



# Integrating a Standardized Self-Report Tool into Geriatric Medicine Practice during the COVID-19 Pandemic: A Mixed-Methods Study

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## Article

**Cite this article:** Northwood, M., Didyk, N., Hogeveen, S., Nova, A., Kalles, E., & Heckman, G. (2024). Integrating a Standardized Self-Report Tool into Geriatric Medicine Practice during the COVID-19 Pandemic: A Mixed-Methods Study. *Canadian Journal on Aging / La Revue canadienne du vieillissement* 43(1), 12–22.

<https://doi.org/10.1017/S0714980823000387>

Received: 15 April 2022

Accepted: 08 April 2023

### Mots-clés:

vieillesse; évaluation gériatrique; auto-évaluation; COVID-19; soins virtuels; maladies chroniques multiples; amélioration de la qualité

### Keywords:

aging; geriatric assessment; self report; COVID-19; virtual care; multiple chronic conditions; quality improvement

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## Résumé

Des services gériatriques spécialisés destinés aux personnes âgées vivant avec une démence, d'autres troubles neurologiques évolutifs, une fragilité ou des troubles de santé mentale ont été fournis en mode virtuel et en personne durant la pandémie. L'objectif de cette étude était d'implanter un logiciel d'auto-évaluation standardisé – l'interRAI Check-Up Self-Report – pour évaluer les patients à distance. Une méthode de recherche convergente et mixte a été utilisée. Le personnel a trouvé l'instrument facile à utiliser et les paramètres du programme utiles pour la planification. La plupart des patients avaient besoin d'une évaluation gériatrique urgente (72%) et présentaient des déficiences cognitives (34%) et fonctionnelles (34%) modérées à graves, des symptômes de dépression (53%), de la solitude (57%), des douleurs quotidiennes (32%) et des soignants en détresse (46%). La mise en œuvre de l'instrument repose notamment sur la prestation d'un soutien continu et la facilitation de la collaboration intersectorielle. Cet outil a amélioré le processus d'évaluation gériatrique en créant un système qui permet de suivre tous les besoins de soins immédiats et futurs, tant au niveau des patients que des programmes.

## Abstract

Specialized geriatric services care for older adults (≥ 65 years of age) with dementia and other progressive neurological disorders, frailty, and mental health conditions were provided both virtually and in person during the pandemic. The objective of this study was to implement a software-enabled standardized self-report instrument – the interRAI Check-Up Self-Report – to remotely assess patients. A convergent, mixed-methods research design was employed. Staff found the instrument easy to use and the program-level metrics helpful for planning. Most patients urgently needed a geriatrician assessment (72%) and had moderate to severe cognitive (34%) and functional impairments (34%), depressive symptoms (53%), loneliness (57%), daily pain (32%), and distressed caregivers (46%). Implementation considerations include providing ongoing support and facilitating intersectoral collaboration. The Check Up enhanced the geriatric assessment process by creating a system to track all needs for immediate and future care at both the patient and program level.

## Introduction

During the ongoing COVID-19 pandemic, older adults (≥ 65 years of age) with multiple chronic conditions are at great risk for destabilization as a result of reduction in access to primary care and other health services and threats to well-being from pandemic restrictions (Palmer et al., 2020; Sinn, Sultan, Turcotte, McArthur, & Hirdes, 2022). Specialized geriatric services (SGS) provide care to particularly vulnerable older adults with dementia and other progressive neurological disorders, multi-morbidity, falls, frailty, and mental health conditions. SGS in Southwestern Ontario, Canada were in need of a reliable instrument to conduct remote assessment of newly referred patients at a time of social distancing and to monitor existing patients in a virtual, systematic manner. Therefore, the objective of this study was to implement a standardized, self-report instrument in SGS as part of the comprehensive geriatric assessment by the geriatrician during the pandemic, and to assess the impact of the implementation.

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## Background

Older adults are disproportionately experiencing negative outcomes to their health and well-being during the COVID-19 pandemic (Hoffmann & Wolf, 2021; Onder, Rezza, & Brusaferro, 2020; Palmer et al., 2020). Although older adults 70 years and older make up only 13.4 per cent of all confirmed COVID-19 cases in Canada, they experienced a fatality rate ranging between 11 and almost 26 per cent, compared with less than 1 per cent for those 40–59 years of age (Shim, 2021). In addition, the presence of co-morbidities increases the likelihood of death if one is infected (Iaccarino et al., 2020; Shim, 2021). In order to limit the exposure of older persons to the virus, social distancing practices were put in place in many jurisdictions. However, these practices have reduced health care access for chronic condition management, placing older adults at risk of destabilization and hospitalization (Heckman, Saari, McArthur, Wellens, & Hirdes, 2020).

Older adults are also more vulnerable to negative consequences from social distancing measures and the subsequent loss of social participation, including isolation and loneliness, which can also accelerate cognitive decline (Dassieu & Sourial, 2021; De Pue et al., 2021; Flint, Bingham, & Iaboni, 2020; Palmer, 2019; Stephenson, 2020). The closure of community support service programs that provided social stimulation, meal delivery, and caregiver respite further threatened the well-being of older adults and their caregivers. Older adults have reported experiencing increases in anxiety and depression, poorer sleep, and a decrease in healthy activities and exercise because of pandemic-related lifestyle changes (Sepúlveda-Loyola et al., 2020).

Thus, the pandemic has led to functional, medical, cognitive, and social decline in older adults, creating an urgent need for remote assessment and care. The interRAI not-for-profit international network of clinicians and researchers develops and maintains an integrated family of instruments to assess vulnerable persons across multiple settings, such as home care and long-term care (Heckman, Gray, & Hirdes, 2013). interRAI assessments are used in these different settings to assess persons and generate real-time electronic reports that identify risks and support care planning. Older adults who have been assessed by an interRAI instrument have been shown to have better outcomes, including reduced institutionalization and functional decline (Landi et al., 2001). These instruments also provide a common language for health care providers across different settings to foster collaboration and integrated care (Heckman, Gray, & Hirdes, 2013). The interRAI Check-Up is a self-report instrument, deployed on a software platform, and can be completed by non-clinicians or older adults themselves in person, over the phone, or virtually (Itheme, Hirdes, Geffen, Heckman, & Hogeveen, 2021; Morris et al., 2018). The instrument was developed based on items from clinician-led assessment instruments but was tailored for self-report use. The validity, reliability, and acceptability of the Check-Up have been evaluated with samples of community-dwelling older adults from diverse backgrounds in several care settings in Canada and South Africa (Geffen, Kelly, Morris, Hogeveen, & Hirdes, 2020; Itheme et al., 2021).

The Check Up is a non-threatening way for an older person to describe functional needs and express concerns sometimes overlooked in health care interactions, including mood, loneliness, financial hardship, food insecurity, and stressful life circumstances (Ahmad, Norman, & O'Campo, 2012; National Academies of Sciences Engineering and Medicine, 2019; Wiljer, Strudwick, & Crawford, 2021). During a traditional geriatric assessment, patients

may not volunteer information about certain age-related conditions such as incontinence, falls, or other stigmatized physical, mental, and social conditions because of embarrassment, shame, or fear of being deemed unable to live independently (Chou, Tinetti, King, Irwin, & Fortinsky, 2006; Schreiber Pedersen et al., 2018). As such, the use of a standardized assessment, combined with an in-depth exploration of a patient's narrative, are both essential in obtaining a comprehensive geriatric assessment (Lafortune, Elliott, Egan, & Stolee, 2017). The Check-Up has domains consistent with a comprehensive geriatric assessment and generates a broad range of outcome scales, risk stratification tools, and clinical assessment protocols (Morris et al., 2018). The geriatrician and the team can use these outputs to identify priority areas for care planning to focus on with the older adult and their caregiver. The software platform allows organizations to generate client-level reports that can be shared with the circle of care and program-level reports to inform program planning and continuous quality improvement.

However, previous research has noted health care professionals' reluctance to change assessment practices to include standardized instruments and/or self-report tools, because of a preference and comfort with current practices (Giosa, Stolee, & Holyoke, 2021; Guthrie et al., 2014; Nova, Zarrin, & Heckman, 2020b). Therefore, the overall goal of this study was to implement the interRAI Check-Up into SGS care pathways to remotely assess older adults during the pandemic, and to evaluate the impact of the implementation. The specific objectives were to: (1) explore the perspectives of SGS staff regarding implementation of the Check-Up, (2) describe the characteristics of SGS patients assessed with the Check-Up during the pandemic, and (3) converge the qualitative and quantitative data to provide an understanding of implementation considerations for the Check-Up in SGS during the pandemic and beyond.

## Methods

We used a convergent, mixed-methods research design to answer the overarching question: *What are the key considerations when implementing a standardized, self-report tool in caring for patients of SGS?* (Creswell & Plano Clark, 2018). In this design, both qualitative and quantitative components were conducted at the same time and the information learned in both components was used to answer the study's research question. The reason for using a mixed-methods approach was to more comprehensively understand the implementation process using complementary data (Bazeley, 2018). The qualitative data provided experiential information about the clinical context and the quantitative data supplied the clinical outcomes of patients assessed and cared for in this context (Bryman, 2006).

The study was informed by the integrated Promoting Action on Research Implementation in Health Services (iPARIHS) framework (Harvey & Kitson, 2016). The iPARIHS framework is a guide for implementing evidence-based practice changes, which details the elements that need to be addressed for a greater likelihood of success (Stetler, Damschroder, Helfrich, & Hagedorn, 2011). The main constructs of the framework are *facilitation* (how the process is implemented), *innovation* (what is implemented), *recipients* (who is targeted), and *context* (where implementation is taking place) (Stetler et al., 2011). In this framework, facilitation is defined as the "active element assessing, aligning and integrating the other three constructs" (Harvey & Kitson, 2016, p. 2). A successful implementation occurs when the innovation becomes embedded

in practice by the clinical team (Harvey & Kitson, 2016). The framework was used in the development of the qualitative focus group (FG) guide, the analysis of the qualitative data, and the mixed-methods analysis.

### *Qualitative Component Design*

A qualitative description method was used in the qualitative component (Sandelowski, 2000, 2010). Qualitative description provides a comprehensive summary of an event (in this case, an implementation study) that stays close to the experiences as described by the participants (Sandelowski, 2000).

### *Participants*

The collaborating geriatrician on the research team provided SGS staff with information about the study and Dr. Northwood's e-mail address. Interested participants contacted the first author and a letter of information was shared.

### *Qualitative data collection*

A series of three virtual FGs were held with the purposive sample of SGS staff over Zoom, lasting between 60 and 90 minutes, which were facilitated by Dr. Northwood. Discussion prompts posed to the FGs at the first virtual meeting included: "tell me about how you think the Check-Up could be used with your patients" and "tell me about what you would do with the information you learned about your patients from the Check-Up." At subsequent FGs, staff currently using the Check-Up joined to share their experiences implementing the instruments and to brainstorm about where the instruments fit across SGS programs. The FGs were semi-structured with flexibility to explore experiences that the participants identified during the discussion. The FGs were digitally recorded and the conversations were professionally transcribed verbatim.

### *Qualitative analysis*

A directed content analysis approach was used to code and analyze the qualitative data (Hsieh & Shannon, 2005). The main constructs of the iPARIHS framework were used as the deductive coding framework (Harvey & Kitson, 2016). Two members of the research team independently coded the FGs with the support of NVivo 12 software. Dr. Northwood reviewed all the coding and re-coded where participant quotes were more reflective of another construct. During an interactive meeting with these three team members, the re-coding was discussed to reach consensus. Summary qualitative themes were drafted for each construct and reviewed and refined in a subsequent meeting of the whole team. The three FGs were found to be sufficient to generate a comprehensive description of the implementation.

### *Quantitative Component Design*

In the quantitative component, descriptive statistical analysis was conducted on the de-identified data from the Check-Up.

### *Quantitative data collection*

interRAI partnered with Raisoft Ltd., a software company, to provide the Web-based platform to conduct the Check-Up. Raisoft provided this software at no cost during the pandemic (up to May 31, 2021). The patients and/or caregivers' responses to Check-Up assessment items were directly entered into the RAIsoft.net platform by the geriatrician. The de-identified data for

SGS patients seen between April 21, 2020 and March 31, 2021 was exported from the RAIsoft.net platform to a secure server hosted at the University of Waterloo. The Check-Up contains the following clinical outputs: Major Comorbidity Count (MCC); Assessment Urgency Algorithm (AUA); Self-Reliance Index (SRI); Activities of Daily Living (ADL) Hierarchy Scale; Instrumental Activities of Daily Living (IADL) Capacity Hierarchy Scale; Communication Scale; Cognitive Performance Scale (CPS) Changes in Health, End-Stage Disease and Symptoms (CHES); Detection of Indicators and Vulnerabilities for Emergency Room Trips (DIVERT); and Cardiorespiratory Clinical Assessment Protocol; as well as self-reported health, loneliness, financial concerns, mood, pain, falls, unstable conditions, acute problem or flare-up of chronic problem, and caregiver burden; and health service use over last 90 days. Refer to [Table 1](#) for description of these outputs.

### *Quantitative analysis*

The analysis of the de-identified data was conducted using SAS University Edition software. Percentages and frequencies were used to describe the categorical data (e.g., gender) and the mean was used to describe the central tendency of the age variable.

### *Mixed-Methods Analysis*

After completion of the qualitative and quantitative analysis, the results from the two components were compared to generate the mixed-methods interpretation (Creswell & Plano Clark, 2018). The findings from both components were entered into a joint display – a table with the qualitative and quantitative results displayed by construct of the iPARIHS – to generate key considerations when implementing an interRAI instrument in caring for patients of SGS (Bazeley, 2018; Harvey & Kitson, 2016). The development of considerations was completed by the research team during a virtual meeting.

### *Ethical Considerations*

This study received ethics clearance from the University of Waterloo Research Ethics Committees (#42473). The use of the University of Waterloo's server for secondary data analysis of information collected using interRAI instruments had received ethics approval previously (ORE#30173). Informed consent was obtained from all study participants prior to their FG participation. Digital audio files and transcripts were stored on a password-protected server behind the university's firewall. Transcripts were anonymized of all identifying information.

## **Results**

### *Qualitative Results*

Three FGs were conducted with five participants. Three participants (P1, P2, P3) attended all three focus groups and P4 and P5 (geriatrician) attended one each to share experiences using the Check-Up. Participants had diverse roles such as intake assessment and direct patient care (geriatrician, registered nurse, nurse practitioner, occupational therapist). The experiences and perspectives of the participants on implementing the Check-Up into their programs are described by constructs and characteristics of the iPARIHS framework (Benzer *et al.*, 2019).

**Table 1.** interRAI outcome scales, risk stratification tools, and clinical assessment protocols

Output	Description	Range	Cut-off (if Applicable)	Reference
Major Comorbidity Count	Measures risk of mortality if infected with COVID-19	0–3 low to high risk		Canadian Institute for Health Information (2020)
Assessment Urgency Algorithm	Indicates urgent need for a comprehensive assessment	1–6 lowest to highest urgency	5–6 highest urgency	Hirdes et al. (2010); Costa et al. (2017); Sinn et al. (2020)
Self-Reliance Index	Measures self-reliance	0–1 self-reliant to not self-reliant		Hirdes et al. (2010)
ADL Hierarchy Scale	Measure of functional performance in 4 activities of daily living (ADL) from early to late loss (hygiene, moving around in home, toilet use, eating)	0–6 independent to total dependence	≥ 3 extensive assistance required to total dependence	Morris, Berg, Fries, Steel, and Howard (2013)
IADL Capacity Hierarchy Scale	Measure of capacity to complete tasks from early to late loss (meal preparation, housework, managing finances, managing medications, shopping)	0–6 no impairment to high impairment	≥ 3 some difficulties in most IADLs to total dependence	Morris et al. (2013)
Communication Scale	Measures impairment in communication and comprehension	0–2 intact to severe impairment	≥ 1 moderate to severe impairment	Frederiksen, Tariot, and De Jonghe (1996)
Cognitive Performance Scale	Measures cognition	0–6 intact to severe impairment	≥ 3 moderate to very severe impairment	Morris et al. (2016)
Self-Rated Mood	Measures presence of mood symptoms	0–9 no symptoms to severe symptom burden	≥ 3 possible depression to possible severe depression	Penny et al. (2016)
Changes in Health, End-Stage Disease and Symptoms	Measures medical complexity and instability	0–5 most stable to most unstable	≥ 3 moderate to very high level of health instability	Hirdes, Frijters, and Teare (2003); Hirdes, Poss, Mitchell, Korngut, and Heckman (2014)
Detection of Indicators and Vulnerabilities for Emergency Room Trips	Measures risk of future unplanned emergency room visits	0–6 lowest to highest risk	≥ 3 Moderate to highest risk	Costa et al. (2015)
Cardiorespiratory Clinical Assessment Protocol	Indicates presence of cardiorespiratory issues when triggered	0–1 not triggered to triggered	1 triggered	Morris et al. (2010)

### Innovation

*Degree of fit with existing practices and values.* The Check-Up fit well with the initial and follow-up assessments of patients (virtually, over the phone or in person) by the geriatrician, and she was seamlessly able to integrate it into her practice. The standardized approach to assessment was particularly useful for assessing patients remotely. Some SGS team members felt less certain that the Check-Up could fit with their existing practices. Participants felt they lacked the time or resources to conduct a wellness check at intake, given the high volume of referrals they manage. Additionally, participants felt the focus of the intake process should be specifically on triaging patients to the appropriate provider. They noted that the clinicians who receive and triage the referrals are different than the clinicians who ultimately provide care for the patient. As such, participants expressed discomfort collecting information if they were not in a position to take action, as this participant shared.

Wonderful to hear those stories where you address something before it became a bigger problem. I think that is where we need to head, but it's a both/and. We need to think about how do we identify and how do we make sure that we have the services to efficiently and effectively meet their needs in a timely manner. (FG2, P1).

They felt that the collection of the Check-Up would ideally be completed by the referring primary care provider to identify reasons for referral and key concerns of the client (e.g., pain, cognition). Participants also felt that the Check-Up would fit with the “pre-assessment” of patients with urgent concerns, which was conducted by nurses prior to these patients’ seeing a medical specialist, or which could be collected by nurses working with geriatricians ahead of the medical assessment. As this participant shared, “I think that possibly the referrals can become more accurate and maybe actually help our intake team direct them better” (FG2, P3).



*Relative advantage.* Using the Check-Up was viewed as advantageous by the geriatrician.

I find that it's good for ensuring that I don't leave out components of the geriatric assessment. I might forget to ask about smoking or alcohol, or I might forget to ask if they can do the stairs. I really like that on the Check-Up that it goes through that good functional checklist. (FG3, P5)

The standardized format also facilitated communication about major issues with patients and caregivers, ensured she did not miss concerns of her patients, and still allowed her to document further assessment findings. Also, the software application streamlined her report generation to the referral source. Some participants saw the advantage of the software-enabled Check-Up in generating outputs that could help to inform the triage process based on the client's main issues (e.g., mood). Another participant found this feature very helpful in flagging issues for the geriatrician whom she worked with, and streamlining the medical portion of the client's assessment.

I think it's because of the tool [Check-Up] because he's able to look at that and quickly figure out where he needs to focus his questions and know that I have already asked a lot of these questions and probably have already dealt with some of the issues. He's able to really hone in on what he needs to do rather than all the other stuff that I can do, or isn't as big of a priority at this particular visit. (FG2, P4).

*Observable results.* The geriatrician found it very helpful to see the trends of all of the patients she had assessed for the first time in her practice: "It's very valuable for me to see my group of people that I've seen over the year, to be able to see, wow, my average AUA [assessment urgency algorithm] is five, and boy, 30% of people are not cognitively independent" (FG3, P5). The reporting feature of the software was regarded as an important benefit to the geriatrician, who hoped that this type of information could be made available to her and the team routinely.

I hope there's a way to get that data, monitored by someone. It's helpful to look at the people, the population and learn, that would be very valuable. I think seeing how it could help inform the system will help individuals as well. (FG3, P5)

## Recipients

*Skills and knowledge.* Learning how to administer the self-report instrument was regarded as straightforward by all of the participants. Despite this, participants felt there was a general lack of awareness regarding interRAI instruments and an overall need for health care providers to improve their "interRAI literacy" to integrate the instruments and outputs into their practice (FG2, P1).

I think that there needs to be some training in that people need to know what it is and what the outcomes are that pop out. Because I think if you look at it, and you're like, okay, whatever. They just ask a bunch of questions. Without really understanding what they are, I think it won't be utilized in the capacity that it really can be utilized. I think there needs to be training of the tools and scales, so people know what they are and how to interpret them. (FG2, P2)

Along with this, participants believed that to increase their confidence using the instruments and understanding the outputs generated, additional education on how the instruments were developed was required.

I recall in doing training with various providers over time, one of the pieces that really stood out to me and stood out to them in the feedback they gave, was when I was able to explain that the questions that are on the AUA were generated from 800,000 patient records, looking retrospectively back at long-stay home-care patients. It gives people the context of understanding why these particular questions were asked. I think that's where we're still missing some pieces within the training and I think maybe even within people's understanding of the benefits of these tools. (FG2, P2).

Additionally, participants shared that they were uncertain about services outside of the health care system that could support patients who were identified from the Check-Up as having financial concerns or difficulty accessing necessary medications and groceries during the pandemic.

*Values and beliefs.* Self-report instruments were not currently part of most of the participants' practice, and some were unsure if self-reports would be as informative as collecting information through a narrative discussion and a health record review. One participant believed that a standardized tool was too restrictive, and they preferred "open-ended conversations" (FG1, P3). Regarding the perspective of older adult patients, the geriatrician noted that her patients and their caregivers did not express any concerns about her use of the Check-Up during their interactions.

## Context

*Organizational level.* The overall context of the COVID-19 pandemic challenged both health and social care provision. During the implementation period, SGS staff were dealing with disruption in home and community care services, redeployment of SGS staff to other roles, and during the first wave, the temporary suspension of in-person geriatric assessments. This participant describes what she learned from doing the Check-Up over the phone.

The son had canceled a PSW [personal support worker] of fear of COVID and was expecting his 92-year-old mom to be bathing on her own. So, she had actually gone three months without bathing. So that was a really urgent LHIN [Local Health Integration Network] referral and social worker referral. (FG2, P4).

Participants felt they were not able to implement the Check-Up across all SGS as a COVID-19 wellness check because of the diversity of SGS programs and independent functions, as this participant explained.

There was some question about where in the system this type of assessment would best fit and where would there be capacity on clinician time and management. And what we ended up finding is, in the middle of pandemic, different clinicians approached it in different ways. (FG1, P1)

However, the geriatrician noted that the program-level outputs generated by the Check-Up for her patients allowed her to see areas where program planning and improvement were required, including strengthening between-visit follow-up to ensure patients had connected with primary care providers regarding her recommendations. The use of program-level data in system quality improvement was not mentioned by the other participants.

*External health and social care system.* Patients seen by SGS often access care from community support services as well as from primary care, specialists, and acute care. However, participants described many barriers to sharing information, such as the Check-Up across the health and social care sectors: "We don't

speak the same language. We don't all communicate. There's all these pillars of care, and our patients being referred unnecessarily to programs they don't need to be referred to, because they just don't all talk." (FG2, P4). For example, participants thought it would be very helpful to have a formal process in which community support services could use the Check-Up and share with primary care to inform a SGS referral. Alternatively, many patients who are referred to SGS receive home and community care support services and would have an interRAI home care assessment completed that could be shared with the referral to SGS to avoid duplication of assessment, as this participant described.

I can go on the CHRIS database [provincial Client Health and Related Information System digital health platform] and if they've done a RAI-HC [interRAI home care] recently, you can go to a synopsis table and it will output all of the tool's outputs, so the CHES and the ADL score. For you to be able to look there, that could quickly map out potential pressure points where you might need to be focusing. I think that it's already being done, it's about then making value out of that work. (FG2, P1).

However, the SGS electronic client record is not connected to those in home care, primary care, or acute care, impeding information sharing and communication.

#### Facilitation

The research team provided facilitation to SGS participants by reviewing trends in data, sharing lessons learned from other interRAI implementation studies, and creating an interim and final presentation of findings. The collaborating geriatrician presented these findings to an SGS quality improvement working group.

One of the participants described the importance of facilitation in interRAI implementation work.

I think just being able to help support the geriatric system around how the interRAI tools may interface from a primary care lens and what that may look like in terms of a common language sharing or different populations or taking it to the next step, the care planning process and what does it mean for specific screening in terms of referral and all of those pieces. (FG1, P2)

#### Quantitative Results

During the implementation, 195 Check-Up assessments were collected. Patients were on average 80.7 years of age (standard deviation = 8.1). The majority (71.8%) of older adults were at the highest level of urgency for an assessment (AUA of 5 or 6). One third of patients (33.8%) had moderate to very severe cognitive impairment (CPS  $\geq 3$ ), experienced daily pain (31.8%), and had moderate to severe communication impairments (31.3%). More than half reported signs of depression (self-rated mood  $\geq 3$ ; 53.3%) and feelings of loneliness (57.4%). Many patients (46.2%) had an overwhelmed caregiver. IADL impairment was also very prevalent (IADL Capacity Hierarchy  $\geq 3$ ; 70.8%). The patients had health instability (CHES  $\geq 3$ ; 29.2%), were at elevated risk for future emergency department use (DIVERT  $\geq 3$ ; 61.5%), and reported unstable health conditions (65.6%). Just under 60% of patients had fallen at least once in the 90 days prior to their assessment. Some older adult patients (5.1%) reported having to make trade-offs between purchasing food, shelter, medications, sufficient home heat or cooling, and necessary health care or home care. Refer to Table 2 for a summary of the outputs.

**Table 2.** Characteristics of specialized geriatric services patients assessed with the interRAI Check-Up Self Report

Variable	Older Adult Patients, n (%) (n=195)
<b>Gender</b>	
Female	100 (51.0)
Male	95 (49.0)
<b>Major co-morbidity count</b>	
Low risk	16 (8.2)
Elevated risk	146 (74.9)
High risk	33 (16.9)
<b>Assessment Urgency Algorithm</b>	
Lowest urgency (1-2)	4 (2.1)
Medium urgency (3-4)	51 (26.1)
Highest urgency (5-6)	140 (71.8)
<b>Function</b>	
Impaired self-reliance	185 (94.9)
ADL Hierarchy Scale $\geq 3$	46 (23.6)
IADL Capacity Hierarchy Scale $\geq 3$	138 (70.8)
Moderate-severe communication impairment	61 (31.3)
<b>Cognition</b>	
Cognitive Performance Scale $\geq 3$	66 (33.8)
<b>Psychosocial status</b>	
Fair or poor self-rated health	70 (35.9)
Self-rated mood $\geq 3$	104 (53.3)
Loneliness	112 (57.4)
Overwhelmed caregiver	90 (46.2)
<b>Health status</b>	
Health instability (CHES $\geq 3$ )	57 (29.2)
Elevated risk for future ED use (DIVERT $\geq 3$ )	120 (61.5)
Cardiorespiratory CAP triggered	101 (51.8)
Daily pain	62 (31.8)
Any falls in the last 90 days	113 (58.0)
Unstable condition(s)	128 (65.6)
Acute problem or flare-up of chronic problem	93 (47.7)
<b>Health Service use over past 90 days</b>	
Inpatient hospital	40 (20.5)
Emergency room visit	70 (35.9)
Visit with physician or nurse-practitioner	81 (41.5)
Trade-offs resulting from limited funds	10 (5.1)
Variable	Older adult patients, mean (SD) (N=195)
Age (years)	80.7 (8.1)

Note: ADL = activities of daily living; IADL = instrumental activities of daily living; CHES = Changes in Health, End-Stage disease, Signs and Symptoms; ED = emergency department; DIVERT = Detection of Indicators and Vulnerabilities for Emergency Room Trips; CAP = Clinical Assessment Protocol.

### Mixed-Methods Interpretation

This section will present a narrative synthesis of how the qualitative and quantitative data contributed to an understanding of key considerations when implementing a standardized, self-report tool in caring for patients of SGS by the constructs of iPARIHS (Creswell & Plano Clark, 2018; Harvey & Kitson, 2016).

#### Innovation: interRAI instrument

The self-report Check-Up was a good fit with SGS, supporting the assessment of a large number of patients (195) during the study. The aggregate results identified multiple needs requiring care planning, such as cardiorespiratory issues and loneliness. Participants saw the advantage of a software-enabled instrument providing real-time outputs of client issues despite feeling that a self-report tool was not a good fit with their existing practice and values. Although the geriatrician successfully utilized the Check-Up, it was felt that it could also be effectively positioned as an intake tool at the point of referral or assessment by a nurse prior to the medical consultation.

#### Recipients: SGS staff and patients

Participants shared that they and their colleagues could easily learn to use the Check-Up; however, they required more support and education in understanding the clinical outputs and scales, the purpose of a self-report instrument, and how the instruments and outputs are constructed. Conversely, the geriatrician was quickly able to integrate the assessment and its outputs into her practice, demonstrating the usefulness of the instrument on a software-enabled platform. Some knowledge gaps were evident regarding the benefit of standardized instruments in addition to patient narratives. Additionally, although 5 per cent of older adults did report making financial trade-offs, participants were uncertain what community support services were available to support patients with those needs. From the client and caregiver perspective, the geriatrician felt that they were comfortable with the self-report format, and she easily collected the information on her patients.

#### Context: Health and social care during the pandemic

The instrument's design allowed the collection of reliable patient information while maintaining physical distancing. The quantitative data revealed that SGS patients were frequent users of the larger health care system, with 20.5 per cent having an inpatient hospital stay and 35.9 per cent having visited an emergency department in the last 90 days. The SGS patients also had moderate to severe cognitive and functional impairments and unstable and complex medical needs, and were psychosocially vulnerable; that is, clearly in need of SGS support. Yet the participants were discouraged by lack of consistent and easy communication and information-sharing pathways among SGS, home care, primary care, acute care, and community support services. The geriatrician and SGS working group's interest and engagement with the program-level quantitative data are promising, and helped to demonstrate the utility of using a single source of information (i.e., standardized instrument) for multiple purposes.

#### Facilitation beyond the research team

Active and ongoing active facilitation will be required to spread the use of interRAI self-report instrument across other SGS programs. The collaborating geriatrician's leadership and skill, current uptake of the Check-Up in primary care, and existing system-level role

connecting primary care and SGS are all well positioned to provide active facilitation for further regional spread of the tools across SGS. Based on this synthesis and the literature, we have developed recommendations to consider when implementing a standardized, self-report instrument (refer to Table 3).

### Discussion

This study highlighted some important considerations when implementing a self-report interRAI instrument as part of existing care pathways. First, patients served by SGS are complex and have multiple care-planning needs, which is complicated even more by the impact of the COVID-19 pandemic and mitigating public health measures, and are in need of a comprehensive geriatric assessment. The self-report Check Up was useful as part of a comprehensive geriatric assessment conducted remotely during the pandemic and could be implemented in the event of future disasters. In this study, those assessed with the Check-Up were more cognitively impaired and medically complex but had a lower frequency of IADL impairment than those in a study of older home care patients in contact with geriatric medicine in Ontario, Canada (Hogeveen, 2019). Older home care patients are the most frail, high-needs community-dwelling older adults, but only about 5 per cent were in contact with a geriatrician (Hogeveen, 2019), while only 2 per cent of the general population of older adults were found to be in contact in a geriatrician in another Ontario study (Seitz, 2019). Because of the limited availability of specialized geriatric resources, both in Canada and in jurisdictions internationally, there is a need for instruments, pathways, and systems like those implemented in this study, to ensure that those patients with the highest needs are accessing SGS. Whereas 71.8 per cent of older adults assessed in this study had the most urgent need for assessment, conversely, 28.1 per cent were not, and potentially could have been supported by other services, such as home care or the Alzheimer's Society, while waiting for an appointment with a geriatrician. Also, the AUA can be used as a screener across health care settings (e.g., primary or emergency care) to identify high-need patients and facilitate their referrals of to SGS (Elliott, Gregg, & Stolee, 2016).

Second, tensions arise when clinicians face the challenge of adopting a new assessment and care planning instrument, and their comfort with existing instruments and practices must be considered when supporting practice change. As in this study's findings, a qualitative study investigating primary care physicians' views on the utility of the interRAI home-care instrument as an information-sharing strategy found physicians had mixed opinions about the helpfulness of the clinical outputs, namely lack of confidence in the scales (Nova *et al.*, 2020b). However, part of the challenge in utilizing the information shared was the format; physicians wanted a more digestible presentation, with actionable strategies, and one that was software enabled (Nova, Zarrin, & Heckman, 2020a). Other work exploring the perspectives of older adults and their families on standardized assessments found that a standardized assessment in the context of a person-centred discussion was preferable, as was found by the geriatrician in this study (Lafortune *et al.*, 2017). A study of home-care clinicians' geriatric assessment practices found that the majority of clinicians were aware of the interRAI standardized assessment completed by home care coordinators but unfortunately did not consider it as part their discipline-specific assessments (Giosa *et al.*, 2021). Consequently, facilitation is a critical part of implementing new assessment

**Table 3.** Implementation considerations by innovation, recipient, context, and facilitation

iPARIHS Construct	Key Considerations
interRAI Check-Up	<ul style="list-style-type: none"> <li>Determine what portion of current assessment practices the self-report instrument replaces to avoid duplication of assessment</li> <li>Establish point in care pathway to use self-report instrument</li> <li>Consider how patient and caregiver could complete self-report instrument ahead of SGS contact</li> <li>Plan integration of instrument into referral process to streamline triage and assessment process</li> <li>Utilize a user-friendly software platform to conduct self-report instrument, generate report</li> <li>Provide education to implementers on value of self-report and use in person-centred care approach as complementary to narrative assessment</li> </ul>
Recipient: SGS Staff	<ul style="list-style-type: none"> <li>Provide education to implementers and managers on interRAI instrument outputs and the meaning of scores</li> <li>Deliver education on community support services to address concerns identified by self-report instruments, such as loneliness, financial barriers, difficulties accessing medications and groceries (consider in partnership with local community support services)</li> <li>Share self-report outputs with patients and caregivers</li> </ul>
Context	<ul style="list-style-type: none"> <li>Identify and engage local champion(s) to support implementation and provide practical advice to implementers</li> <li>Conduct active surveillance of vulnerable patients using standardized instruments during the pandemic</li> <li>Use data-analysis function of software-enabled self-report instruments to generate program- and SGS-level aggregated data reports to inform program planning and continuous quality improvement</li> <li>Connect with local providers using other interRAI instruments to facilitate information sharing and reduce burden of duplicate assessments on patients and caregivers</li> <li>Share interRAI assessment outputs when referring to SGS and when SGS is reporting back to referral source</li> <li>Work with developers/supporters of existing electronic health records to create intersectoral integration</li> <li>Advocate locally for shared and integrated electronic health records</li> <li>Use data-analysis function of software-enabled self-report instruments to generate system-level aggregated data reports</li> </ul>
Facilitation	<ul style="list-style-type: none"> <li>Identify and engage local champion(s) to support implementation across health and social care sectors</li> <li>Facilitate ongoing use of self-report instruments and collaboration</li> <li>Form an intersectoral working group, given that SGS patients are frequent users of both the health and social care system</li> <li>Develop system to use system-level aggregated data reports to inform continuous quality improvement as integrated system</li> </ul>

Note. iPARIHS = integrated Promoting Action on Research Implementation in Health Services; SGS = specialized geriatric services.

practices including exploring motivation to change at the individual and team level, providing opportunities to try out the new instrument, determining the additional education and practice development required, and establishing a forum to reflect on advantages and benefits at the client and system levels (Harvey & Kitson, 2016). The utility of self-report tools and patient-reported outcome measures as a more person-centred assessment practice is a newly developing concept and requires education and orientation to health care providers who have historically understood self-report to be inferior to a clinician assessment (Canadian Institute for Health Information, 2015; Wiljer et al., 2021). Additionally, there is need for education and support on interRAI instruments across the health and social care system as well as a need to work collaboratively as a system across sectors and professions.

Closely related is the third important finding, that there is a clear need for enhanced communication and information sharing across community-based health and social care providers. As the participants shared, they did not have built-in mechanisms to share information with primary care, home care, and acute care. Also, they reported not being well connected with community support services. Although there were some questions about the most appropriate placement of the Check-Up within SGS care processes, participants recognized that the tool had many potential uses, including as (1) a communication tool with a common language for information sharing from other providers with referrals, (2) a triage tool for more accurate assessment and direction to other services at intake, and (3) part of the assessment process to ensure a comprehensive and holistic view of complex patients is captured, whether by a nurse prior to medical consultation or by a physician during the medical consultation. Many older adults and their caregivers require support from primary care, multiple specialists, home care, and community support services (Heckman et al., 2013; Kuluski, Ho, Hans, & Nelson, 2017; Ploeg et al., 2019). As such, all these sectors must work together to ensure the complex needs of older adults are met and that these patients are not exposed to preventable health crises, loss of independence, and caregiver distress (Giguere et al., 2018; Grembowski et al., 2014; Heckman, Gray, & Hirdes, 2013).

Lastly, this study demonstrated how standardized instrument outputs have the potential for use and can be highly useful in ongoing program quality improvement. Using the Check-Up in the geriatrician's practice provided her a first opportunity to have quantifiable information on the clients she serves and to begin to think about program planning to account for their complexity. Traditionally, quality assessment in health care settings employs an audit and feedback process, which is labour intensive (Heckman et al., 2019). In this study, using a software-enabled assessment instrument facilitated collection of information that could be used in both the care of the patient and potentially, in the monitoring and evaluation of the program.

### Strengths and Limitations

This study has several strengths. A mixed-methods research approach maximizes the benefits of qualitative and quantitative research while minimizing their limitations (Creswell & Plano Clark, 2018). Using a series of focus groups with engaged participants helped to explore the components of implementation and generated a richer account than might have been gathered from one-on-one interviews (Parker & Tritter, 2006). Additionally, maintaining a core group of participants and adding other participants to later focus



groups afforded data source triangulation (Carter, Bryant-Lukosius, DiCenso, Blythe, & Neville, 2014). These additional participants had successfully utilized the interRAI Check-Up, and their contrasting experiences generated robust discussion, particularly around providing practical tips for implementation.

Certainly, there are limitations to take into account. Primarily, the sampling of participants from only one SGS and volunteer bias are considerations when looking at the applicability of the study results to other settings (Creswell & Plano Clark, 2018). Also, the sample size and the number of participants in the focus groups were small. It is entirely possible that the clinicians who participated in the study differ to other SGS clinicians. The implementation considerations identified may not be relevant for all SGSs; however, describing the findings by the iPARIHS constructs enables other SGSs to compare how their program may be similar or different (Harvey & Kitson, 2016).

## Conclusion

In conclusion, interRAI self-report tools are an innovation that can fit well in SGS practice and have an advantage resulting from deployment on a user-friendly software platform. However, continuing education is required to support clinicians' understanding of the outputs and development of the interRAI self-report instruments. At a system level, information-sharing and communication pathways need to be created, along with education to improve "interRAI literacy" across health and social care providers, and strategies to work and think as an integrated system, rather than as individual practitioners and programs. Using the aggregated outputs of the Check-Up to inform quality improvement initiatives is highly beneficial.

**Acknowledgments.** The authors thank the participants for their thoughtful contributions to this study and Raisoft for providing the software at no cost during the first waves of the pandemic.

**Data availability.** To protect patients' and participants' identities, the de-aggregated quantitative data and qualitative transcripts cannot be shared.

**Funding.** This study was funded by Regional Geriatric Program Central, affiliated with McMaster University. Salary support for Dr. Heckman was provided by the Schlegel Research Chair in Geriatric Medicine and for Dr. Northwood was provided by both the Canadian Institutes for Health Research and the SE Research Centre during a post-doctoral fellowship.

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