

# Patient Satisfaction and Acceptability with Telehealth Services for Childhood Behavioral Health Concerns

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## Presentation Outline

- Telehealth History and Overview
- Behavioral Health and Telehealth
- Telehealth Satisfaction and Acceptability
  - Current Study
    - Method
    - Results
    - Discussion

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## Mental/Behavioral Health Services

- Over 87 million people live in an area designated as a mental health professional shortage area (HRSA, 2014)
- Several states with significant rural areas lack close proximity to providers
  - In Nebraska, 88 out of 93 counties are designated as "health professional shortage areas" by HRSA

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## Mental/Behavioral Health Services



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## TELEHEALTH OVERVIEW AND HISTORY

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## Telehealth

- Telehealth (synonymous with tele-medicine and various other terms) offers one potential way to provide quality mental/behavioral health services to children and their families who may otherwise be unable to access on-site services due to geography
- Use of technology to share/disseminate information related to service delivery

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## Telehealth: What is it?

**Tele** = at or over a distance

**health** = soundness of body or mind;  
freedom from disease or ailment

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## Telehealth is...

“...the use of technology to provide health care when providers are geographically distant from patients.” (Backhaus et al., 2012)

“...the transmission of images, voice, and data between two health units via technology to provide educational, clinical, training, administrative, and consultation services.” (Perle & Nierenberg, 2013)

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## Telehealth technologies are...



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### Telehealth Public Service Announcement



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### Telehealth Public Service Announcement

<http://www.youtube.com/watch?v=5rmiHCPOd0M>

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### Telehealth History

- **Advancements of telecommunications devices**
  1. mid 1800s – telegraph (x-ray transmission)
  2. late 1800s – radio to provide medical advice
  3. 1900s – telephone (tele-stethoscope [1910], EKGs via computer modem, fax machines)
  4. 1950s – television (close-circuit t.v.; CCTV) for telemedicine Nebraska Psychiatric Institute
  5. Current - Wireless Communication – mobile phones, other wireless device enabling Internet access

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## Telehealth History

- **Speed and Form of Data Transmission:**
  - Improved means of data transmission (from 128-384 Kbps to now at 384+Kbps) – Hilty, Ferrer, et al., 2013
  - Affordable means of encryption (i.e., HIPAA-approved) increasingly available (e.g., Vidyo, AdobeConnect, etc)

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## Internet Use Trends

- **As of 2011:**
  1. 78% of US adults use the internet
  2. 62% of home internet users age 18+ have a high speed broadband internet connection
  3. 63% of adults go online using a portable device (e.g., cell phone, laptop, e-book or tablet computer)

<http://pewinternet.org/Reports/2012/Digital-differences.aspx>

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## Multiple Methods to Connect



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## BEHAVIORAL HEALTH AND TELEHEALTH

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### Telehealth for Behavioral Health

- Telepsychology is defined ... as the provision of psychological services using telecommunication technologies as expounded in the “Definition of Telepsychology.” (Guidelines for the practice of telepsychology, APA, 2013)

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### Shortage of Mental Health Service Providers

- Nearly 1 in 5 counties unmet needs for mental health specialists
- This need is greater in rural areas, where access to providers is even more limited
- Behavioral telehealth makes services more accessible in shortage areas

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### May Overcome Stigma

- Call to set up appointment
- Leave home to travel to clinician's office
- Sit in waiting area (with others)
- Speak to clinician

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### Cost Effectiveness

- Telehealth services may decrease cost to patients and providers:
  - Transportation
  - Travel time
  - Missed work

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### Telehealth

- Use of technology not a "new" idea
  - Freud used letters to "conduct therapy" (Freud, 1955)
  - UNMC used closed circuit tv to provide services at Nebraska Psychiatric Institute and Norfolk State Hospital

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**Telehealth**

- **Current telehealth examples**
  - Military (e.g., Tripler Military Base)
  - Hospitals (e.g., Jackson Memorial Hospital, UNMC)
  - NASA (remote monitoring of vitals & physiology)
  - Private practice psychologists

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**Telehealth at UNMC**

- **Supervision of Students/Interns/Post-Doctoral Fellows in Rural Areas**
- **Consultation with providers while on-campus**
- **Monthly meetings with Behavioral Health Providers**
- **Patient Care (Assessment and Treatment)**

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**Telehealth at UNMC**

*Munroe-Meyer Institute  
Department of Psychology  
Rural Outreach Behavioral Health Clinics  
2013*

The map displays 20 Rural Outreach Behavioral Health Clinics across Nebraska. Each clinic is represented by a colored square and labeled with its name and location. The clinics are:
 

- Beatrice BHC (Beatrice)
- Blair BHC (Blair)
- Broken Bow BHC (Broken Bow)
- Chadron BHC (Chadron)
- Cherryvale BHC (Cherryvale)
- Clarks Summit BHC (Clarks Summit)
- Conrad BHC (Conrad)
- Elgin BHC (Elgin)
- Elmer BHC (Elmer)
- Franklin BHC (Franklin)
- Geneva BHC (Geneva)
- Harlan BHC (Harlan)
- Harrison BHC (Harrison)
- Holdrege BHC (Holdrege)
- Imperial BHC (Imperial)
- Irwin BHC (Irwin)
- Kimberly BHC (Kimberly)
- Lexington BHC (Lexington)
- North Platte BHC (North Platte)
- St. Paul BHC (St. Paul)
- Wahoo BHC (Wahoo)
- Wray BHC (Wray)
- Yutan BHC (Yutan)

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## Empirical Support Behind Telehealth

- The majority of research comparing telehealth interventions to face-to-face interventions find similar treatment outcomes (Gros et al., 2013; Sato, Clifford, Silverman, & Davies et al., 2009)
- Telehealth intervention was found to have been successful in approximately 55% of studies and potentially successful in a further 28% (Hailey, Roine, & Ohinmaa, 2008)

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## Treatment Efficacy

- **Anxiety Disorders:**
  - Panic Disorder (Richards, Klein, & Austin, 2006; Carlbring, Ekselius, & Andersson, 2003)
  - Social Phobia (Calbring et al., 2006)
  - Panic and Agoraphobia (Bouchard et al., 2004)
  - Chronic Tic Disorders (Himle et al., 2012)
  - Post-Traumatic Stress Disorder (Tuerk, Yoder, Ruggiero, Gros, & Acierno 2010; Germain et al., 2009; Strachan et al., 2012)
- **Depression**
  - Depression and Insomnia in an Elderly Population (Lichstein et al., 2013)
  - Depression (Ruskin et al., 2004)
  - Childhood Depression (Nelson, Barnard, & Cain, 2003)

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## Treatment Efficacy

- Smoking Cessation (An et al., 2006; Orleans et al., 1991; Rabin et al., 2004; Wadland, Soffelmayr, & Ives, 2001; Shu et al., 1996)
- Eating Disorders (Mitchell et al., 2008)
- Chronic Health Conditions (Glueckauf & Ketterson, 2004)
- Teaching Caregivers Discrete Trial Instruction (Higgins, 2014)

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## TELEHEALTH SATISFACTION AND ACCEPTABILITY

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 **Telehealth Satisfaction/Acceptability**

- Objective analysis of treatment effectiveness is necessary, but not sufficient
- Attitudes (satisfaction and acceptability) impact critical aspects of service delivery process
  - Adherence to recommendations
  - Engagement during therapy and follow-up services
  - Perceptions of effectiveness

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 **Research on Patient Satisfaction**

- Minimal general evidence for telehealth satisfaction
  - Backhaus et al. 2012:
    - In 14 of 16 telehealth studies that examined therapeutic relationships, patients and providers perceived strong therapeutic alliance using telehealth
    - Patients generally satisfied with telehealth services.
    - When dissatisfaction arose, often due to technical difficulties and did not lower overall satisfaction

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## Research on Patient Satisfaction

- Evidence that individuals receiving telehealth services indicate high ratings on treatment acceptability and therapeutic relationship for treatment of:
  1. chronic tic disorders (Himle, Olufs, Himle, Tucker, & Woods, 2010; Himle et al., 2012)
  2. depression (Stiles-Shields, Kwasny, Cai, & Mohr, 2014)

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## Telehealth Satisfaction/Acceptability

- Current evidence base has yet to:
  - Evaluate properties of satisfaction instruments (e.g., do measures *actually* assess satisfaction?)
  - Compare satisfaction between telehealth and “typical” on-site behavioral health service delivery

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## Purpose of the Study

- Examine telehealth satisfaction/acceptability in behavioral health clinics to determine appropriateness of measurement instrument and how ratings compare with on-site services

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## Research Questions

**Question 1:** Do satisfaction questionnaire items measure a similar construct (i.e., how good is the internal validity)?

**Question 2:** Do satisfaction ratings differ across delivery mode (i.e., telehealth and in-person outpatient behavioral health clinics)?

**Question 3:** Does satisfaction vary based on location of services?

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## Method

### Participants & Setting

- Families of pediatric patients ( $n = 289$ ) seen at Midwestern academic medical center behavioral health clinics (e.g., behavioral pediatrics, feeding disorders)
- Behavioral health providers delivering outpatient services at 1-2 sites ( $n = 31$ )

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## Method

### Materials

- Paper-based satisfaction/acceptability questionnaire for services through
  - 1 clinician ID free response question
  - 1 session frequency category question
  - 7 satisfaction 4-point Likert scale questions

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## Method

Clinician seen: \_\_\_\_\_

Please circle the total number of times you were seen in the clinic.

a. 1 to 3 sessions  
 b. 4 to 8 sessions  
 c. 9 to 12 sessions  
 d. 13 or more sessions

Use this scale to rate each item below:

	1 Not at all Satisfied	2 Satisfied Somewhat	3 Satisfied	4 Highly Satisfied
1. How satisfied were you with your first appointment being scheduled within a reasonable period of time?	1	2	3	4
2. How satisfied were you with the therapist providing the service (e.g., courteous, pleasant & genuinely interested in helping my family)?	1	2	3	4
3. How satisfied were you with how knowledgeable the therapist providing the service was?	1	2	3	4
4. How satisfied were you with the written information provided?	1	2	3	4
5. How satisfied were you with the services provided meeting your families' needs?	1	2	3	4
6. How satisfied were you with the services helping the problems which brought your child to the clinic?	1	2	3	4
7. Which of the following best reflects your level of satisfaction with the quality of services you received?	1	2	3	4

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## Method

### Measurement of Dependent Variables

- Q1 through Q7 as individual satisfaction measures
  - Q1: Timely scheduled 1<sup>st</sup> appointment
  - Q2: Therapeutic alliance (i.e., social interaction)
  - Q3: Therapist knowledge
  - Q4: Written information provided
  - Q5: Met needs of family
  - Q6: Addressed child problems
  - Q7: Overall quality of services

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## Method

### Design and Independent Variables

- Non-randomized correlational + between groups design
  - Efficient, versatile, generalizable
  - Helps identify *possible* causal/influential factors
  - Cannot completely rule out certain extraneous variables (e.g., selection bias)
- Independent Variables
  - Delivery mode (On-site – Telehealth)
  - Service location (Rural – Urban – Telehealth)

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## Method

### Procedure

- Providers give out satisfaction questionnaire to all patient families as part of typical program evaluation over 3 years
- On-site clinics: paper copies handed to families with postage paid envelope; given verbal instructions
- Telehealth: questionnaire mailed to family with postage paid envelope; given written instructions

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## Method

### Procedure

- Returned questionnaires were coded and entered into database
- Delivery mode coded by telehealth indicator
- Service location coded by provider and associated clinic
  - Clinician coded by first name written

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## Method

### Data Analysis

- Descriptive statistics and correlational analysis across primary satisfaction questions (research question 1)
- Analysis of variance between groups (research questions 2 and 3)
  - Two-sample t-test: delivery mode
  - One-way ANOVA: service location

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## Results

### Correlation between questionnaire items

- All item associations positive and statistically significant at  $p < 0.05$  level
- Indicates strong internal validity (i.e., questionnaire items measure the same thing)

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## Results

Table 1 Correlations between questionnaire items

	Mean	SD	Q1	Q2	Q3	Q4	Q5	Q6	Q7
Q1	3.60	0.65							
Q2	3.85	0.41	0.49**						
Q3	3.81	0.44	0.45**	0.77**					
Q4	3.63	0.58	0.41**	0.42**	0.59**				
Q5	3.69	0.57	0.44**	0.60**	0.70**	0.67**			
Q6	3.57	0.73	0.36**	0.51**	0.60**	0.54**	0.76**		
Q7	3.73	0.52	0.42**	0.56**	0.73**	0.60**	0.80**	0.75**	

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## Results

### Satisfaction by delivery mode

- Significantly **higher** telehealth ratings on Q4, Q6, and Q7 (at  $p > 0.05$  level)
- No other statistically significant differences (i.e., ratings equal)

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## Results

Satisfaction by delivery mode

- Q4: Written information provided
  - $t(11.41) = -2.63, p = 0.023$ 
    - Telehealth ( $M = 3.90, SD = 0.32$ )
    - On-site ( $M = 3.62, SD = 0.59$ )
- Q6: Addressed child problems
  - $t(12.88) = -3.15, p = 0.008$ 
    - Telehealth ( $M = 3.90, SD = 0.31$ )
    - On-site ( $M = 3.55, SD = 0.73$ )
- Q7: Overall quality of services
  - $t(274.00) = -8.70, p < 0.001$ 
    - Telehealth ( $M = 4.00, SD = 0.00$ )
    - On-site ( $M = 3.72, SD = 0.53$ )

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## Results

Satisfaction by service location

- Significant main effect for urban/rural/telehealth ( $p < 0.05$  level) on all items
  - Indicates a difference between groups is present in data
- Post hoc tests revealed significantly **higher** ratings on Q2, Q3, Q5, Q6, and Q7 (at  $p < 0.167^*$ ) for urban compared to rural
  - No other significant differences found

*\*Post hoc tests in one-way ANOVA require adjusted p value to control for inflated Type I error risk (thus,  $p / [\# \text{ comparisons}] = \text{new } p \text{ level}; 0.05 / 3 = 0.167$ )*

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## Results

Satisfaction by service location

- Q2: Therapeutic alliance (i.e., social interaction)
  - $F(2, 283) = 7.01, p = .001$ 
    - Urban ( $M = 3.94, SD = 0.24$ )
    - Rural ( $M = 3.76, SD = 0.51$ )
- Q3: Therapist knowledge
  - $F(2, 283) = 8.18, p < .001$ 
    - Urban ( $M = 3.91, SD = 0.29$ )
    - Rural ( $M = 3.70, SD = 0.53$ )
- Q5: Met needs of family
  - $F(2, 283) = 4.12, p < .001$ 
    - Urban ( $M = 3.78, SD = 0.45$ )
    - Rural ( $M = 3.59, SD = 0.65$ )

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## Results

### Satisfaction by service location

- Q6: Addressed child problems
  - $F(2, 283) = 9.70, p < .001$ 
    - Urban ( $M = 3.73, SD = 0.54$ )
    - Rural ( $M = 3.38, SD = 0.85$ )
- Q7: Overall quality of services
  - $F(2, 283) = 9.56, p < .001$ 
    - Urban ( $M = 3.85, SD = 0.37$ )
    - Rural ( $M = 3.60, SD = 0.63$ )

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## Discussion

- **Question 1:** *Do satisfaction questionnaire items measure a similar construct (i.e., how good is the internal validity)?*
  - Items appear to measure the same construct, as indicated by statistically significant correlations across all items
  - Strong internal validity

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## Discussion

- Items logically connected based on description, still required demonstration to assure same construct is being measured
- Questionnaire appears appropriate for pragmatically measuring satisfaction in mental/behavioral program evaluation context
- Future research will need to assess satisfaction measures against one another (e.g., evaluate convergent/divergent validity, reliability)

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## Discussion

- **Question 2:** *Do satisfaction ratings differ across delivery mode (i.e., telehealth and in-person outpatient behavioral health clinics)?*
  - Telehealth satisfaction was equal to, and sometimes greater than on-site services satisfaction

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## Discussion

- **Telehealth satisfaction appears equal or greater than on-site satisfaction**
  - May offer important advantages (e.g., less patient effort, better written information) in service provision if outcomes/satisfaction equal or > on-site
  - All things equal, which to choose? Depends on needs!
  - More robust comparative analysis with randomized samples to assure results generalize

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## Discussion

- **Question 3:** *Does satisfaction vary based on location of services?*
  - Satisfaction was higher for urban respondents compared to rural respondents. No differences were observed between telehealth and either group.

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## Discussion

- Comparable satisfaction ratings suggest that telehealth could be a good compromise to help patients who may experience geographical barriers access satisfactory care
- Additional studies are necessary to tease apart specific geographical influences/barriers that specifically impact satisfaction and acceptability

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