

Patient Satisfaction with Telephone Neuropsychological Assessment

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Abstract

Objective: Telephone-based neuropsychological assessment (TeleNP) has been shown to be a valid alternative to in-person or video-based assessment. However, there is limited information regarding patients' satisfaction with TeleNP. This report presents satisfaction survey data from a diverse, clinical sample who received TeleNP during the coronavirus disease pandemic.

Method: A total of 43 adult patients (30.2% Hispanic/Latinx, 32.6% Black), aged 24–75, who received TeleNP as part of routine clinical care participated in a postassessment satisfaction survey. Responses were analyzed qualitatively and via nonparametric comparisons based on demographic factors.

Results: Given options of “Not Satisfied,” “Somewhat Satisfied,” “Satisfied,” or “Very Satisfied,” 97.7% of patients reported satisfaction with their visit as well as the visit length, and 80% felt the visit met their needs (“Good” + “Very Good”). There were no significant differences in responses based on age, race/ethnicity, sex, or education. Endorsed advantages of TeleNP included “Avoid potential exposure to illness” and “Flexibility/Convenience,” and 20% reported difficulty communicating, concentrating, and/or connecting with their provider as potential disadvantages. Although 67.7% reported a preference for in-person visits, 83.7% expressed interest in another “virtual visit” (telephone or video conference) with their provider.

Conclusions: TeleNP was well received by the sample and demonstrated good patient satisfaction. These results in conjunction with other research supporting the validity of TeleNP support consideration of this assessment modality for patients who might not otherwise have access to in-person or video conference-based neuropsychological services. Based on these findings, a greater focus on rapport building may be warranted when utilizing TeleNP to enhance patients' sense of connection to their provider.

Keywords: Telephone; Home-based neuropsychological assessment; Patient satisfaction; Survey

Introduction

Remote neuropsychological assessment via telehealth has been of interest to the field for many years, beginning with telephone-based assessments (Brandt, Spencer, & Folstein, 1988) and evolving to include audio–visual video conferencing-based assessment. Before the severe acute respiratory syndrome coronavirus 2 (coronavirus disease [COVID-19]) pandemic, telehealth neuropsychological assessment (telessessment) was scarcely used in clinical settings outside of veteran association (VA) systems, and with more frequent utilization in research settings, either to screen and enroll participants (van Uffelen, Chin, Klein, van Mechelen, & Hopman-Rock, 2007), conduct follow-up visits (Reckess et al., 2013), or to study the assessment methods themselves (Cullum, Hynan, Grosch, Parikh, & Weiner, 2014; Wadsworth et al., 2018). With sweeping quarantine orders in 2020 due to the COVID-19 pandemic, clinical neuropsychologists across the globe were forced to quickly adopt telessessment to continue to safely provide services to their patients. Despite inherent limitations related to breadth and type of assessment techniques available with telessessment, remote neuropsychological assessment has several benefits, even in

nonpandemic times. These include increasing access to care for individuals with transportation limitations (e.g., people without vehicles or for whom driving may be dangerous [epilepsy or dementia populations]) and those in rural areas or otherwise far from neuropsychology services, providing an alternative option for immunocompromised patients, and possibly even increasing appointment show rates by removing barriers such as transportation or reliance on others to facilitate the appointment.

Interest in telephone-based neuropsychological assessment (TeleNP) seems to have waned, at least in clinical settings (although it has been used in large epidemiological studies, e.g., Late-Onset Alzheimer's Disease Family Study [Wilson et al., 2010], Midlife in the United States [Lachman, Agrigoroaei, Tun, & Weaver, 2014]), with the advent of video conferencing technology, though TeleNP should not be overlooked as a potential way to provide services, particularly when in-person assessments are not possible. This has been highlighted during the COVID-19 pandemic where many neuropsychologists faced not performing face-to-face evaluations, modifying their assessment procedures, or significantly limiting the number of patients seen. Patient access to telephone technology is nearly universal (Pew Research Center, 2019), whereas video conferencing technology, although common, may present a limitation for some patients, especially those with limited access to required technology or internet services. Furthermore, some individuals may simply prefer the TeleNP modality to video conference or find this modality more user friendly.

Recent systematic reviews and meta-analyses of the validity of video conference-based neuropsychological assessment lend support for its use in clinical settings (Brearly et al., 2017; Marra, Hamlet, Bauer, & Bowers, 2020), notably finding the strongest evidence for verbally based measures assessing language and memory, which tend to be the backbone of TeleNP assessments. A large body of literature also provides evidence for the utility and validity of TeleNP with several literature reviews yielding evidence in its favor (Carlew et al., 2020; Castanho et al., 2014; Kwan & Lai, 2013). Although much of the TeleNP literature focuses on cognitive screening measures, such as the Telephone Interview for Cognitive Status (TICS; Brandt et al., 1988), several groups have developed and published neuropsychological test “batteries” that included new or established neuropsychological measures (Kliegel, Martin, & Jager, 2007; Knopman, Knudson, Yoes, & Weiss, 2000; Prince et al., 1999; Tun & Lachman, 2006) with empirical support for acceptable validity and reliability across a range of populations including mild cognitive impairment (MCI; Tremont et al., 2011), dementia (Knopman et al., 2000), schizophrenia (Berns, Davis-Conway, & Jaeger, 2004), and autoimmune diseases (Julian et al., 2012). Furthermore, TeleNP has demonstrated diagnostic utility in ethnically diverse populations (Manly et al., 2011), and the TICS, in particular, is available in at least 10 languages (Carlew et al., in press; Castanho et al., 2014).

Although the validity of both video-based neuropsychological assessment and TeleNP has been established, evidence regarding patients' response to this type of assessment is limited. Several studies have published anecdotal evidence to suggest that patients generally respond well to video-based assessment (Barton, Morris, Rothlind, & Yaffe, 2011; Harrell, Wilkins, Connor, & Chodosh, 2014). More systematic research has been conducted into patient satisfaction in similar fields such as psychiatry and neurology, with findings suggesting an overall positive response to video-based telehealth (Hilty, Nesbitt, Kuenneth, Cruz, & Hales, 2007; Shores et al., 2004; Wechsler, 2015). To our knowledge, only one study thus far has systematically examined patient satisfaction with regard to video teleneuropsychological assessment. Parikh and colleagues (2013) found a 98% satisfaction rate among healthy controls, MCI patients, and early Alzheimer's disease patients following video-based assessments. This particular study examined satisfaction in older adults, aged 50–82, with a high level of education who underwent both in-person and video-based assessment within a clinic setting. There is still much work to be done examining the acceptability of teleneuropsychological assessment administered in different settings (e.g. home based) and with culturally diverse populations. TeleNP has the advantage of increased accessibility and, as such, is ideal for studying the acceptability of telemedicine among a wide variety of patients. However, to date, there are no dedicated studies assessing patient satisfaction utilizing TeleNP.

The current paper presents patient satisfaction survey data from a diverse population of clinically referred adult patients assessed at home using TeleNP during the COVID-19 pandemic. To our knowledge, this is the first report of patient satisfaction with TeleNP, and one of the few patient satisfaction surveys to examine satisfaction with teleassessment in a diverse patient population. Results of the survey as well as similarities and differences in response patterns by age, race/ethnicity, education, and gender will be presented. In light of the results, recommendations to guide future teleneuropsychology (TeleNP) services will be discussed.

Method

A patient satisfaction survey was developed as part of an Institutional Review Board-approved quality improvement project at the University of Texas Southwestern Medical Center and Parkland Health and Hospital System (PHHS) to assess utility/feasibility and satisfaction of TeleNP services on campus. This paper focuses on patient satisfaction of telephone neuropsychological assessment (TeleNP) services in a diverse sample. Due to COVID-19 and stay at home orders, neuropsychological services

at PHHS were converted to telephone-only in March 2020. Given the prolonged nature of the pandemic and need to continue offering services remotely, this survey was developed to provide feedback on patient experiences to guide future teleassessment services in this population.

Participants and Procedures

Participants included 81 individuals referred for neuropsychological assessment at PHHS, a county hospital in PHHS, as part of routine clinical care who were able and willing to participate in a TeleNP. The number of patients who were referred for assessment but not reached or unable/unwilling to schedule an appointment was not recorded, though was estimated to be relatively small. Individuals who completed a TeleNP between March and July 2020 were contacted by phone between May and July 2020 by clinic staff familiar with the TeleNP process to complete the survey. Time between evaluation and completion of survey was not recorded, though likely ranged between 2 weeks and 2 months, with most between 1 and 2 months after their TeleNP visit. The caller was bilingual and able to administer the survey in English or Spanish based on patients' preference. Three attempts were made to contact each participant. Deidentified survey responses were entered into a Redcap database for storage and analysis for those who responded to the survey.

The TeleNP consisted of a clinical interview (30–45 min) and brief test battery that took ~40–120 min to conduct and was followed by feedback and recommendations (10–15 min). Overall visit lengths ranged from ~75–150 min. A fixed–flexible approach was utilized for the testing portion of the evaluation. The core test battery included Barona premorbid IQ estimate (Barona, Reynolds, & Chastain, 1984), Repeatable Battery for the Assessment of Neuropsychological Status (RBANS; Digit Span, List Learning, Story Memory; Randolph, Tierney, Mohr, & Chase, 1998) or the Hopkins Verbal Learning Test–Revised (HVLTR; Benedict, Schretlen, Groiniger, & Brandt, 1998), Wechsler Memory Scale 4th edition (Logical Memory I, II, and recognition; Wechsler, 2009), Wechsler Adult Intelligence Scale 4th Edition (WAIS-IV; Digit Span, Information; Wechsler, 2008), Oral Trail Making Test (Ricker & Axelrod, 1994), and Verbal Fluency (FAS/Animals; Benton & Hamsher, 1989). The Verbal Naming Test (Yochim et al., 2015) and the Montreal Cognitive Assessment Basic (orientation and abstraction subtests; Nasreddine et al., 2005) were also given in some cases. For monolingual Spanish-speaking patients, the Escala de Inteligencia Wechsler para Adultos-III (EIWA-III; Digit Span; Wechsler, 1999) was substituted for the WAIS-IV Digit Span. Although the Spanish speakers in this sample were not from Puerto Rico, the EIWA-III Digit Span and associated norms were thought to better represent performance in this population than the WAIS-IV version. Select patients were administered the Geriatric Depression Scale–Short Form (Sheikh & Yesavage, 1986), Beck Depression Inventory-II (Beck, Steer, & Brown, 1996), and/or the Geriatric Anxiety Inventory (Pachana et al., 2007). The mood questionnaires were selected due to the forced choice response options being more conducive with the TeleNP modality. The test battery was informed by measures that were available in both English and Spanish, with adequate normative data available, and to provide two possible embedded performance validity tests (Reliable Digit Span, Babikian, Boone, Lu, & Arnold, 2006; and the effort index from the RBANS, Silverberg, Wertheimer, & Fichtenberg, 2007). Normative data for Spanish speakers were used for the HVLTR (Arango-Lasprilla et al., 2015) and verbal fluency (Olabarrieta-Landa et al., 2015). All but one of the TeleNPs included feedback at the end of testing.

Instrument

The patient satisfaction survey (Supplementary Material A1) was adapted from a measure developed by neuropsychologists at Children's Health Children's Medical Center and designed to capture satisfaction with teleneuropsychological/psychological services provided broadly at UT Southwestern Medical Center and PHHS. Thus, it was used to collect data on services delivered via video conference and telephone modalities across a range of clinical activities. In addition to demographic information and general questions about their visit, the survey included 15 items, followed by the opportunity to provide free comments in response to two questions, "Was there anything in particular you liked about your experience?" and "Are there any additional comments you would like to share about your experience?"

Statistical Methods

Survey data from Redcap were exported to Excel for preliminary analysis and imported into SPSS 26 for additional analyses. Descriptive data and frequency distributions of responses were derived. Demographic comparisons using χ^2 and analysis of variance (ANOVA) were conducted among those who completed the survey and those who did not. Because the data were largely ordinal, many of the data analyses were qualitative, though nonparametric comparisons using the Mann–Whitney *U* test were made to examine differences in satisfaction based on gender and ethnicity, as well as median split in high/low education (<12 vs. \geq 12) and younger/older age based on a median split (<52 years vs. \geq 52 years).

Table 1. Demographic data for telephone neuropsychological assessment survey participants

Variable	Total sample <i>N</i> = 43	Younger/older age (median split)		Low/high education (median split)	
		<52 years <i>n</i> = 21	≥52 years <i>n</i> = 22	<12 years <i>n</i> = 12	≥12 years <i>n</i> = 31
Age (<i>M</i> , <i>SD</i>)	52.16 (13.30)	41.24 (8.76)	62.59 (6.88)	53.58 (14.39)	51.61 (13.06)
Education (<i>M</i> , <i>SD</i>)	12.12 (3.60)	12.48 (2.67)	11.77 (4.34)	7.83 (0.98)	13.68 (0.36)
Sex (Male, <i>n</i> %)	17 (39.5%)	9 (52.9%)	8 (47.1%)	7 (41.2%)	10 (58.8%)
Ethnicity (<i>n</i> %)					
Hispanic/Latinx	13 (30.2%)	6 (46.2%)	7 (53.8%)	7 (53.8%)	6 (46.2%)
Black	14 (32.6%)	9 (64.3%)	5 (35.7%)	3 (21.4%)	11 (78.6%)
White	14 (32.6%)	5 (35.7%)	9 (64.3%)	2 (14.3%)	12 (85.7%)
Other	2 (4.6%)	1 (50.0%)	1 (50.0%)	0 (0.0%)	2 (100.0%)
Testing language (<i>n</i> %)					
English	35 (81.4%)	18 (51.4%)	17 (48.6%)	7 (20.0%)	28 (80.0%)
Spanish	8 (16.6%)	3 (37.5%)	5 (62.5%)	5 (62.5%)	3 (37.5%)

Results

A total of 81 participants who underwent TeleNP between March and July 2020 were called between May and July 2020 for participation in the survey. Of these, 43 (53%) were reached and agreed to complete the survey on the telephone with questions/possible answers read aloud and the examiner entering responses directly into the Redcap database. The survey took ~5 min to complete. Demographic data can be found in Table 1. Diagnoses and reason for referral were not collected for confidentiality reasons, though typical referrals to this clinic include presurgical epilepsy evaluations, question of dementia, and assessment of cognitive functioning in a range of medical and psychiatric disorders. Age of participants ranged from 24 to 75 years, with a mean of 52.2 and a median of 52.0. The majority of respondents had 12 years of education or greater ($M = 12.1$; median = 12.0), though the range was 2–20 years. Of the total sample, 62.8% were Hispanic/Latinx (30.2%) or Black (32.6%), and 18.6% (8) were evaluated in Spanish. Those who were not reached for survey administration ($n = 38$) did not differ from those who were reached with respect to age ($M = 56.1$, $SD = 15.1$; $F(1,79) = 1.58$, $p = .21$), education ($M = 12.3$, $SD = 4.0$; $F(1,79) = 0.04$, $p = .838$), or race (60.5% Hispanic/Latinx [28.9%] or Black [31.5%]; $\chi^2(4) = 2.05$, $p = .73$) using ANOVA and χ^2 analyses. For comparison of race between responders and nonresponders, numbers of Hispanic/Latinx and Black patients were combined, though the percent for each was also similar across groups.

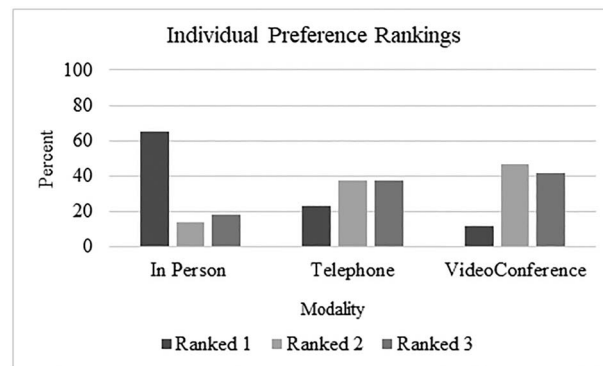
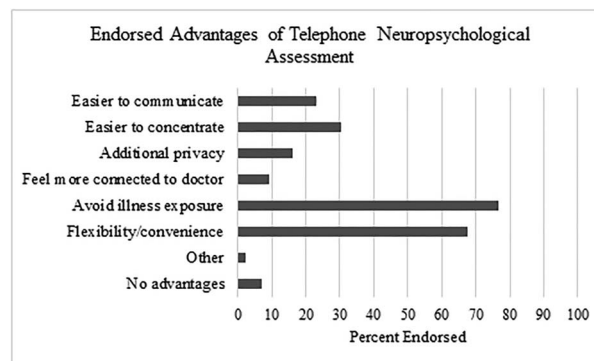
Survey responses were mostly provided by the patient ($n = 42$, 97.7%), though a family member was the respondent for one of the surveys. Almost all items were answered by participants, with missing data only for two fields from one of the respondents. A total of 28 free comments were recorded. The majority of respondents ($n = 24$, 55.8%) had participated in a virtual visit (type of visit not specified) with another provider prior to the TeleNP, with an average of about two previous telehealth visits in those individuals. All participants felt they were given adequate information about how to connect with their neuropsychology provider, and almost all of the participants felt comfortable using the technology (i.e., telephone; “Very Good” + “Good”; $n = 40$, 93.0%). Most had no connection difficulties ($n = 37$, 86%), though a small number reported technology-related problems ($n = 6$, 14%). Patients underwent their appointments primarily in their home ($n = 40$, 93%), and 93% ($n = 40$) felt they had adequate privacy for the visit.

Satisfaction data (survey questions 12–15) can be found in Table 2. Most patients felt the telephone visit met their needs (“Very Good” + “Good”; $n = 34$, 79.1%) and were satisfied with the amount of time their provider spent with them (“Very Satisfied” + “Satisfied”; $n = 36$, 83.7%). When asked to rate overall satisfaction with their visit (Not Satisfied, Somewhat Satisfied, Satisfied, Very Satisfied), 97.7% indicated they were “Very Satisfied” ($n = 19$, 44.2%), “Satisfied” ($n = 15$, 34.9%), or “Somewhat Satisfied” ($n = 8$, 18.6%), and only one respondent reporting being “Not Satisfied” with the visit. When asked about their preference of future meetings (in-person, telephone, video conference) with “this or other medical providers,” the majority of respondents ($n = 28$, 67.7%) indicated a preference for an in-person encounter, though over half ($n = 26$, 60.5%) listed telephone as a first ($n = 10$, 23.8%) or second (16, 38.1%) choice, and most ($n = 36$, 83.7%) stated they would be interested in another virtual visit (telephone or video conference) with their neuropsychology provider (Fig. 1).

Satisfaction data were examined for differences by race/ethnicity, gender (39.5% male), younger/older age (<52 years, $n = 21$; ≥52 years, $n = 22$) and low/high education (<12, $n = 12$; ≥12, $n = 31$). For survey questions yielding dichotomous data, χ^2 tests were run to evaluate group differences based on demographics. For questions yielding ordinal data, Mann–Whitney U tests were conducted to evaluate group differences based on the demographics mentioned earlier. For all analyses, no significant differences between demographic groups were observed for any of the survey questions, including satisfaction

Table 2. Patient satisfaction data

	Poor/Not Satisfied <i>n</i> (%)	Fair/Somewhat Satisfied <i>n</i> (%)	Good/Satisfied <i>n</i> (%)	Very Good/Very Satisfied <i>n</i> (%)
How well did the virtual visit meet your needs?	2 (4.7)	7 (16.3)	16 (37.2)	18 (41.9)
How comfortable did you feel using this technology for your visit?	0 (0)	3 (7.0)	17 (39.5)	23 (53.5)
How satisfied were you with the amount of time spent with your provider?	1 (2.3)	6 (14.0)	19 (44.2)	17 (39.5)
How would you rate your overall satisfaction with your visit?	1 (2.3)	8 (18.6)	15 (34.9)	19 (44.2)

**Fig. 1.** Respondents were asked to rank their preference for how they would like to meet with “this or other medical providers in the future from 1 to 3, with 1 being the most preferred.”**Fig. 2.** Respondents were asked to indicate which items they viewed as advantages of telephone neuropsychological assessment.

items (Supplementary Material A1). Satisfaction data were also examined between those who had had a prior “virtual visit” (type of prior visits were not specified) and those who had not, with no significant differences between the groups for any of the satisfaction variables.

Participants were asked about specific advantages and disadvantages to conducting their assessment via telephone (Figs. 2 and 3). The majority cited “Avoid potential exposure to illness” ($n = 33$, 76.7%) and “Flexibility/convenience” ($n = 29$, 67.4%) as primary advantages to TeleNP, as well as “Easier to communicate” ($n = 10$, 23.3%) and “Easier to concentrate” ($n = 13$, 30.2%) as additional benefits. In contrast, 55.8% ($n = 24$) indicated there were no disadvantages to TeleNP, though “Feeling less connected with their provider than if seen in-person” ($n = 10$, 23.3%) and being harder to communicate ($n = 9$, 20.9%) and concentrate ($n = 8$, 18.6%) were listed as potential disadvantages to TeleNP.

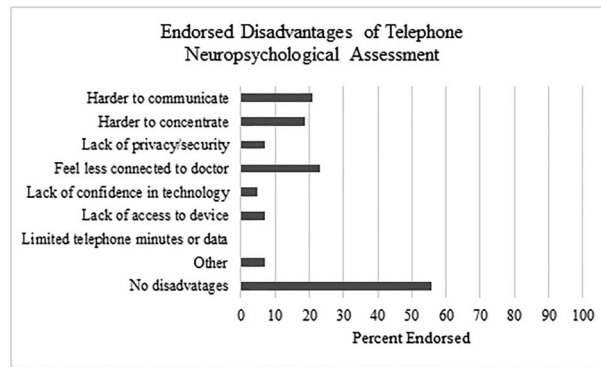


Fig. 3. Respondents were asked to indicate which items they viewed as disadvantages of telephone neuropsychological assessment.

At the end of the survey, respondents were given an opportunity to provide additional comments about their experience, including if there was anything they particularly liked about the experience. A total of 28 comments were recorded from 26 respondents. The essence of provided comments can generally be broken into three themes. The first related to reported benefits of telephone assessments due to difficulties getting to the clinic, because of transportation problems, distance from clinic, and/or physical mobility limitations. The second theme pertained to advantages of virtual visits (telephone and video conference) with respect to reduced wait time, feeling they had more time to talk with their provider, and feeling less pressure and/or more relaxed by getting to control the setting, though several respondents highlighted it was harder to concentrate. The last theme that emerged from individual comments related to challenges with a telephone assessment, including not feeling as connected with their provider than with in-person visits (e.g., where body language can be seen), concerns with the length of the appointment, and/or trouble tracking questions over the telephone.

Discussion

Research has shown that TeleNP can be reliable and valid, though there is a lack of data pertaining to patients' perceptions and satisfaction with this mode of evaluation. The COVID-19 pandemic catapulted the use of telehealth using a variety of modalities (telephone, video, computer based) in order to continue to provide services when in-person assessments were not possible or posed unnecessary risk. Although there are clear advantages to a video-based approach to teleneuropsychology, there are many patients who are unable to access this medium, often because of lack of access or familiarity with the technology (e.g., as discussed in [Bildler et al., 2020](#)). Thus, there continues to be a place for TeleNP, even as multiple platforms for video-based assessment are now available. This paper is the first to examine patient satisfaction with TeleNP and one of the few that has explored patient satisfaction with telehealth neuropsychological services in a clinical (vs. research), home-based setting, and in a diverse adult sample.

Overall, TeleNP was well received by the sample, with most reporting they were satisfied or very satisfied with their visit, and 84% indicating they would be interested in another virtual (telephone or video conference) visit with their provider, lending support for TeleNP as an acceptable option for patients when in-person or video visits are not possible. Although the sample size is relatively small, the lack of differences in satisfaction and response to TeleNP by sex, age, education, and race/ethnicity is encouraging, especially because telehealth neuropsychological services may be particularly applicable in circumstances where barriers to in-person visits due to lack of transportation, reduced mobility, and no/limited internet access may be present in some demographic constituencies more than others (e.g., older patients, lower socioeconomic status [SES]/underserved populations). In comparison with reported satisfaction (98%) for video teleassessment by [Parikh and colleagues \(2013\)](#), in which satisfaction was elicited in a yes/no format ("Overall I was satisfied with the video-conference testing session?," satisfaction rates are similar for TeleNP in this sample (97.6%) when all satisfaction options were combined (i.e., Somewhat Satisfied, Satisfied, Very Satisfied vs. Not Satisfied).

Even though patients were generally satisfied with the amount of time their provider spent with them and the TeleNP process, and most were interested in another virtual (telephone or video conference) visit with their provider, the majority indicated a preference for in-person visits with their neuropsychology and medical providers. Thus, although TeleNP seems to be a well-accepted assessment option when in-person assessment is not possible or would delay access to care, this is not the modality of choice for most patients. That being said, 55% of respondents did not endorse any "disadvantages" to TeleNP, though greater difficulty communicating, concentrating, and connecting with their provider were endorsed as "potential disadvantages" with

TeleNP by around 20% of the sample, which may be addressed by making an extra effort to establish rapport with patients, identify barriers to communication, and help them to reduce distractions or identify need for breaks (i.e., asking patients how they are doing and what they need).

None of the participants noted limited telephone minutes or mobile data as a concern. This is particularly noteworthy as lack of resources in some diverse or lower SES populations may be a potential barrier to both video assessments (e.g., limited access to internet and devices with video/audio capability) and in-person visits (e.g., transportation issues). Thus, TeleNP may potentially provide increased access to services without putting undue burden on patients. In addition, one of the primary advantages to TeleNP endorsed by the sample was “Flexibility/Convenience.” This possible advantage for some patients may result in increased service utilization, which is supported by examination of “show” rates in this clinic from November to February (pre-COVID-19 restrictions) to those from March to June (after COVID-19 restriction when TeleNP was used), in which 80% of patients kept their TeleNP appointment from March to June (i.e., same patient population called for participation in this survey) compared with 56% from November to February for in-person assessment (Caze, Dorsman, Carlew, Diaz, & Bailey, 2020). Indeed, an argument can be made for the ethical obligation of neuropsychologists to consider offering TeleNP as an option for teleassessment when other alternatives are not possible and patients may otherwise go without care. As per the [American Psychological Association’s \(2017, Principle D\) Ethics Code’s](#) Principal of Justice, “Psychologists recognize that fairness and justice entitle all persons access to and benefit from the contributions of psychology and to equal quality in the processes, procedures, and services being conducted by psychologists.” Based on results of this survey, if TeleNP is going to be employed, the follow recommendations are put forth for consideration.

Recommendations for TeleNP

- Consider TeleNP when in-person neuropsychological assessment is not possible, would delay care/treatment, or is otherwise unsafe for the patient.
- Clearly explain the length of the appointment in advance and identify any time constraints the patient may have.
- Allow additional time to establish rapport and connection with patients at the beginning of the visit; this may include getting a better understanding of their physical environment and potential distractions (e.g., others in the household, pets, etc.), problem-solving barriers to communication (e.g., need for headphones or volume adjustment if hearing is an issue), asking patients periodically if they need a break, and acknowledging potential challenges to telephone visit but your desire to minimize these to the extent possible.
- Keep evaluations brief to maximize attention and minimize distractions.
- Explain the need for privacy, but be flexible when interruptions occur.
- Clearly explain next steps and if additional visits will be needed.

There are several limitations of this study that should be noted. The sample size is relatively small despite the response rate for the survey being 53% (which is above typical survey response rates or around 33%) and showing no demographic differences between those who completed the survey and those who did not. Demographic characteristics of those who completed the survey were slightly different than the patient composition typically seen in the clinic (during nonpandemic times), in which 42% are Hispanic/Latinx, 29% are Black, and 27% are White compared with 30%, 32%, and 33%, respectively, in the current study, though the sample is nonetheless diverse. Surveys were conducted over the phone and it is possible that this could have affected responses versus if participants were taking the survey on their own.

This report supports patient satisfaction with telephone-based neuropsychological services, though there are inherent limitations with TeleNP that should be considered before choosing this assessment delivery method. It may be more difficult for patients to concentrate on the telephone than in-person or via video conference, which could potentially affect validity of results for some individuals, and, in fact, 18.6% of respondents indicated that “Harder to concentrate” was a potential disadvantage to this modality. In addition, TeleNP batteries tend to be relatively brief and the test instruments that can be administered via telephone are limited to those that can be conducted verbally, thereby reducing the types of tests and domains that can be assessed with this modality. Thus, some referral questions (e.g., presence of lateralized impairment) would be harder to answer using TeleNP in which assessment of certain domains such as visuospatial abilities, processing speed, and executive functions are harder or impossible to assess well via telephone.

It should also be noted that these data were collected during a pandemic where in-person medical appointments were not permitted, which may have affected responses. For example, 74% cited “Avoidance of potential exposure to illness” as an advantage to TeleNP, which may be particularly noteworthy in this ethnically diverse sample that may be overall at higher risk for contracting or having complications with COVID-19. It is unknown if this advantage would have been cited as high prior to

the pandemic, though it is unclear to what extent patient beliefs and behaviors will change or remain stable once the threat of the pandemic is over or greatly minimized. Given the lack of patient satisfaction data for home-based telephone and video-based neuropsychological assessment in clinical and diverse samples, additional studies are needed to assess patient experiences with these modalities across different settings to enhance provision services, particularly because the utility of telehealth services is likely to remain part of the healthcare system even after the pandemic has subsided.

Conclusion

This study is the first to provide patient satisfaction data for telephone neuropsychological assessment and suggests that this modality was well accepted by patients who were overall satisfied with their experience and generally felt the telephone visit met their needs, irrespective of age, sex, education, and race/ethnicity. Although patients indicated a preference for in-person visits in general, the majority indicated telephone visits were their second most preferable choice of how they would like to conduct their visit. Overall, these results in conjunction with other research supporting the validity of TeleNP support consideration of this assessment modality to extend services when video conference or in-person visits are not possible or when meeting in-person is ill-advised for safety reasons.

Supplementary Material

Supplementary material is available at *Archives of Clinical Neuropsychology* online.

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Conflict of interest

None declared.

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