Research article

Perceptions of caregivers and adolescents of the use of telemedicine for the child sexual abuse examination

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ABSTRACT

Background: Childhood sexual abuse is a common cause of morbidity and mortality. All victims should receive a timely comprehensive medical exam. Currently there is a critical shortage of child abuse pediatricians who can complete the comprehensive child sexual abuse examination. Telemedicine has emerged as an innovative way to provide subspecialty care to this population. Despite the growing popularity of telemedicine, no literature exists describing patient and caregiver perceptions of telemedicine for this sensitive exam.
Objective: To explore caregiver and adolescent perspectives of the use of telemedicine for the child sexual abuse examination and discover factors that drive satisfaction with the technology.
Participants and Setting: Caregivers and adolescents who presented for a child sexual abuse medical evaluation at our county's child advocacy center.
Methods: We completed semi structured interviews of 17 caregivers and 10 adolescents. Guided by the Technology Acceptance Model interviews assessed perceptions about: general feelings with the exam, prior use of technology, feelings about telemedicine, and role of the medical team. Interviews were audio-recorded, transcribed, coded and analyzed using content analysis with constant comparative coding. Recruitment ended when thematic saturation was reached.
Results: There was an overwhelming positive response to telemedicine. Participants reported having a good experience with telemedicine regardless of severity of sexual abuse or prior experience with technology. Behaviors that helped patients and caregivers feel comfortable included a clear explanation from the medical team and professionalism demonstrated by those using the telemedicine system.
Conclusion: Telemedicine was widely accepted by adolescents and caregivers when used for the child sexual abuse examination.

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What is known

Telemedicine is emerging as an innovative solution to the shortage of child abuse pediatricians who perform the child sexual abuse evaluation. There is currently no research that explores caregiver's and patient's perceptions of this technology for the sexual abuse exam.

What this study adds

We demonstrated that telemedicine was widely accepted by adolescents and caregivers when used for the child sexual abuse examination. Drivers of satisfaction included good virtual communication and professionalism by the telemedicine provider.

1. Introduction

Child sexual abuse (CSA) is common cause of morbidity among U.S. children with 25% of girls and 5% of boys becoming victims of sexual abuse before the age of 18 (Finkelhor, Shattuck, Turner, & Hamby, 2014). The short and long term adverse effects of child sexual abuse have been well documented (Dube et al., 2005; Maniglio, 2009) and thus, timely medical evaluation is warranted as the starting point for improved health outcomes. The standard of high quality care for CSA includes a comprehensive medical evaluation by a trained clinician to diagnose injury, treat sexually transmitted diseases, assess for signs of psychological distress, refer for appropriate services and provide expert testimony when necessary (Adams et al., 2016; Bechtel & Carroll, 2003; Jenny & Crawford-Jakubiak, 2013; Myers, 1993).

Despite the importance of comprehensive medical evaluations for victims of CSA, there remains a shortage of medical providers trained to complete the exam, with some states having only one board certified Child Abuse Pediatrician (CAP) (American Board of Pediatrics Inc., 2016). Because the evaluation of suspected victims of CSA involves careful questioning, evidence collection, and specialized examination techniques, many pediatric providers do not feel adequately prepared to conduct these medical assessments. (Kellogg, 2005; Makoroff, Brauley, Brandner, Myers, & Shapiro, 2002). Due to the lack of clinicians who are well versed in the CSA medical evaluation, innovative approaches are needed in the delivery of health care to address current challenges of access and quality of care provided to this population (Dzau, Yoediono, ElLaissi, & Cho, 2013).

Telehealth has emerged as a potential solution to address the workforce shortage of providers with expertise in the CSA medical evaluation. Broadly speaking telehealth refers to the delivery of health care services using information and communication technology (Burke & Hall, 2015a, 2015b; Perednia, 1995). Telemedicine (TM) is defined as the use of medical information exchanged form one site to another via electronic communications to improve a patient's clinical health status (Burke & Hall, 2015a, 2015b; Wilson & Maeder, 2015). Synchronous TM occurs when there is a live encounter between a clinician and patient using video conferencing software. The "originating" site is the location of the patient at the time of service and the "remote" site is the location of the health practitioner.

Prior research in other fields of pediatric medicine has demonstrated that TM can improve access to subspecialty care for children with special needs (Marcin et al., 2004), improve quality of care for neonatal resuscitation (Fang et al., 2016), and works for both acute and chronic disease management (Burke & Hall, 2015a, 2015b; Izquierdo et al., 2009; Munoz et al., 2012; Romano, Hernandez, Gaylor, Howard, & Knox, 2001).

A small body of literature specifically on the use of TM in CSA evaluations suggests that TM improves the quality of the acute forensic evaluation (Miyamoto et al., 2014a, 2014b) and improves care to rural populations where access to this pediatrics expertise is limited. (Rogers et al., 2013)

In a 2015 policy statement addressing the use of TM technology, the American Academy of Pediatrics (AAP) emphasized the need to understand and foster patient and family satisfaction as an important metric when considering TM use (AAP Policy Statement, 2015). Researchers in rural emergency departments, surgery clinics and mental health have demonstrated patient acceptance and satisfaction with TM (Dharmar et al., 2013; Dick, Filler, & Pavan, 1999; Kopel, Nunn, & Dossetor, 2001). Currently there is no literature on patient and family acceptance when TM is used specifically for the sensitive medical CSA exam. Patient satisfaction data from other studies may not be generalizable to the unique realities of delivering care to this population.

As telemedicine programs for child sexual abuse are implemented around the country to address the gap in expertise (Burton, Stanley, & Ireson, 2002; Kellogg, Lamb, & Lukefahr, 2000; Miyamoto et al., 2014a, 2014b), it is important to understand perceptions of TM technology use from patients and caregivers before full adoption of this approach to care.

The objective of this study was to explore the patient and caregiver experience with technology during the CSA exam including TM and standard colposcopy. We aimed to: 1) expand our knowledge of how patients and caregivers view technology for the CSA exam; 2) understand what drives patient satisfaction with TM for the CSA exam; and, 3) generate hypotheses for further exploration of how to ensure patient satisfaction with TM during the CSA medical evaluation.

2. Methods

2.1. Interview guide development

Constructs from the Technology Acceptance Model (TAM) were used to guide the conceptual framework and aid in understanding factors that may shape acceptance of technology in this population (Davis, Bagozzi, & Warshaw, 1989) (Fig. 1). The developers of
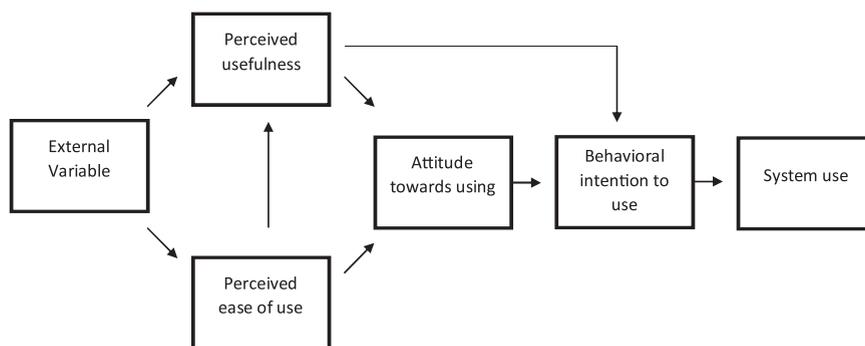
Fig. 1. Technology Acceptance Model (Davis et al., 1989).

TAM adapted the model from the Theory of Reasoned Actions (Fishbein & Ajzen, 1975). The model suggests that one's attitude towards technology is related to behavioral beliefs, normative beliefs, perceived usefulness, and perceived ease of use. In our modified model (Fig. 2), we included, *a priori*, other external factors that could influence a patient or caregiver's acceptance of TM including: 1) prior experience with technology; 2) type of sexual abuse including whether technology played a role in the child's sexual abuse; and, 3) role of the medical team. An interview guide containing semi-structured, open-ended questions was designed to explore our adapted TAM constructs. The interview guide was reviewed and pilot tested with colleagues specializing in CAP and qualitative research. It was revised based on feedback. It was then pilot tested with the first 5 consenting participants. Pilot testing did not identify any significant content issues, so the guide was not revised any further. (See Appendices 1–4 for interview guides)

2.2. Setting

We conducted individual semi-structured interviews of non-offending caregivers and adolescent patients who presented to the medical clinic at our county child advocacy center (CAC). Children, adolescents, and their non-offending caregivers present to the CAC for the forensic interview process when there are allegations of sexual abuse. After the forensic interview, if the patient meets criteria for a medical examination (non-acute sexual assault), they are escorted to the medical suite. During the study period (January 2017–July 2017) the CAC received 2001 referrals, and conducted 1110 forensic interviews. Most referrals were Black/Bi-racial (68%) and female (70%). The medical clinic conducted medical evaluations in 337 of those referrals.

Both TM and standard colposcopy are used at the clinic. Standard colposcopy refers to a camera built into a colposcope which is positioned approximately 12 in. from the patient during the exam. TM involves a high definition camera with tilt and zoom capacity that is at least 3 feet from the patient. It is attached to a computer where the patient can see and hear the attending at the remote site. When standard colposcopy is used, the CAP fellow and attending are both present in the room. When TM is utilized, a senior CAP fellow (2nd or 3rd year) is present at the clinic (originating site). A board certified CAP attending physician at the main hospital (remote site) initiates a video connection. The patient and accompanying caregiver can directly interact with the attending physician through the computer screen. The CAP fellow is responsible for positioning and providing traction. The CAP attending is responsible for managing the video-colposcopy and image capture.

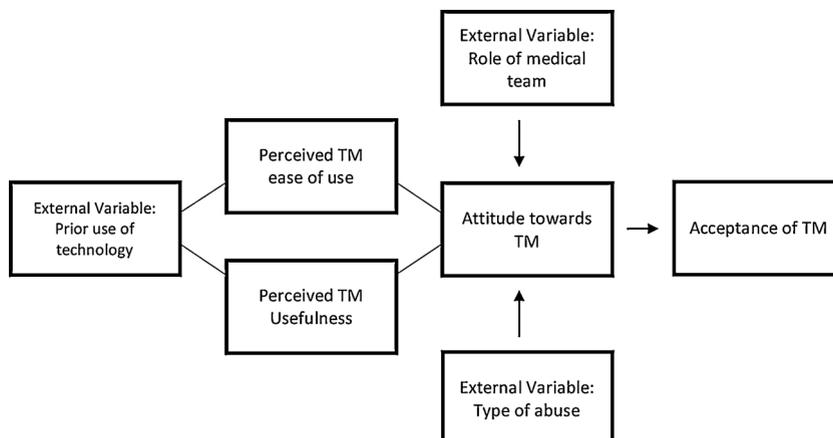Our Institutional Review Board approved the study.

Fig. 2. Adapted Technology Acceptance Model.

2.3. Target population

Non-offending caregivers and adolescents who presented for the CSA medical examination were recruited beginning January 2017. When possible, caregiver-adolescent dyads were recruited together. Caregivers were eligible if they were: English speaking, > 18 years old, the legal guardian, and lived in our primary county. Adolescents were eligible if they were between the ages of 12–17, were English speaking, and lived in our primary county. We restricted our study to adolescents because we suspected the narrative from younger children would be limited and would not provide adequate data for the purpose of this study (i.e. attitudes towards technology use in a health care visit). Caregivers provided written consent for themselves and consent for the adolescent participant. Adolescents provided written assent. Trained study staff members identified eligible subjects and obtained consent/ assent after the entire examination (either standard colposcopy or TM) had been completed and the patient or caregiver was ready to leave the clinic. Within two weeks of the medical evaluation, a study team member called the enrolled caregiver and/or adolescent to schedule the interview.

Our sampling strategy was guided by our conceptual framework, with the goal of sampling a wide range of participants who could provide a rich narrative about their experience. Purposive sampling was used to recruit participants who had undergone either standard colposcopy or TM. The determination of when TM vs standard colposcopy were used was dictated by whether a 2nd or 3rd year CAP fellow was at the originating site and an attending trained in the use of TM technology was at the remote site. The days that fellows and attendings were assigned to clinic occurred months before patients were scheduled at the clinic; thus clinicians had no prior knowledge if a patient would be eligible for the study until the day of the clinic and patients had no knowledge of which methodology would be used. No patients or caregivers had a prior relationship with the providers until the day of the exam. Our goal was to recruit more participants who had undergone TM, however, we also wanted to interview participants evaluated with standard colposcopy to identify potential differences in themes between the two examination methodologies. Purposive sampling was also used to ensure we recruited a balanced sample of participants with diverse sexual abuse disclosures (including disclosures that included mobile technology use in distributing sexually explicit images/videos, and/or social media communications), different ages, different genders, and who had evaluation by different medical providers including same vs. different gender to the adolescent. Enrollment was continued until thematic saturation was reached in the interviews with both the adolescents and caregivers.

2.4. Data collection: qualitative

Interviews were conducted either in person in a private room at the CAC, or over the phone within one month of the medical visit for patients and caregivers who did not want to return to the CAC. The caregivers and adolescents were interviewed separately. Interviews were conducted by one of three study team members. One interviewer had a clinical relationship with some of the participants as a medical provider in the clinic. All interviewers received training from a researcher with experience in qualitative research methods. Training included qualitative coursework, meetings to develop and refine the interview guide, mock interviews, and in-person observations of interviews. Interview sessions began with exploring the participant's general feelings before and after the exam. After this portion, the interview explored participants' prior use of technology and their technology literacy. The majority of the interview was then spent exploring participants' experience with the technology used for the CSA exam, either colposcopy or TM. The interview concluded by exploring how the medical team influenced their experience and whether they would be open to TM in the future.

2.5. Data collection: demographics

We obtained data about participating caregivers and adolescents collected by the CAC from NCATrak (National Children's Alliance, 2014), a secure, web-based national data-base used for case-tracking. We also collected data from the EPIC electronic medical record system used by the medical clinic at the CAC. This data included caregiver and adolescent demographics, abuse characteristics, and agency involvement. The data was collected and stored in a research data file using Research Electronic Data Capture (REDCap) (Harris et al., 2009).

2.6. Data analysis

Transcripts were entered into NVivo 11 (QSR International, Melbourne Australia) software for coding and organization. We used content analysis with constant comparative coding.(Cavanagh, 1997; Hsieh & Shannon, 2005; Kondracki, Wellman, & Amundson, 2002) Our analysis began with codes established from our conceptual model and interview guide. During the coding process we labeled sections of transcripts with the established codes. Three study team members coded the first 9 transcripts and met to develop consensus definitions for the codes. Two study team members then re-coded the transcripts and made final revisions to the code definitions. All remaining transcripts were then coded separately by two study team members. Two study team members met regularly to discuss results and examine inter-rater reliability, resolve coding disagreements by consensus and clarify code definitions as needed. Records were kept of decisions to ensure consistency in coding. Estimates of inter-rater reliability produced an average kappa statistic of 0.93 with a range of 0.75–1.0, denoting excellent reproducibility (Landis & Koch, 1977).

Coded transcript sections representing the main study questions were reviewed to discover emerging themes in the total sample and in the subgroups of standard colposcopy and telemedicine. Direct quotations were highlighted to illustrate themes. Demographic data was entered into the REDCap database hosted by our study institution. Data about participating caregivers and adolescents were

Table 1
Characteristics of Population.

Age, mean years [range]	
Caregiver	37 [26,56]
Adolescent	13 [12,17]
Gender	
Caregiver	
Female	14(82)
Male	3(18)
Adolescent Female	10(100)
Race/Ethnicity	
Black	25(92)
White	1(4)
Other	1(4)
Hispanic/Latino	1(4)
Relationship to Child	
Mother	14(82)
Father	3(18)
Sex Abuse Characteristics[a,b]	
Met online	1(10)
Exposure to sexual content online	1(10)
Sexual photos taken of child	3(30)
Genital-genital contact	5(50)
Contact over clothing	3(30)
Digital-genital contact	2(20)
Oral-genital contact	2(20)
Perpetrator Characteristics[a]	
Father	1(10)
Juvenile Acquaintance	3(30)
Non-relative	1(10)
Other relative	1(10)
Parent's Paramour	3(30)
Unknown	1(10)

Caregiver N = 17.
Adolescent N = 10.
  [a] N = 10, characteristics from adolescent disclosure.
  [b] N > 10 due to adolescents with more than one type of reported sex abuse.

summarized using mean and medians for continuous variables and percentages for categorical variables to provide descriptive information about our sample. Analysis was performed using Stata 13 Software (StataCorp, 2013).

3. Results

From January to July 2017 40 caregivers and adolescents were recruited to participate in the study based on eligibility and purposive sampling. Those that were recruited, but did not respond after two follow up phone calls were withdrawn from the study. Thematic saturation was considered reached when no new themes emerged that would be consistent with the research question. (Saunders et al., 2017) After study team members agreed it was reached, two additional TM interviews were completed to ensure saturation. The median time from exam to interview was 3 weeks with a range of 1 day–4 weeks. The average interview length was 25 min. Interviews of 9 caregiver-dyad pairs (18 subjects) and an additional 8 caregivers and 1 adolescent were completed for a final study sample of 27 participants. Of the 27 study participants, 5 (19%) participated in standard colposcopy and 22 (81%) participated in a TM encounter. Characteristics of caregiver and adolescents are summarized in Table 1. The mean age of the adolescents was 13 years (SD 1.7). All the adolescents interviewed were Black females. 70% of the caregivers interviewed were female. The mean age of the caregivers was 37 years (SD 9.8).

3.1. Interview themes

The vast majority of both adolescents and caregivers reported having a "good experience" with TM. No participants reported having a negative or bad experience related to the technology during the exam. We initially hypothesized that factors such as prior use of technology and type of sexual abuse experience would influence a participant's response; however, we did not observe this from the participants' narratives. Responses were similar regardless of a participant's prior technology use or type of CSA disclosures. Interestingly, a predominant theme related to professionalism of the medical staff emerged as contributing towards technology acceptance.

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3.2. Feelings before and after the examination

Our goal with this section of the interview was to understand if the specific type of technology contributed to anxiety before or after the exam. Specifically, we wanted to explore if the narrative from TM patients included more expressions of anxiety or fear regarding the examination than the narrative from those participants who underwent standard colposcopy. Regardless of the technology used, the majority of caregivers and adolescents felt nervous and unprepared prior to the exam, with one respondent reporting they were "blindsided". The feelings stemmed more from the sensitive nature of the exam and not knowing what to expect than from the technology. Most reported feeling "scared" because they did not know what the exam would entail, as they did not recall a prior explanation of the exam. Multiple caregivers reported they were afraid the exam would be "invasive" and "like a pap-smear." No participants reported that TM increased their anxiety and none expressed that seeing a doctor through the computer screen caused them increased stress or anxiety. Two adolescents reported they would prefer TM, as it decreased the number of people in the room and they were more comfortable with a male provider on the "TV screen" than in the room. When comparing the narratives of the two groups (colposcopy and TM) there were no major differences in themes that emerged related to anxiety before and after the exam. The majority of caregivers were more concerned with how their child tolerated the medical examination, and expressed relief when they observed their child tolerating the exam without any distress. Almost all participants, regardless of the technology modality used, expressed feelings of relief when the exam was over.

3.3. Prior experience with technology and telemedicine

All adolescents interviewed reported being very comfortable using technology with the majority reporting everyday use either at school or at home. All adolescents had at least a smartphone and most reported using either an iPad or computer on a daily basis. Many adolescents reported they had to help their caregivers adapt to new technologies such as show them how to use a smartphone. The majority of caregivers reported at least being familiar with technology and having a smartphone. A few caregivers reported becoming "more used to technology" or that technology was "growing on them", however they had "a lot to learn." Two caregivers reported no experience with technology stating they were "not tech savvy at all." Overall, regardless of their personal experience, caregivers and adolescents felt that advancements in technology were important both in their personal life and in healthcare. Of those interviewed after the TM encounter, no adolescent reported having heard of TM, and none had experienced TM in a healthcare setting. One caregiver reported having heard of TM due to their job, however never experienced it personally. Despite the varying levels of prior experience with technology no significant differences emerged in the narratives related to the experience with exam, whether the technology was TM or colposcopy. In fact, those who were less familiar with technology expressed being impressed with the "wow" of TM and the "newness" of it. A few participants who struggled to even use a smartphone reported being amazed to see how "medicine is progressing."

3.4. Experience and perceptions of telemedicine for the child sexual abuse examination

A variety of themes emerge when subjects were discussing their perceptions of TM. The overall themes included participants describing TM as: 1. New and cool 2. A good experience, and 3. Similar to Skype or FaceTime. Many caregivers reported TM felt "new" and that it showed "progress in medicine." A few of the adolescents described the technology as "cool" with one reporting she "always wanted to see a doctor through the screen." Multiple caregivers marveled at how technology has advanced and noted it exemplified the ability of medicine and technology to interact in beneficial ways.

The majority of caregivers reported that "it was a good experience" and "enjoyed" TM because it still seemed like the doctor on the screen was "right there" with them. A few adolescents reported preferring TM over an in-person consultant. They felt the interaction with the "TV doctor" was better than seeing the doctor in-person because it reduced the number of people in the room. A few adolescents specifically mentioned that this was especially helpful in the case of a male provider examining a female patient. Other adolescents suggested that TM should be available for shy people who might experience more anxiety with multiple providers physically in the room. One adolescent reported that they felt more comfortable asking questions without the male provider physically in the room, explaining that it reduced some of the anxiety they would typically feel in such a situation.

Multiple participants were struck by the novelty of the doctor "Skyping" into the session. In fact, several compared the experience to Skype or FaceTime, and felt familiar, and therefore "comfortable, with this sort of technology." Some felt TM could "benefit a lot of people in the future," especially those in need of health resources not readily available to them in their area. Many respondents expressed that they did not have concerns about the use of the video-camera, and were comfortable with telemedicine technology.

There was a wide variety of abuse disclosures reported from this study group (Table 1). The narratives regarding feelings towards TM did not appear to be related to the type of abuse disclosure. For example, one adolescent met her perpetrator online and pictures were exchanged via a social media tool. That adolescent reported "I liked it, I prefer that rather than an in-person exam." The mother reported "It was a real good experience for me, it made you comfortable even though we were talking through a computer."

Only one respondent initially expressed reservation and that they felt "weird" and "uncomfortable that a third person was watching the child's private area." However, that respondent later went on to report "I think it was kinda cool."

3.5. Concerns related to telemedicine

The majority of adolescents and caregivers reported minimal concerns with privacy or security with the use of TM for the CSA

exam. They reported having few concerns because of reassurance by the medical team that the system was very secure as the connection was encrypted and within the electronic medical record system, and their privacy would be maintained. Multiple caregivers did report the thought of "hacking" had crossed their mind, but felt reassured the system was secure due to their trust in the medical team. Some subjects who reported initial concerns related to the quality of the exam, reported that those concerns were ameliorated after they experienced the exam using telemedicine. For example, one mother reported "I was concerned, is he getting a good look? But as the exam was going on…I was like ok, I guess he can see all right."

3.6. Role of the medical team during the TM encounter

We wanted to explore the concept of trust (a core attribute of professionalism) in the medical team as it relates to acceptance of a new technology such as telemedicine as well as professional behaviors exhibited by the team that enhance patient acceptance and satisfaction. Overall it appeared participants had a positive experience with telemedicine because it was explained well by the medical team. Both caregivers and adolescents appreciated a thorough explanation of why telemedicine was being used as well as when the doctor at the remote site explained her/his role. Many caregivers reported it was the team's explanation and behavior during the encounter that made them comfortable with one caregiver reporting "The way the doctors handled it, the nurses handled it. It was the way everybody handled it that made it easy to accept." Participants reported that while it was a completely new experience and one they did not expect, because it was explained well, and "everybody" had a good understanding of the technology, "things went well". A recurring theme was that the "TV doctor was very professional". Although participants didn't explicitly talk about trust, the concept of professionalism emerged as an important part of the exam with telemedicine and many subjects reported they felt comfortable because "it was all handled very professionally, done professionally, and we was treated professionally".

3.7. Telemedicine as a viable option for specialized care

When the question was posed on the choice between not having access to a medical specialist versus use of TM, all respondents except one endorsed TM as an acceptable option for care if there was no provider available to conduct the CSA medical exam in-person. That particular respondent had a favorable opinion of TM, but reported she would rather travel to have a provider in-person.

All participants were enthusiastic about the opportunity to receive medical care, which might otherwise be hindered by geographic distance and/or lack of resources, including qualified providers in their area. One caregiver felt TM was a good option because, from her experience, she could tell that not only was the doctor competent, but they had good resources at hand, including the powerful camera and a qualified nurse to help conduct the exam. Another caregiver pondered what compensation for telemedicine visits would be and how it would be reimbursed.

For illustrative quotes of the main themes see Table 2.

4. Discussion

We set out to understand the perspectives of both adolescents and caregivers of the use of TM for the CSA exam. We felt this was an important area to explore, as there is no prior literature directly addressing patient and caregiver views of this technology, specifically for the child sexual abuse examination.

In 2015 *JAMA* published a Viewpoint article warning of potential consequences of the rapid expansion of new digital health technologies. It encouraged physicians to ensure new products serve their patients well and are incorporated in a way that does no harm. (DeJong, Lucey, & Dudley, 2015) In this study, we demonstrated that adolescents and caregivers had a positive experience with an innovative approach to CSA patient care using TM, and found it an acceptable method to deliver health care for the CSA examination.

We initially explored adolescents' and caregivers' general feelings about the overall exam experience. Our results were consistent with prior literature in that people feel nervous or anxious before the CSA exam and experience a sense of relief when it is completed (Allard-Dansereau, Hébert, Tremblay, & Bernard-Bonnin, 2001; Davies & Seymour, 2001; Scribano, Hornor, Rhoda, Curran, & Stevens, 2010). In our study, similar narratives were provided by those who received colposcopy and those who received TM. Both cohorts described feelings of fear before the exam, and relief after the exam. TM did not appear to cause the participants any extra distress or anxiety when compared with those families who underwent standard colposcopy. In fact, the opposite seemed to emerge. Participants who underwent TM described having a "good experience" and feeling like they were part of something new and novel. In stark contrast, participants who underwent colposcopy did not express any positive emotional response regarding the examination and/or technology used.

Based upon our modified conceptual framework we sampled participants with a broad range of sexual abuse disclosures. Despite the enriched sample of varied of abuse disclosures and severity, we found no differing themes emerge in participants' responses, regardless of technology used. We purposely sampled patients whose sexual abuse involved technology to see if it would influence the way they viewed TM. When we compared the narratives of those whose sexual abuse was related to technology to those who had no direct relationship with technology, there were no differing themes. There was a general sense of technology acceptance, and the narratives demonstrated an overwhelming positive experience, regardless of disclosure. Additionally, our sample included people with a range of technological capabilities spanning from "not tech savvy at all" to "very tech savvy". Regardless of prior technology experience or knowledge the responses to TM were affirmative.

Finally, it cannot be overemphasized of the importance of professionalism as a core competency for delivery of all healthcare, but

Table 2

Interview Themes and Illustrative Quotes.

Themes	Illustrative Quotes
Feelings before exam	
Nervous	"I was a little nervous because I didn't know what the exam entailed, what was the process or what was gonna take place."
Not prepared	"I was not prepared at all for the medical visit."
Caregivers reaction mimics child's reaction	"My experience was really based on my daughter's reaction. Her reaction was key. So I was like please don't get hysterical. I would have been tense and tight, glutes and everything."
	"When I noticed and realized she was cooperating, my nervous levels went down.
Feelings after exam	
Relief	"I was relieved. I was glad that it was over. I felt really good about the exam."
Experience with Technology	
Very experienced	"I use technology every day, with smartphone, on the computer at work. So it's just like a lot of times, that's how people interact now is through FaceTime."
Adapting to new technology	"I've never really been to keep with the computers and that. But since I've been using the cell phones, I'm getting better with it and I'm learning how to be more computer-based. I found out how to actually pay my bills through my phone. So that's a wow."
Minimal experience	"I was very old school. I was very against getting a cell phone. I have a cordless house phone I attach to my hip. "I'm not tech savvy at all"
Perceptions of Telemedicine for the CSA exam	
Good Experience	"That was a good experience because it gave me the benefit to sit back and be able to see how medicine is moving-progressing and everything. So it was a good thing"
	"For me it was a good experience with everything that's changing in medicine and computers and all, its' good to know that they are connecting the two to bring out a better service for everybody"
New	"It was a new experience, but it was a good one. I enjoyed it"
	"There were no concerns. It was just like wow, that's new"
Novel	"When I first seen the machine, I was curious. I was really open. I was curious. And when I learned what it was going to be, I was like wow, okay, this is new"
	"I really look back with the wow of it. The experiment of talking to somebody over the computer and everything at the same time. I mean he actually was seeing what we were doing"
Cool	"I think it was cool that the lady was on a monitor. For doctors that can't be at more than one place, that you all use the monitor. I thought that was really nice"
	"I was like, okay, that's cool"
Like Facetime or Skype	"I think it's good, nowadays people use the internet a lot, so now coordinating with doctors is better, and if you home you can see the doctor via FaceTime."
	"It's just like Skyping"
Prefer TM rather than in person	"I think it was a good thing because maybe my daughter wasn't as embarrassed as having a man physically in the room. I guess he was inside the computer. So it may have made it a little easier."
	"I prefer that [telemedicine] rather than an in person exam"
Comfortable	"It was a really good experience for me. It made you comfortable even though was talking through a computer. I was comfortable talking with the doctor and his interaction with me and my child"
	"She was at ease and comfortable with what was going on…I felt more comfortable just knowing I was able to talk to him…So that was a little ease of doing that (TM) for the first time.
Wish it was done more often	"They should do that a lot more often especially for shy people"
	"I think it'll benefic a log of people in the future, more hospitals, and more clinics and more placed"
Potential issues with telemedicine	
Hacking	"That was the only thing about it, that information can be hacked into and leaked out, but the doctor was telling me they have instructions set up to keep that from happening, that made it more relaxed"
	"I wondered about people hacking, that thought came and went but it's not like it sat with me."
Quality of exam	"I felt comfortable knowing I was able to talk to him and he was still paying attention. That was like a real big ease that showed her and me he watching everything. So it's not being missed. Nothing is being missed out"
	"I do remember thinking, wondering if this could replace hands on- and I was concerned if he was able to really get a good look…but as the exam was going on he was using certain words and everything looked good. I was like oh so I guess he can see all right."
Role of medical team with telemedicine	
Professionalism	"Even the doctor on TV was professional"
	"It was all handled very professionally, done professionally, and we was treated professionally"
	"The way the doctors handled it, the nurses handled it. It was the way everybody handled it that made it easy to accept"
Explanation of Telemedicine	"I was kinda numb…but as I was there the doctor made both of us feel very comfortable and talked to us and really explained everything so I think she[the doctor] was a really good part of the experience"
	"I wasn't nervous anymore. I was very comfortable and felt more informed and pleased with the whole outcome of the procedure"
	"They summed everything up…So I was like okay…I always wanted to try that [telemedicine] anyway"

Table 2 (*continued*)

Themes	Illustrative Quotes
Telemedicine vs no subspecialty care	"I really liked how before they did anything they explained it and made sure I was okay with it [telemedicine] before they did it."
Prefer Telemedicine	"I would absolutely push for telecommunications. I'm backing it 100%...Because it really will the people who need help the right help" "I absolutely would do it [telemedicine]" "I think I really would...I can only imagine if I was in this situation and we didn't have the resources we have. I'd probably pull my hair out"

especially when new health care delivery models such as telemedicine are used in the care of vulnerable populations. There has been continued attention on clinician professionalism and its relationship with patient trust in the medical team. We believe that use of telemedicine, even in sensitive medical encounters such as the evaluation of CSA, can be successful and acceptable by patients and caregivers when delivered by providers who exhibit their professionalism skills to engender trust (Birden et al., 2013; Charon, 2001; Collier, 2012; Graham, 2006; Rothman, 2000; Salloch, Wäscher, Vollmann, & Schildmann, 2015; Swick, Szenas, Danoff, & Whitcomb, 1999).

As highlighted in the article "Incorporating a new technology while doing no harm, virtually" telemedicine strategies could fail to meet professional standards and jeopardize patient care (DeJong et al., 2015). Professional standards for TM as outlined by the ACGME include clinicians demonstrating safe TM practices, performing adequate physical exams, having technology literacy including virtual rapport building, and performing all essential elements to the medical encounter (DeJong et al., 2015).

The majority of participants in the study mentioned concepts of professionalism including appropriate communication, thoroughness of the exam, and feeling comfortable with the process being critical to their acceptance of the technology. Many reported they felt the "TV doctor" was "professional" and "competent." Our results demonstrate that the role of the medical team is important for establishing patient acceptance and satisfaction with TM. Clinicians participating in telemedicine must ensure they meet establish clinical standards and that it is appropriate for a given patient population (Chaet, Clearfield, Sabin, & Skimming, 2017). Ongoing research is needed to understand how to continue best practices, developed standards, and train clinicians to actively engage in these platforms.

There were limitations to our study. The population interviewed was primarily Black females in an urban pediatric CAC, consistent with the demographic characteristics we see in at our CAC; however, may limit the generalizability of our study. TM may have been well received, in part, because the clinicians at the originating site were 2rd and 3th year CAP fellows who have at least one year experience performing the CSA exam. The perceptions could be different if the provider at the originating site was not a CAP fellow. However, standard of care for any CSA exam should ensure that a provider at the originating site has training and competency in performing the basic exam techniques such as positioning and traction to ensure adequate visualization of genital structures.

As with any study, selection bias may play role for those who consented and completed the interviews. We attempted to be open with our consent processes, explaining we wanted to understand the experience, whether good or bad. Finally, recall bias could have influenced the narratives; however, we interviewed all participants within 4 weeks to minimize this bias.

We explored whether type of abuse, and technology literacy would play a role in a participant's technology acceptance, however this did not appear to be the case. What did emerge as stronger influencers were: concerns of security being adequately addressed; caregiver observations that the technology worked well and provided the examiner with adequate visualization of the examination, as if physically in the room; and, staff competency and professionalism. These domains are important to consider when incorporating TM into clinical practice, and is generalizable across all aspects of healthcare delivery.

Based on our results, we suggest the following recommendations to those considering TM use into their practice: development of provider communication competency specifically for a TM encounter; discussion and re-assurance about cybersecurity of the TM system (based upon the specific features of the system used); demonstration of diagnostic quality visualization of the medical examination; and, a thorough explanation of the technology before it is used.

5. Conclusions

TM was widely accepted by adolescents and caregivers when used for the child sexual abuse examination. Participants had an overwhelming positive response regardless of severity of sexual abuse or prior experience with technology. Behaviors that helped patients and caregivers feel comfortable included a clear explanation from the medical team, evidence of professionalism, and virtual communication competency.

Conflicts of interest

None

Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:https://doi.org/10.1016/j.chiabu.2018.08.009.

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