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FEATURE ARTICLE

The Role of Nurses in Telemedicine and Child Abuse

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Telemedicine allowed for imaging and videoconferencing between staff at a medical center hub and registered nurses who performed child abuse examinations at community hospitals. By means of electronic communication and information technology, a network was designed to facilitate the examination of children at distant locations when abuse was suspected. Telemedicine provided for expert consultation, rapid evaluation, response to community needs, and an expanded role for nurses. This anecdotal evaluation explored the experience from the view of the registered nurses and an advanced registered nurse practitioner who participated in the telemedicine network. Findings indicated that nurses went through phases of adjustments while becoming familiar with the information technology, cameras, and setup while focusing on the needs of the children and their own responses. Telemedicine nurses were able to draw upon their clinical backgrounds in caring for children and apply their knowledge and skills when assessing victims of abuse. On the basis of interviews and observation, it was concluded that telecommunication did not interfere with the nurse-patient relationship.

KEY WORDS

Child abuse • Nurse/patient relationships • Telemedicine

A telemedicine network was designed and implemented in the state of Florida to provide rapid medical evaluations of children in locations distant from a major medical center hub when allegations of child abuse were made. The model linked the medical centers to local hospitals in remote sites where direct services were limited.[1] The network used advanced telecommunications technology to link computers, cameras, and colposcopes for high-quality imaging and videoconferencing between a physician or nurse practitioner at the "hub" and a registered nurse (RN) who performed the examination at a remote site.[2]

Through the development of an expanded role for nurses in community hospitals in coordination with the physician or nurse practitioner at the medical center, the evaluation and documentation was conducted without having to transport the child to the center. When a child was brought to a local community hospital because of suspected abuse, the physician or nurse on call contacted the medical center for assistance with an immediate evidentiary examination. Since all state laws require reporting when there is a reason to suspect abuse has occurred, this examination was part of evidence gathering. The coordinated effort offered a supplement to local medical expertise in evaluating children, expedited child safety decisions by investigators, and increased the number of successful court actions. Telemedicine enhanced training opportunities for healthcare providers, including house staff, pediatricians, family practice physicians, nurses, and emergency department personnel.[3]

Through the use of high-speed transmission lines and computer technologies, a nurse at the remote site performed an assessment that was electronically linked to a hub site where a pediatrician or nurse practitioner child abuse expert observed and consulted with the nurse conducting the examination. The camera equipment enabled the physician or nurse practitioner to see external lesions, x-rays, and genital examinations. This technology allowed the child abuse expert to be the examiner

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of record. The telemedicine nurse then became the *hands* of the expert examiner of record who was interacting from the medical center hub and provided opportunity for peer evaluation.

Forensic examinations in cases of child sexual abuse have been conducted through telemedicine in a number of states in an attempt to connect clinicians in communities with experts at medical center hubs. An overview of networks in Alaska, California, Florida, Missouri, Oregon, Texas, and Utah found that telemedicine provided an opportunity to raise the standard of care in the evaluation of child sexual abuse.[4]

CONFIDENTIALITY

All patients seen in this program were reported to the State Hotline for allegations of abuse. Forensic examinations were required to evaluate the validity of the report. The telemedicine nurse and the examiner at the hub were employees of the state program and were subject to confidentiality statutes that precluded dissemination of case details except to designated investigators. The examinations were carried out in real time using dedicated landlines that are highly secure. All records were stored on a secure server designated for that purpose. No detailed or identifiable patient data were used in this evaluation.

PURPOSE AND SITE SELECTION

The purpose of this anecdotal evaluative process was to describe the experience from the view of the nurses participating in the telemedicine project and to determine if the technology interfered with the nurse-patient relationship.

Sites for deployment of telemedicine equipment were selected with the following parameters:

1. Absence of current traditional medical resources for evaluation of abused children.
2. An easily accessible community facility willing to see abused children.
3. Capability of installing high-speed communication lines.
4. More than 500 reports of child abuse in the community per year.
5. Availability of a cadre of nurses with pediatric experience and willing to learn skills needed for child abuse cases.

At the three sites that met the criteria, the nurses underwent 2 days of intensive training. In addition to the focus on telemedicine, the content included units on child abuse, psychology of abuse, and reactions to abusive families and abused children.

METHODS OF EVALUATION

The nurses were observed as they set up the computer and camera equipment, established rapport with children, and conducted examinations while consulting with the expert at the medical center. The three RNs and a nurse practitioner who participated in the program were also interviewed individually using a semistructured format guided by the questions in Table 1. The interviews were each recorded, transcribed, and coded to look for themes and patterns. Anonymity was ensured, and group data were reported to adhere to the guidelines for the protection of human subjects.

Sample

The RNs who completed the telemedicine training had experience in pediatrics or emergency department practice and with abused children. All of the nurses felt comfortable with computers but had to learn new skills in operating the cameras and computers that were required for documentation of the examinations. Each nurse learned how to set up the equipment and conduct an examination under the supervision of a nurse practitioner who provided guidance as needed on site.

FINDINGS

When asked to describe the reactions to the process, the telemedicine nurses expressed apprehension initially as they focused on the new technology. But they soon gained confidence in their use of the telecommunications network to transmit documentation of their examinations. Drawing on their pediatric and emergency department backgrounds, they quickly focused their attention on the children being assessed rather than on the technical aspects of transmission.

Table 1

Interview Guide for Telemedicine Nurses

1. What was your initial reaction to the telemedicine experience?
2. How do you feel about using the equipment? Any fears … what if?
3. Can you describe any unexpected situations?
4. What new roles are you assuming?
5. What kind of phases did you go through in adapting to the role?
6. What are the stressors and coping strategies used?
7. What are the rewards or unexpected outcomes?

Initial Reaction

The nurses were nervous at first while getting accustomed to using the camera, focusing, zooming in and out, and becoming familiar with the equipment. One nurse said that even though she was comfortable with computers and photography was her hobby, she was anxious that the equipment might not work correctly. Each nurse felt a sense of personal responsibility in knowing that the assessment has to be transmitted to the hub to be viewed simultaneously by the physician or nurse practitioner, the examiner of record. They recognized their interdependent role with the child abuse experts. Another nurse described her reaction:

> The first 5 minutes are the roughest because you have to get the child to relax and then you have to get the camera right and sometimes that takes some focusing and talking back and forth…No matter how good that equipment is, I am the one who is focusing and manipulating the equipment. A nurse practitioner or physician at the hub will direct me, but for the most part, I validate by saying, "Do you see what I am seeing?"

Focus on Child

As the nurses became more familiar with the equipment, they gained a comfort level with the procedure and began to focus more on the child. One nurse said she was so intent in looking for positive signs of assault that she actually forgot the camera. Surprisingly, the children being examined also quickly forgot about the camera.

Nurses' clinical expertise was evident in their assessments of children in terms of each child's cognitive level, how much a child understood or worried about what was happening, or what might be found on examination. They found that older children were concerned about privacy and who was going to see the examination. Nurses reported that they took into account the developmental level of the children and explored their concerns in an effort to reassure them of issues such as privacy. The telemedicine nurses took time to introduce themselves, explain their role, and establish rapport. They often talked to the children about school, their grades, or favorite subject. The nurses were also cognizant of what children had been taught by parents and teachers as part of prevention programs. Nurses related their concerns about children's reactions to physical examinations when sexual abuse is suspected.

One of the nurses related that she always let the child know that her purpose was to make sure that the child is all right. Older children were sometimes concerned that the examination would reveal physical evidence of sexual abuse that would make them feel different or that "others might notice."

Children and Technology

Nurses described the importance of letting children see the equipment and knowing what to expect. This phase of orientation to the equipment and establishing a trusting nurse-patient relationship typically took longer than the actual examination.[1]

One nurse explained:

> You walk into this room and there is this table and there is this big computer and a television, and you see these people trying to adjust screens on the other end, and I'm sure it's very frightening. I always take time to explain to them what things are and exactly what we're going to do, and tell them any time they want to ask a question, that's fine. It was helpful to me as a nurse in the emergency department to let the kids do that when we'd start an intravenous or whatever to let them know what's going on.

Children's Responses

When asked if there were any unexpected reactions or situations that they did not anticipate, the nurses revealed their surprise at how cooperative the children were. Some of the children enjoyed seeing themselves on the monitor prior to the procedure and said it was like being on television. Children were reassured that they were safe and that the nurse who they had been talking with was the one who would conduct the physical examination.

After the examination was over, several children expressed that the experience was not bad after all. Nurses attributed the children's cooperation to the fact that they were talked through the procedure and understood the general purpose of the equipment. The nurses related their routine:

> We sit them up on the table so they can see their picture on the screen and we explain to them where they (physician and/or nurse practitioner) are and that they are the experts. I'm just there to help with the examination. They haven't been afraid or traumatized, and it's better that it is done here in the community and they don't have to travel to the center. It advocates for the community. People feel connected, they feel comfortable here.

Shared Responses

The nurses also shared their emotional responses in dealing with suspected sexual abuse. One telemedicine nurse said that the reality of looking at a child and seeing the child's innocence made her angry and sad. She

related, "I always leave there and I cry. I cry halfway home." Other emotional reactions were described by nurses who stated:

> People say, "I don't know how you do this. I don't understand how you can do that." But to me, it's a great responsibility and I have a part in bringing someone to justice.
>
> As nurses, wherever we work, we learn to cope with death and whatever may be going on, but there is still an emotional side of us or we wouldn't be nurses.

As telemedicine nurses went through the phases of developing comfort with the expanded roles, they sometimes shared their feelings with other nurses but not with people outside the medical staff. One nurse said that people question how she could deal with sexual abuse but she responded that nurses understand because of the way they get involved in people's lives and their pain and "they understand the emotional side of what we're dealing with."

Nurses also experienced pride in doing their part to help children, and in providing evidence to the court system. Telemedicine nurses expressed the belief that they contribute to seeing that justice is done when someone has harmed a child.

Rewards of Telemedicine

As the telemedicine nurses gained experience in their expanded role, they began to appreciate the value of telemedicine for the community. They expressed the personal rewards they felt in helping the community and recognized that they were helping children and families by reducing the added stress of going to a major medical center when they could be seen in the community. Nurses described their contributions to families and local communities in the following examples:

> It's a wonderful value…a benefit to the community. They can take their child to some place close and have the examination done and have some degree of comfort. If you live in this community, going to the major medical center is like driving to New York City. I hear people say they are very frightened to drive into the city and over the bridges and then going to the medical center that is so vast. If you can go to your community hospital where you know where things are, where to park, you're not afraid.

Telemedicine nurses took pride in knowing that through their practice they were benefiting children and families. One nurse exclaimed, "And just for me personally, just to be involved in something so cutting edge; it really is an amazing science and I'm glad to be a part of it."

ADVANCED REGISTERED NURSE PRACTITIONER ROLE

The study also examined the experience from the perception of the nurse practitioner at the medical center hub. At the time of the interview, she had conducted approximately 500 hands-on examinations of children in whom abuse was suspected. She had gained clinical competency in determining normal from abnormal findings through her experiences and could serve as the expert of record.

When relating the phases she went through since beginning the telemedicine practice, she compared the process as going from a novice to someone who has a grasp of the technology. She described learning how the cables work and gaining expertise in the technical part that is needed when problems arise. She explained, "For instance, the other day everything was coming in black and white. Well, I had to know that's probably a video cable problem." She saw herself as one who went from a beginning computer person to an intermediate computer person who needed to understand the interface between a computer and the machinery such as the camera, cables, and software packages. When asked what new roles she assumed, she saw herself as a teacher, mentor, and technician. She had to be able to talk with medical equipment sales personnel as she took on the role of liaison among people at many different levels. As she described, "There are several different vendors: software vendors, hardware vendors, colposcope dealers, camera equipment, and the telemedicine units themselves."

When sharing what the experience is like for the nurse practitioner or physician who is communicating with the child from the medical center hub, the nurse practitioner said, "The experience dealing with the child is really not a whole lot different except for the need for me to want to touch and do…I want to be able to touch…I say the nurse is going to do this and that's the difficulty I have when I'm relating to the child."

The pediatrician at the hub related a similar reaction when during an interview with a child who was getting ready for an examination, the physician wanted to reach out and touch the child. At that moment, without communication, the telemedicine nurse sitting next to the child in the examining room reached out and patted the child on the shoulder.

The nurse practitioner was asked about the rewards of the experience from her perception at the medical center. She felt comfortable that she and the physician could make the connection with the nurse who was focusing the camera and technical equipment in a way that they could use their clinical expertise to determine if abuse had occurred.

When asked about unexpected outcomes, the nurse practitioner focused on her role as a teacher and mentor and finding differences in the learning styles of the nurses who took on expanded roles. She had to learn how to teach accordingly and how to encourage without being critical.

The participants all emphasized the importance of therapeutic communication that has to occur between the telemedicine nurse and the child being examined. Telemedicine nurses had to work through the fear associated with examining a child who may have been abused. The role of the nurse practitioner included participating in the didactic training on child abuse, physical examination of children when sexual abuse is suspected, and then the technology training. The nurse practitioner also served as a preceptor on site as each telemedicine nurse gained confidence in assuming the role of examiner in the community hospital. And then, a nurse practitioner or physician also functioned in the role of an expert at the medical center hub.

CONCLUSION

This anecdotal evaluation found that telemedicine was an innovative means to serve victims of child abuse and respond to community needs. The application of telemedicine to the assessment of children when child abuse was suspected required planning and training. Experts in telecommunication technology were needed to set up the necessary computers, cameras, and networks to ensure that imaging and communication are of high quality. Instituting a program that used electronic communication and information technology required input from a cohort of engineers, program staff, nurses, and physicians. Decisions were made regarding computers, cameras, and network capability.[3]

This evaluation of a small sample of RNs and an advanced registered nurse practitioner found that the participants went through similar phases while learning new technology, recognizing child abuse, and experiencing unexpected outcomes. The nurse practitioner focused on her position as liaison, clinician, and educator/mentor, while the telemedicine nurses identified themselves as nurse, teacher, and child and family advocate. Through training and practice, nurses gained the expertise required to feel confident in their expanded roles. On the basis of themes and patterns identified through semistructured interviews, the findings supported the conclusion that telecommunication did not interfere with the nurse-patient relationship. As expressed by the telemedicine participants, the program benefitted children, families, and the community at large, and they valued the part that they contributed. While the evaluation of allegations of abuse in children is a complex clinical activity, it is possible to create roles for partners at all levels of clinical medical training and experience to effectively bring state-of-the-art technology to bear on service delivery.

REFERENCES

1. Whitworth JM, Wood B, Morse K, Rogers H, Haney M. The Florida Child Protection Team Telemedicine Program. In: Wooton R, Oakley A, eds. *Teledermatology*. London, UK: Royal Academy of Medicine Ltd; 2002:135–149.
2. Palmer W, Haney M, Wood BM, et al. Use of telehealth technology to extend child protection team services. *Pediatrics*. 2001;108: 583–590.
3. Child Protection Team Telemedicine Network: a guidebook. Available at: http://www.doh.state.fl.us/cms/pdivision/guide.pdf. Accessed October 8, 2004.
4. Kellogg ND, Lamb JL, Lukefahr JL. The use of telemedicine in child sexual abuse evaluations. *Child Abuse Neglect*. 2000;24:1601–1612.