

# Opioid use disorder patients' perceptions of healthcare delivery platforms

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## Abstract

**Objectives:** To assess the acceptability and quality of web-based videoconferencing telemedicine consultation platform in the treatment of opioid use disorder at TrueNorth Medical Centre.

**Methods:** We conducted an interview based quality improvement initiative using an investigator-designed questionnaire. The questionnaire consisted of 17 Agree/Disagree questions, measured on a 7-point Likert scale and 2 questions where patients had the ability to elaborate qualitatively on their perceptions and experiences with their telemedicine service. Content-style analysis was performed on qualitative responses.

**Results:** The majority of patients (n=14; 47%) preferred face-to-face over telemedicine consultations. The number of patients that preferred telemedicine consultations over face-to-face consultations was lower (n=6; 20%). A notable number of patients (n=10; 33%) indicated no specific preference for either telemedicine or face-to-face consultations. Patients preferring face-to-face consultations rated their clinical outcome and patient-physician relationship following telemedicine consultations similarly as those who preferred telemedicine consultations. Patients preferring telemedicine rated their experience and overall perceptions of the service significantly higher than those preferring face-to-face consultations. Patients who preferred telemedicine consultations identified the efficient and timesaving nature of telemedicine consultations as primary advantages whereas those preferring face-to-face consultations reported lower levels of empathy from their physician during telemedicine consultations as a major disadvantage.

**Conclusions:** The majority of patients at TrueNorth Medical Centre viewed telemedicine consultations as an acceptable treatment modality. Patients preferring telemedicine consultations and those preferring face-to-face consultations evaluated the majority of the measured indices of care in a similar fashion.

## Keywords

Telemedicine, face-to-face consultation, opioid use disorder, patient preference

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## Introduction

Telemedicine (TM) is a broad technical term that encompasses a variety of telecommunication technologies designed to provide patients with medical care that is not necessarily limited by geographical boundaries.<sup>1</sup> Ever more so with increasing shortages in physicians, especially in rural areas, long waiting times, and increasing healthcare costs, TM stands out as a viable solution to address barriers to healthcare access and delivery. According to the 2013 Canadian Telehealth Report, an approximately 55% increase in clinical telehealth sessions was documented between 2010 and 2012, indicating the growing appeal of this technology to the healthcare industry.<sup>2</sup> In fact, currently a wide range of specialties are using some form of TM technology, ranging from psychiatry and dermatology to cardiology.<sup>2</sup>

A specialty where TM may be of great utility is addiction medicine,<sup>3</sup> including opioid use disorder. Opioid use represents a significant and growing public health concern that is frequently associated with a stigmatized patient population.<sup>4–6</sup> Indeed, those with opioid-related addiction conditions often have unique needs that at times demand the treatment of other

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written informed consent was obtained, and the patient was directed to an interview room. In order to measure survey completion rates, the number of patients who did not wish to take part, yet met inclusion criteria, was noted. The interview consisted of the research investigator, who had no previous contact with the patient, reviewing the procedure, explaining the content of the questionnaire, obtaining informed consent to participate and ultimately proceeding with the interview.

The questionnaire consisted of 17 agree–disagree questions, measured on a 7-point Likert scale and 2 questions where patients had the ability to elaborate qualitatively on their perceptions and experiences with their TM service. These statements were read out and explained to the patients, who in turn informed the interviewer of their response. This was done in order to compensate for literacy issues many of the study patients had and in order to ensure that the study patients fully understood the content of each statement. Each statement was followed by a range of numbers from 1 to 7 representing the degree to which patients agree with the statement, ranging from “very strongly disagree” to “very strongly agree,” respectively. Patients were reminded about the implications of selecting double negative responses. Each statement directly contrasted a certain aspect of care received by face-to-face consultations with the TM consultation. Questionnaire topics were divided into four different themes: Perceived Outcome (PO), Patient–Physician Relationship (PPR), Patient Experience (PE), and Overall Perception (OP). Statements that presented TM in a negative light with respect to face-to-face were reverse scored during data analysis. Reverse scoring meant that agreeing on such statements and thereby selecting a number on the higher end of the Likert scale spectrum was interpreted as a lower ranking of the TM service.

An additional portion of the questionnaire entailed an open-ended question about TM service where patients were asked to express themselves to a greater extent with regard to their perceived pros and cons of the service. A final question designed to evaluate their strength of conviction for a particular service was asked and subjected to correlational analysis with the number of prior TM consultations. For review of the questionnaire, refer to Supplementary Appendix.

### *Defining satisfaction*

There is a lack of consensus on what patient satisfaction truly is and what the best method may be to capture it and its complex components.<sup>16–18</sup> Although not necessarily specific to patient satisfaction with TM, client satisfaction scales have been developed and used in select TM studies.<sup>8</sup> However, they are not uniformly used throughout the TM satisfaction literature.<sup>19</sup> Many TM satisfaction studies are, therefore, poorly generalizable,<sup>19</sup> and to our knowledge, none have been validated for use in the opioid use disorder population. Indeed, many TM studies evaluating satisfaction in the context of substance-use populations relied on

investigator-designed rating scales.<sup>14</sup> With the absence of a consistently used framework to evaluate patient satisfaction with TM in the context of addiction medicine, the current quality-improvement initiative developed an investigator-designed questionnaire with the goal to evaluate the quality of care received at TrueNorth Medical Centre.

The questionnaire was developed by frontline clinicians and staff based on experiences treating opioid use disorder patients using TM and published studies that investigated patient satisfaction with TM in other medical specialties.<sup>20–26</sup> Although psychometric validation was not conducted, the questionnaire was screened for face and content validity as well as clarity. Questionnaire items were modeled from various studies examining patient satisfaction with TM, including those examining it in the context of dermatology,<sup>22,25</sup> pediatrics,<sup>23</sup> and oncology,<sup>20</sup> as well as from the Patient Satisfaction Questionnaire III.<sup>27</sup> These items were grouped into four themes: PO, PPR, PE, and OP. PO was defined as factors related to the quality and competence of care provider. PE was defined as factors related to access and convenience of treatment. Factors influencing interpersonal aspects of care were used to describe the PPR. The OP theme contained only one question that was designed to summarize the overall perspectives of study participants have regarding TM by evaluating how their expectations were met. These topics have been evaluated in prior TM studies<sup>22,23,25</sup> and in general are recognized as some of the determinants of patient satisfaction.<sup>27,28</sup>

A positive rating of TM was defined as scoring above 4.0 (which represented neutrality) on the questionnaire regarding a certain aspect of care. Importantly, this neutrality marker implies that a patient perceives TM to be equivalent with the standard face-to-face care they receive. The degree of satisfaction is further assessed as mild, strong, and very strong for the same statement types in which patients scored “mildly agree,” “strongly agree,” and “very strongly agree” on the Likert scale, respectively. Opposite principles were applied if the patient had a score somewhere within the disagree range for these statements. Conversely, scoring between mildly disagree and very strongly disagree on statements that presented TM as less favorable than face-to-face consultations signified satisfaction with TM care. Measuring gradients of satisfaction were identically conducted as in the case with positively worded statements for TM. Data analysis interpreted obtained scores both from a categorical perspective (>4.0 representing a favorable score for TM and <4.0 representing a favorable score for face-to-face consultations) and from a continuous perspective where satisfaction was measured on a 1- to 7-point scale.

### *Statistical analyses*

The responses to the questionnaire were analyzed using Microsoft Excel 2013. Mean scores for each item on the Likert scale were calculated for each preference group. Mean

scores were also calculated for the overall scores for each category (PO, PPR, PE, and OP) by adding respective individual item means. Patients were separated into two groups: those who preferred face-to-face consultations and those who did not (those who preferred TM or have no preference). Pearson correlations were used to evaluate the association between the number of prior TM consultations and one's strength of conviction with their preferred modality. Differences based on preference group were calculated by the Student *t*-test.

## Results

### Study patients

Altogether 30 patients volunteered to participate, 22 (73.3%) of the study participants were males, typical of the opioid-dependent population served by TrueNorth Medical Centre. A total of 91% (30/33) of the patients approached consented to take part in the study. In total, the patients who participated in the study completed 222 TM sessions with a mean of 7.4 sessions (standard deviation (SD)=±7.7 sessions). The study participants' mean age was 40.9 years (SD=±10.9 years).

### Overall patient preference

Almost half of the patients (n=14; 47%) selected standard care as their optimal modus of therapeutic delivery. In contrast, the number of patients who preferred TM over face-to-face was much lower (n=6; 20%). However, 33% (n=10) of the patients indicated that they have no specific preference for either TM or face-to-face consultations. Face-to-face preference was modestly and negatively correlated with prior number of TM sessions a patient had experienced ( $r=-0.33$ ,  $p=0.212$ ). Patients who indicated no specific preference for either therapeutic delivery method or those who preferred TM when grouped together displayed a modest positive correlation with number of prior TM consultations ( $r=0.34$ ,  $p=0.009$ ). There were no statistically significant differences between both age and gender characteristics and preferences for any or neither therapeutic delivery system.

### Indices of care and patient preference

More specific analysis was carried out to investigate whether patient evaluations of specific indices of care were related to preference for either of the two available therapeutic delivery modalities. There were no significant differences between the two preference groups in how patients evaluated PO and PPR indices. There was a statistically significant difference, however, with respect to evaluations of PE and overall evaluation of TM between the two preference groups. That is, with regard to PE, patients preferring TM over face-to-face consultations rated their experience with the service much

**Table 1.** Effect of preference on general indices of care.

Indices of care	Preference group		
	FTF (n=14), mean ± SD	TM (n=6), mean ± SD	TM+NP (n=16), mean ± SD
PO	14.1 ± 5.1	16.8 ± 2.2	16.3 ± 1.9
PPR	13.8 ± 4.4	17.0 ± 3.0	16.5 ± 3.0
PE	16.4 ± 4.8	22.8 ± 2.7	20.7 ± 3.8

FTF: face-to-face consultation; SD: standard deviation; TM: telemedicine consultation; TM+NP: telemedicine and no preference grouped; PO: Perceived Outcome; PPR: Patient-Physician Relationship; PE: Patient Experience.

This table illustrates the relationship between select patient preferences and indices of care. Significant differences were observed only for the PE index of care between both FTF and TM groups ( $p=0.002$ ) and FTF and TM+NP groups ( $p=0.012$ ).

more favorably (M=22.8, SD=2.7) than those who preferred face-to-face consultations (M=16.4, SD=4.8;  $p=0.01$ ). Similarly, patients preferring TM signified that their overall expectations about the service (M=6.3, SD=0.5) were met significantly more so than those who preferred face-to-face consultations (M=4.9, SD=2.1;  $p=0.03$ ). These results are displayed in Table 1.

Further analysis was conducted to compare the responses between those preferring TM versus face-to-face consultations regarding specific items within each set of indices of care. Although as an overall index of care there were no significant differences between the two consultation groups with regard to perceived treatment outcome, there were significant differences between the two consultations groups when analyzing the health improvement aspect of the aforementioned index. That is, those who preferred TM (M=4.3, SD=0.5) saw it as a significant better therapeutic modality for overall symptom relief when compared to those who preferred face-to-face consultations (M=3.3, SD=1.3;  $p=0.02$ ). Similarly, the two consultation groups differed significantly on the way they perceived empathy during TM consultations, with those preferring TM communicating that relative to face-to-face consultations, they felt more empathy (M=4.8, SD=1.3), whereas those who prefer face-to-face felt they received less empathy during the TM consultation (M=3.1, SD=1.1;  $p=0.02$ ). Finally, all components of the patients experience index of care had significant differences between the two groups, including those concerning time saved (Q3.1), general convenience (Q3.2), privacy (Q3.3), and rushed visits (Q3.4). All the aforementioned results are displayed in Table 2.

## Discussion

The current results indicate that TM is regarded as a viable therapeutic delivery system by TrueNorth Medical Centre patients. This is in line with previous works examining the perceptions of substance-use disorder patients,<sup>8,15</sup> as well as

**Table 2.** Effect of preference on specific indices of care.

Question number	Preference group		
	FTF (n = 14), mean ± SD	TM (n = 6), mean ± SD	TM + NP (n = 16), mean ± SD
1.1	4.2 ± 1.7	3.8 ± 0.4	3.9 ± 0.3
1.2 <sup>ab</sup>	3.3 ± 1.3	4.3 ± 0.5	4.1 ± 0.5
1.3 <sup>a</sup>	3.1 ± 1.4	4.0 ± 1.1	4.1 ± 0.9
1.4	4.1 ± 2.0	3.7 ± 1.4	3.9 ± 0.9
2.1	4.1 ± 2.1	3.8 ± 1.6	4.1 ± 1.1
2.2 <sup>ab</sup>	3.1 ± 1.1	4.8 ± 1.3	4.4 ± 1.2
2.3 <sup>a</sup>	3.0 ± 1.5	4.3 ± 1.4	4.6 ± 1.4
2.4	4.1 ± 1.3	4.3 ± 1.0	4.3 ± 0.8
3.1 <sup>ab</sup>	4.6 ± 1.7	6.3 ± 0.8	5.8 ± 1.2
3.2 <sup>ab</sup>	4.6 ± 1.5	6.5 ± 0.5	5.6 ± 1.3
3.3 <sup>ab</sup>	3.0 ± 1.0	4.8 ± 1.0	4.6 ± 1.2
3.4 <sup>ab</sup>	3.0 ± 1.0	4.8 ± 1.0	4.6 ± 1.2
4.1 <sup>b</sup>	4.9 ± 2.1	6.3 ± 0.5	5.9 ± 1.0

FTF: face-to-face consultation; SD: standard deviation; TM: telemedicine consultation; TM + NP: telemedicine and no preference grouped.

This table illustrates the relationship between select patient preferences and specific indices of care. The exact statement which question number is referring to can be found in Supplementary Appendix.

<sup>a</sup>Significant differences in between FTF versus TM and FTF versus TM + NP groups, respectively. Significance was defined as  $p \leq 0.05$ .

other patient populations<sup>14,19</sup> on TM. It is interesting to note that for patients who express a preference for face-to-face care, this preference is quite mild. In contrast, those patients expressing a preference for TM care express a much stronger preference for this type of care. One possible explanation for this result is that this study clinic often uses TM in order to provide care outside traditional office hours. Patients for whom weekend or evening care is especially important may be the group that strongly favors TM care. This idea is certainly worthy of study in future TM research.

That said, most patients, when offered the option of either using TM consultations or face-to-face care opted out for the latter. This was due to several factors, most of which related to the way in which patients perceived their interactions with the physician change as a result of TM consultation. Those who preferred face-to-face consultations tended to have privacy concerns surrounding intimate topics of discussion during TM sessions. This may explain why this same population felt that they perceived less empathy from their physician during the TM consultation. In fact, using content style analysis on the qualitative sections of the questionnaire revealed that patients who prefer face-to-face consultations emphasized the themes of “intimacy” and “building rapport,” which came up frequently in about 78% of the patients. That is, many patients felt that the TM construct compromised their ability to develop rapport with their physician and was less intimate when directly compared to the face-to-face consultation. These patients may represent a patient group with greater functional impairment or greater difficulties following

through prescribed therapy plans, thereby requiring greater attention from physicians.

At face value, the aforementioned findings may cast doubt onto TM as an effective therapeutic modality for opioid disorder patients serviced at TrueNorth Medical Centre. However, it is important to note that despite there being a greater number of patients who preferred face-to-face over TM, there was a similarly large patient population (33%) that showed no preference between either forms of treatment modality. In fact, when both those preferring TM and those with no specific preference for either treatment modality are grouped together, they represent a majority of the study population. Moreover, there was not a large spread with regard to degree of satisfaction among different indices of care. In fact, most indices were evaluated between scores of 3 and 5, indicating that TM, in general, shares many similarities with standard care. Taking this into consideration, it seems as though opioid use disorder patients at TrueNorth Medical Centre are likely to accept TM as a viable consultation type.

In this light, patients acknowledged the potential benefits of TM consultations as well. The PE, as described in this study, seemed to be the index of care most appreciated by those favoring TM, as well as those who have no specific preference for the two avenues of care. Of great relevance to these population groups was that the TM consultation saved them time and was perceived as being more convenient than face-to-face consultations. In fact, the time-saving nature and convenience of TM received the greatest satisfaction rating from patients, averaging 6.3 and 6.5 on the Likert scale, respectively. This is line with other studies published on the topic, which also identified the convenience and time-efficient nature of TM as a notable benefit.<sup>8,15</sup> In qualitative portions of the questionnaire, all but one of the study patients who preferred TM specifically identified the time-saving nature of TM as the main advantage. This suggests that patients who prefer TM over face-to-face consultations place more value on the convenient nature of TM than other aspects of care measured in the study. Indeed, a greater degree of convenience provided by the TM technology may explain why the group who preferred TM on average evaluated it more favorably than the face-to-face group did their preferred consultation type. Importantly, this suggests that those patients who prefer TM over face-to-face consultations represent a specific patient group that appreciates or is dependent on the flexibility of physicians’ schedules. Indeed, patients who participated in this quality improvement initiative typically occupy work schedules that produce unorthodox time constraints on their availability.

Those favoring TM over face-to-face also agreed that they felt greater comfort discussing intimate feelings with their physicians during their TM consultation. Interestingly, one patient acknowledged that the TM construct is less intimate than face-to-face; however, they considered this as an advantage since they felt less stigmatized when drug-positive results were discussed over TM than in person with the

physician. Also, the fact that there were no significant differences between patient groups with regard to the overall therapeutic outcome index and overall PPR index indicates that TM is a generally satisfactory therapeutic option. It is worthy to point out, however, that those preferring TM seem to think that the construct of the system may encourage physicians to finish their appointments quicker than usual.

Correlational analysis suggests that with a greater number of TM consultations opioid use disorder patients may develop a preference for the service or become less against receiving it. This is attested to by the significant positive trend observed between those preferring TM or those with no preference and the number of prior TM consultations. The opposite trend was observed for those preferring face-to-face sessions. This points to the importance of the degree of prior exposure to TM with regard to the formation of patient preference. Perhaps, with greater exposure to the service and during less clinically demanding stages of illness, more patients would accept TM as their preferred service delivery platform.

The greatest limitation of this quality improvement initiative is its small sample size. However, this was an inherent limitation of the study clinic itself. The sample also primarily consisted of middle-aged males. With this said, it is important to note that women have been demonstrated to seek opioid-related treatment at lower rates than men.<sup>4</sup> Also, this study employed an investigator-designed questionnaire that was not subjected to specific studies to examine reliability, discrimination, or validity. With this said, face validity screenings and positive patient and staff feedback indicate that the questionnaire was able to capture relevant aspects pertaining to the quality of service at TrueNorth Medical Centre. Furthermore, the questionnaire allowed for direct comparisons between face-to-face and TM consultations, thereby not only evaluating TM in isolation but also directly contrasting its suitability as a therapeutic service with traditional standard care. Moreover, the study patients see the same physicians both face-to-face and during their TM consultation which limits confounding variables and allows for greater evaluation of the points of diversion between preference groups and the impact the TM technology presents itself.

Taken together, TM is viewed by this study population as a viable additional service to standard face-to-face consultations. Despite a significant amount of patients rejecting the service and preferring face-to-face consultations, the majority of patients were not antagonistic to TM and identified clear advantages offered by it. The time-saving nature of TM was most appreciated, suggesting patients with constrained schedules may benefit most from the service. Indeed relative to face-to-face consultations, TM provides patients with greater opportunity to access care during unorthodox time periods and from various geographical locations. Greater utilization of TM in this context may provide physicians with greater reach to underserved patient groups and increase the

volume of patients treated. However, efforts should be made to take into account patient characteristics before suggesting the service, including the clinical stability and general availability of potential TM patients. Importantly, physicians who rely on TM should seek ways of improving empathic communication with their patients.

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### Ethical approval

Ethical approval was not sought for this study because this study was undertaken as a quality-improvement initiative by TrueNorth Medical Centre in Toronto. According to Article 2.5 of the Tri-Council Policy Statement, due to the nature of the current quality-improvement initiative, no REB review was necessary ([http://www.pre.ethics.gc.ca/eng/policy-politique/initiatives/tcps2-eptc2/chapter2-chapitre2/#ch2\\_en\\_a2.5](http://www.pre.ethics.gc.ca/eng/policy-politique/initiatives/tcps2-eptc2/chapter2-chapitre2/#ch2_en_a2.5)).

### Informed consent

Written informed consent was obtained from all subjects before the study.

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