | 31 | 4.57 (0.86) | 4.67 (4.17–5.17) |
| HCPs | 13 | 4.39 (0.45) | 4.50 (4.11–4.67) | 7 | 4.36 (0.65) | 4.46 (3.81–4.73) |
| Volunteers | 7 | 4.11 (0.43) | 4.17 (3.92–4.46) | 5 | 4.35 (0.25) | 4.42 (4.08–4.58) |
| Caregivers | 6 | 4.10 (0.64) | 4.46 (3.51–4.51) | 5 | 4.22 (0.67) | 4.33 (3.64–4.73) |

**Abbreviations**: T1, time 1; T2, time 2; HCPs, healthcare professionals; N, number of participants; SD, standard deviation; IQR, interquartile range.

**Table 4** Perceptions of Team Relational Coordination Across Study Groups During COVID-19 (N = 66) and While Transitioning Out (n = 48)

| | Perceptions of Team Relational Coordination | | | | | |
|---|---|---|---|---|---|---|
| | T1 | | | T2 | | |
| | N | Mean (SD) | Median (IQR) | N | Mean (SD) | Median (IQR) |
| Overall | 66 | 3.77 (0.77) | 3.81 (3.12–4.38) | 48 | 3.68 (0.75) | 3.81 (3.17–4.21) |
| Patients | 40 | 3.77 (0.90) | 4.00 (3.05–4.48) | 31 | 3.65 (0.83) | 3.53(3.09—4.38) |
| HCPs | 13 | 4.00 (0.39) | 4.00 (3.69–4.38) | 7 | 3.90 (0.28) | 3.90(3.76–4.05) |
| Volunteers | 7 | 3.63 (0.61) | 3.71 (2.94–4.00) | 5 | 4.09 (0.24) | 4.00(3.88–4.36) |
| Caregivers | 6 | 3.39 (0.46) | 3.19 (3.03–3.88) | 5 | 3.17 (0.78) | 3.52(2.38–3.78) |

**Abbreviations**: T1, time 1; T2, time 2; HCPs, healthcare professionals; N, number of participants; SD, standard deviation; IQR, interquartile range.

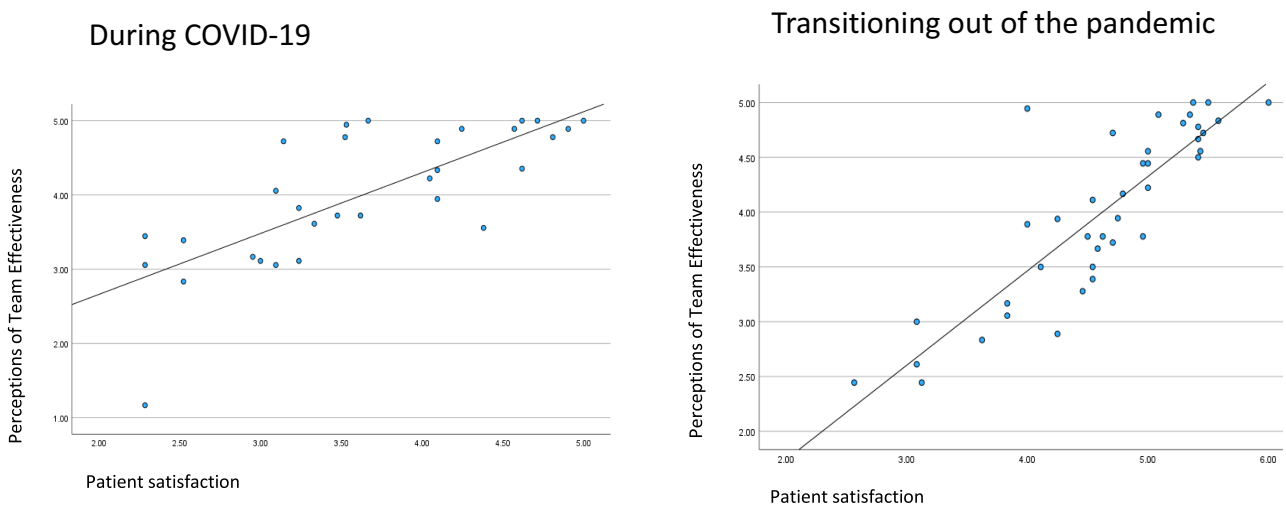


**Figure 1** Correlations between patient perceptions of Team Effectiveness and satisfaction with cancer care during and transitioning out of the pandemic.

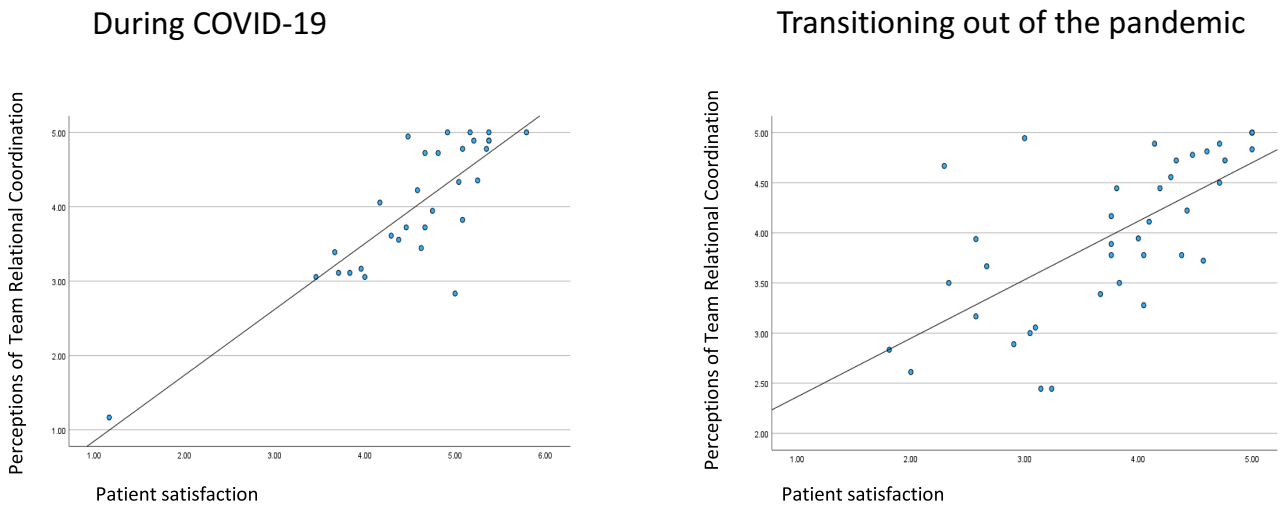


**Figure 2** Correlations between patient perceptions of Team Relational Coordination and satisfaction with cancer care during and transitioning out of the pandemic.

addition, a moderate positive correlation was noted between patient TRC perceptions, and their cancer care experiences $r_s = 0.69$; $p < 0.01$.

At T2, the correlation with perceptions of TE was maintained, $r_s = 0.78$; $p < 0.01$, and a stronger correlation was found with TRC perceptions $r_s = 0.79$; $p < 0.01$

## Discussion

In this pilot study on perceptions of cancer team functioning, participants reported high perceptions of TE and TRC with no significant change between time points or across the four groups. Despite disruptions amidst the pandemic, high perceptions of team functioning might be explained by the rapid adoption of virtual technologies for communication and consultations that made it easier for cancer teams to maintain effective collaboration and care coordination as well as patient contact.[45,56,68,69] In Anjara et al, 2021, participants reported greater collaboration more bottom-up decision-making, and enhanced interdisciplinary teamwork, supporting the good operation and functioning of the team.[70] Similarly, Stayt et al, 2022, reported that HCPs were striving to work to the best of their abilities despite the work-related challenges during the pandemic.[71]

High perceptions of TE and TRC reported by patients and informal caregivers might also be explained by the trust they felt toward their team during COVID-19. In a qualitative study by Chia et al, 2021, patients and caregivers reported trusting their team and expressed high confidence in the competence of HCPs in managing cancer care.[72] Patients and informal caregivers also described their interactions with the care team as positive despite the challenges of maintaining connections and the prominent healthcare silos during the pandemic.[73–76]

This pilot study results also indicate that patients were satisfied with the cancer care provided during and transitioning out of the pandemic. Patient perceptions of TE and TRC were significantly and positively correlated with their care experiences. Similar to our findings, two other studies reported high levels of patient satisfaction with the overall care and services provided during the pandemic.[77,78] Literature also documents that interprofessional collaboration is associated with higher patient satisfaction. For instance, a team that collaborates effectively connects different specialized care tasks and works together to make joint clinical decisions centered on patient needs and preferences.[79] In a study by Tremblay et al, 2017, patients reported higher positive perceptions of patient-HCPs communication and person-centered care, in teams characterized by high interdisciplinary teamwork intensity, compared to lower teamwork intensity.[80] Similarly, Zajac et al, 2021, found that high-quality teamwork is significantly associated with increased patient satisfaction.[81]

To our knowledge, this is the first study documenting perceptions of cancer team functioning during the pandemic and its transition as reported by multi-stakeholders including patients, informal caregivers, and volunteers. Whereas study results are promising, some limitations are acknowledged. Given the fact that it is a pilot study, the small sample size limits our ability to reach definitive conclusions. In addition, despite our ongoing efforts, recruitment was challenged by the restrictions to approach participants in person, resulting in smaller samples than anticipated. If we had a larger sample, we would have conducted multiple regression allowing us to control for potential confounding variables. Another study limitation includes the lack of baseline measures pre-pandemic. For instance, we chose both cancer teams given their clear treatment trajectories and the well-documented biopsychosocial needs of patients, and we cannot be certain if they were high or low functioning. It would have also been informative to have a baseline measurement for team resilience.[82] If teams were found to be initially high functioning and resilient, this could have contributed to the stability during and transitioning out of the pandemic.[83] Moreover, the study measures completion was spread over a year (from July 2021 to July 2022) for the pandemic-related portion of the study. This period coincides with the end of the third COVID-19 wave in Quebec and the beginning of the seventh wave. Perceptions might have differed during other times/waves, such as the onset of the pandemic. Last, TE and TRC were considered two distinct concepts of team functioning. Future studies with a larger sample are recommended to explore whether TE and TRC independently or jointly contribute to team functioning.

## Conclusions

During the pandemic and its recovery period, cancer care teams including HCPs, patients, informal caregivers, and volunteers, had to adjust and readjust to changes in in-person, virtual, and hybrid care environments. In this study, we documented multi-stakeholders' perceptions of cancer care team functioning. Perceptions of TE, TRC, and patient care experiences were found to be rated high and relatively unchanged during and transitioning out of the pandemic. A future qualitative exploration of key themes related to team functioning and the inclusion of additional factors such as team resilience would complement this work and add crucial insights into the overall cancer team optimal functioning.

## Ethics Approval and Consent to Participate

This study was conducted following the Declaration of Helsinki and approved by the ethics committee CIUSSS West-Central Montreal (#2021-2423), written informed e-consent was obtained from all participants.

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## Disclosure

The authors report no conflicts of interest in this work.

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