# Patient and Caregiver Experience with the Use of Telemedicine Post-Concussion in a Pediatric Physical Medicine and Rehabilitation Population

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## Background

Telemedicine is an overarching term encompassing any health care service delivered at a distance.[1] Over the past 20 years, the use of telemedicine has grown exponentially with the aim of improving access to care.[2] Tools such as videoconferencing have allowed clinicians to administer health care services from a remote setting to diagnose, manage, and monitor patients during the course of their treatment while limiting patient exposure to other illnesses.[3] This approach was widely adopted during the COVID-19 pandemic and has opened new possibilities for future clinical practice.[3]

Previous studies have reported benefits in delivering pediatric services via telemedicine with reports of fast assessment and improved quality of life for both patients and caregivers.[2,4] Currently, there is still limited research on the use of telemedicine for pediatric patients seeking physical medicine and rehabilitation (PM&R) care, such as evaluation and treatment for concussions.

As feasibility studies emerge investigating baseline testing, diagnosis, and management of concussion using telemedicine platform[5,6] there is a need for the assessment of patient and caregiver experience to optimize the effectiveness of telemedicine care in this patient population.

## Aims and Objectives

- Investigate the efficacy of online care (telemedicine) for concussion compared to standard office visits from the patient and caregiver perspective in a population of pediatric PM&R patients
- Explore the impact of telemedicine on patients and caregiver healthcare experience
- Identify factors that optimize visit satisfaction

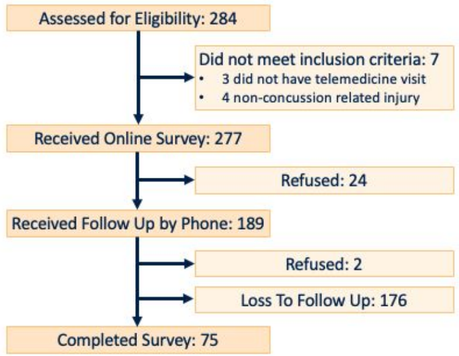
## Methods

**Design**: The cross-sectional study was a mixed methods design including Likert-scale quantitative questions and a qualitative, patient satisfaction and feedback response question.

**Participants**: A total of 75 patients (n=8) and caregivers (n=67) completed the survey. Eligibility criteria included:

- 18 years of age or older
- English-speaking
- Patient with documented concussion or caregiver of a minor with a documented concussion
- present at the time of telemedicine encounter
- Active email address

**Figure 1. Enrollment Flowchart**




**Main Outcome Measures**:

1. Assess the utility of telemedicine and if it met the medical needs of this population
2. Assess the potential role of telemedicine in minimizing emergency department visits.
3. Identify modifiable factors to better understand the positive impact of providing care for individuals post concussion via telemedicine platform and areas that can be targeted to improve such care

## Results

The majority of responders agreed that their telemedicine visit was beneficial for their care (89.5%) and their medical needs were met using the online platform (87.8%). Additionally, 68% reported that the ability to be seen early via telemedicine resulted in less of a need to go to (or return to) the emergency room (Table 1).

**Table 1. Six Question Likert Scale Response Rate**

| Survey Question | Strongly Agree | Somewhat Agree | Neither Agree/ Disagree | Somewhat Disagree | Strongly Disagree |
|---|---|---|---|---|---|
| I felt that my telemedicine visit was helpful. | 65.79% | 23.68% | 9.21% | 1.32% | 0.00% |
| I felt my medical needs were met using the telemedicine platform. | 54.05% | 33.78% | 6.76% | 4.05% | 1.35% |
| I would schedule a telemedicine visit for concussion care again. | 41.33% | 33.33% | 5.33% | 13.33% | 6.67% |
| By using telemedicine and being seen early, I felt less of a need to go to (or back to) the emergency department. | 48.00% | 20.00% | 28.00% | 1.33% | 2.67% |
| I would recommend using telemedicine for others. | 38.67% | 36.00% | 13.33% | 5.33% | 6.67% |
| I would prefer in-office instead of telemedicine. | 30.67% | 25.33% | 29.33% | 10.67% | 4.00% |

The final sample of qualitative feedback resulted in a total of 41 themed statements that were coded into three main categories (Table 2).

**Table 2. Themes and Sub-Themes**

| Themes | Sub-Themes |
|---|---|
| Visit Access | Ease of scheduling |
| | Elimination of travel |
| | Same-day appointment options |
| Quality of Care | Supportive counseling |
| | Need for in-person physical exam |
| Patient-Provider Relationship | Meaningful connection |
| | Communication |
| | Comfort with virtual medical care |

*"I think the telemedicine was very easy and convenient. Scheduling was excellent, I felt like we were able to see the doctor much faster, and it allowed us to get the care my daughter needed while on a busy schedule. It felt like a normal visit as if we were there in person."* (Response 1)

*"My son suffered a concussion on Thursday night… The PM&R physician was able to meet with us during the following day and this appointment gave us a lot of comfort about my son's process to recover and made the weekend a lot more productive in his recovery versus having to wait to get to an in-person appointment."* (Response 2)

*"Although the telemedicine visit was informative and very thorough, I believe because concussion care can be so specialized per the individual and injury, it requires the first visit in-person for physical exam and follow-up visits could maybe be done via telemedicine."* (Response 3)

## Conclusions

Overall, this study demonstrated overarching patient and caregiver satisfaction with the use of telemedicine as an option in their healthcare. Highlighting that concussion care is situational, and telemedicine may provide a beneficial addition or alternative to in-person care. Additionally, identifiable themes demonstrate that telemedicine plays a positive role in patient and caregiver counseling but may lack the ability to fully assess a patient due to limitations in conducting a physical exam.

## References

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