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Simulation Instruction for Direct Support Professionals: A Pilot Study between a School of Nursing and Community Providers Supporting Persons with Intellectual and Developmental Disability

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Abstract

Aim: The purpose of this paper is to inform the reader about the potential relationship benefit between community-based providers supporting individuals with intellectual and developmental disability and Schools of Nursing by using simulation based learning to augment direct support staff training. This article will reveal a pilot study in a school of nursing simulation center geared toward direct support professionals in community-based agencies in South-East Indiana. Results of the study were analyzed to determine if didactic instruction coupled with simulation exercises for epilepsy and dysphagia increased the confidence level and skill mastery of DSPs to manage these conditions in the intellectual and developmental disability population.

Background: As a result of a change in national and international philosophy over the last decade, persons with intellectual and developmental disability have progressed from institutional living into community-based home settings. While this change in living arrangement offers community opportunity, it may also produce a gap in their health care. In the United States, this gap may be due in part, to the lack of uniform training requirements for direct support professionals who provide care to this population.

Methods: The One-Group Pre-Test –Post-Test Design was chosen for this study. A post-confidence likert scale was also implemented.

Results: Post testing results indicated a noteworthy increase in knowledge gained by direct support professionals and a significant increase in their confidence levels.

Conclusion: On the basis of study results, partnerships between schools of nursing and community providers for persons with intellectual and developmental disability can be developed. Simulation Centers within schools of nursing may be used to augment current training of direct support professionals working with this population.

Background

As a result of a change in national and international philosophy over the last decade, persons with intellectual and developmental disability (ID/DD) have progressed from institutional living into community-based home settings [1]. This housing trend extends beyond the United States to other countries including Canada, England, Wales, and Australia [2]. While this change in living arrangement offers individuals the opportunity to be more involved in their community, it may also produce a gap in their health care. In the United States, this gap may be due in part, to the lack of uniform training requirements for DSPs who provide care to this population. While there have been attempts to standardize both the training requirements and competencies, there is still a lack of conformity. The National Alliance of Direct Support Professionals Association (NADSP) supports a credentialing of DSPs, and supports access to high quality training and life-long learning [3].

Intellectual and Developmental Disability Population

Intellectual disability is a cognitive disability categorized by substantial restrictions in reasoning, learning, problem solving, and adaptive behavior. This disability presents itself before the age of 18. Developmental disabilities are severe continuing disabilities that can be cognitive or physical in nature or can be comprised of both. The disabilities present before the age of 22 and most likely are permanent [4]. Examples of developmental disabilities include: Autism, cerebral palsy, Down syndrome, and brain injury. Intellectual and developmental disabilities often exist concurrently. Keeping this in mind, this paper will use the term ID/DD when addressing the

population in community based settings.

Many individuals with ID/DD living in the community have complex medical conditions. Two common conditions that have a higher incidence than the general population are epilepsy [5] and dysphagia [6]. Epilepsy can be defined as sudden uncontrolled episodes of excessive electrical discharges of brain cells. These charges can produce changes of behavior, movement or sensation in the person experiencing the seizure. Epilepsy is a chronic disorder, noted by recurrent, unprovoked seizures [7]. Dysphagia is a disturbance of the feeding and swallowing process that causes a significant risk to the well-being of the individual [8]. One of the most notable risks is aspiration which can lead to pneumonia.

As previously stated, direct care in community based settings is often provided by DSPs. DSPs may have little educational background on the special health concerns of persons with ID/DD including epilepsy and dysphagia. While community based ID/DD providers train DSPs, many do not have the technical capability, or resources, to augment their educational offerings with simulation and debriefing

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strategies. The National Alliance of Direct Support Professionals lists continuing education, and promoting health and wellness, as two of the DSP's key competencies to providing support to people with disabilities [9].

DSP Training

In the State of Indiana, DSPs must become certified in the mandated curriculum "Living in the Community: Medication Administration" [10]. While this curriculum provides details on how to safely administer medications, the core curriculum does not provide in-depth training on managing epilepsy or dysphagia, two of the most common conditions in this population. Simulation is not included as a requirement to become certified in the curriculum and debriefing exercises are not a component.

In general, nurses new to the ID/DD field in Indiana are trained by experienced registered nurses contracted by the Bureau of Developmental Disabilities Services. The purpose of this training known as 'Train the Trainer' is to educate new ID/DD nurses on how to instruct DSPs on the mandated curriculum. After completing the required session, these newly trained nurses return to their provider agencies and train DSPs on the medication administration curriculum. Once DSPs have successfully passed this curriculum, they are considered certified and can begin administering medications and providing direct care to the ID/DD population in their provider agency.

Community Living and Health Support for the IDD Population

Community Living for the ID/DD population may include supervised group living and community based homes. Supervised group living or Group Homes are federal programs overseen by individual states. In The State of Indiana, "Rule 460 IAC, Article 9", [11] provides the guidelines for nurses. The rule requires nurses to complete head to toe assessments on each individual at least one time per month; and according to their needs. Nurses working in Group Home Settings will then develop a plan of care for DSPs to follow.

Home and Community Based Services (HCBS) are homes that are also federal programs administered by each State. These sites are diverse depending on the State in which care is delivered. In the State of Indiana, HCBS nurses must complete an online assessment to determine the minimal number of on-site assessments and care interventions that must be completed by the nurse. These necessities are outlined in The State of Indiana "Rule 460 IAC 6" [12] and is overseen by the Bureau of Developmental Disabilities Services.

To complement the role of the nurse, most of the daily direct healthcare may be performed by the DSPs. Persons with ID/DD are often dependent on the DSP's skills, knowledge, and confidence, to properly manage their health [13]. In order to successfully oversee these health conditions, DSPs oftentimes rely on nursing personnel to help guide care including seizure management and monitoring of dysphagia. ID/DD nurses frequently carry large caseloads of individuals that are geographically spread out. These conditions make it difficult for ID/DD nurses to be present when seizure activity occurs for an individual under their care, or to directly manage a chronic condition such as dysphagia. Therefore, the training, skills, and confidence level of DSPs is critical to ensuring that individuals with ID/DD are receiving optimal care.

The purpose of this project was to determine if didactic training for direct support staff coupled with simulation and debriefing strategies conducted by registered nurses and nursing advisors would increase the skill level and confidence of DSPs to manage epilepsy and dysphagia.

Simulation-based Learning and Nursing Students

Simulation-based learning is an educational strategy that creates an environment that mimics real life experiences [14]. It can also be described as designing an authentic situation for a student or trainee that resembles a problem they might encounter in their work [15]. Simulation provides caregivers an opportunity to manage significant health events in a risk-free environment [16]. When coupled with an essential process known as debriefing-learning through feedback and reflective processes [17], simulation has the capability to enhance the learning process. Debriefing occurs following the simulation. Debriefing guides the participant toward the learning objectives by using questions that help the learner understand their performance and how to put their new skills into clinical practice [18].

Simulation united with debriefing is used frequently in nursing education as a teaching tool. In the systematic review by Norman [14] findings suggest simulation in nursing education proved useful in creating a learning environment which contributes to knowledge, skills, safety, and confidence. A study by Lindsey & Jenkins [19] concluded that clinical simulation is effective in improving nursing students' knowledge and clinical judgment.

Simulation-based Learning and Direct Support Staff

Tredinnick and Cocks [13,20] research findings on dysphagia training indicated that there was a significant increase in both knowledge and confidence in the group of DSPs who received training strategies that included lecture, activities, and discussion. Research results by Mackey & Dodd [21] suggested that most DSPs felt group activities and subsequent discussions were the most effective strategies during their DSP training. In another study by Sigalet et al [16,22], a two-group pre and post-test experimental research design was analyzed. The study revealed that caregivers receiving a supplemental simulation based seizure curriculum, achieved significantly higher levels of both competence and reported confidence in managing seizures, when compared to caregivers who did not receive the added simulation component of training.

The Simulation Center at Indiana University School of Nursing at IUPUC is designed to replicate real life experiences for nurses and other health care professionals. The center has the capability to mimic various seizure episodes by training real life individuals to demonstrate seizure activity. Individuals that are specifically trained in simulation are referred to as standardized patients. Adding a human face to the simulation increases the realism of the simulation. The center also has a vast array of medical equipment and mannequins to reproduce clinical situations for its participants. Included in the center are debriefing rooms, and video capability, to enable repeat viewing of the simulation in order to gain additional insight into personal behaviors related to the simulation.

The Community Connection: Schools of Nursing and Community Based Providers

Nursing faculty are responsible to train nursing students to work in hospitals. However, with the push towards cultural competence and

community health nursing, faculty must also ensure nursing students are well versed on how to care for diverse populations in the community. Due to the transition of persons with ID/DD into the community, it is important to include this population into nursing education. Community agencies partnering with academic institutions may be a way to accomplish this [23]. It may also be appropriate that schools of nursing consider opening their simulation centers to a wider health care audience to better meet the healthcare needs of their communities.

Community ID/DD service providers hire nurses and DSPs to work in their agencies. A partnership between schools of nursing and agencies that support individuals with intellectual and developmental disability may help close the gap in healthcare two-fold. First, by providing better prepared DSPs to work in community settings for this population. Secondly, enhance nursing student's community education by introducing this population's unique healthcare needs through simulation and partnership with service providers. Oftentimes, grants are available to fund this type of community engagement project.

Community-based Participatory Research

Community-based participatory research (CBPR) provides a framework in part, for conducting research, encouraging partnerships between academic institutions, and using and disseminating the knowledge gained, to improve the health of underserved or vulnerable populations [4]. The partnerships in CBPR rely on the strength of its participants, and the expertise of members to develop interventions to address complex health problems. This approach complements the use of simulation, schools of nursing, and ID/DD community providers by offering a common community goal. Using CBPR principles, this pilot study sought to:

1. Facilitate change among the immediate beneficiaries (ID/DD Community Providers) by enhancing the DSP training related to seizure and dysphagia management.

2. Offer technical assistance to ID/DD Community Providers to support their program development and service delivery by the use of the Indiana School of Nursing at IUPUC Simulation Lab.

3. Through the use of pre and post testing scores and qualitative questionnaire responses, provide quantitative and qualitative evidence to the community of interest in order to guide future CPBR interventions.

The Pilot Study

The expected goal of this project was to supplement the training direct support professionals receive at their provider agency by adding an in-depth didactic component on the management of epilepsy and dysphagia, followed by simulation and debriefing exercises. The day long simulation held at the Indiana University School of Nursing atIUPUC Simulation Center created a targeted clinical experience for direct support professionals.

The objectives of this project were to increase the knowledge base and confidence level of DSPs working with the intellectual and developmental disability population. Participants held a certification in medication administration by the State of Indiana. At the end of the simulation activity participants were tested to see if they could meet specific objectives related to seizure management and dysphagia care:

a. Identify common types of seizure disorders

b. Provide first aid and follow through on protocols and communication of seizures

c. Understand the anatomy and physiology of swallowing

d. Identify individuals at risk for choking and aspiration

e. Through the use of simulation: Identify appropriate food/liquid consistencies for individuals at risk for choking and aspiration

f. Design a meal time plan that includes food preparation and positioning techniques

The proposed outcomes of this project:

1. Facilitate Change: Increased confidence level of direct support professionals to manage epilepsy, swallowing disorders and aspiration risk, in the intellectual and developmental population residing within community based settings.

2. Provide Technical Assistance: Improved healthcare outcomes for individuals with intellectual and developmental disability residing within community based settings by enhancing the training of direct support professionals through simulation and debriefing using the technology of the IU School of Nursing at IUPUC Simulation Lab.

3. Disseminate Qualitative and Quantitative Evidence: Disseminate results of the study to community providers and IU School of Nursing at IUPUC to provide future research and organizational interventions.

Participants

Participants were DSPs certified in the State of Indiana's Living in the Community Medication Administration Curriculum. The DSPs were employed for less than one year in the field of ID/DD. Two different community provider agencies serving South-Central Indiana were included in this study. A total of fifteen DSPs participated in this training. Nine DSPs completed the seizure training and fifteen DSPs completed the dysphagia session.

Study Implementation

The seizure session included a didactic component that provided the foundation for the training experience. Types of seizures, first aid for seizures, and treatment options were included. The didactic portion was followed by a demonstration using a simulation mannequin on how to administer rectal seizure medication. Each DSP under the direction of a registered nurse, provided a return demonstration on how to administer rectal seizure medication using a training diazepam pen and simulation mannequin. The next segment of the seizure training involved high fidelity performers who acted three different types of seizures, absence, partial complex, and tonic-clonic. Each DSP had to provide first aid and safety measures consistent with what they had learned in the didactic portion of the training for all three seizure types. Following each session, a debriefing with each DSP individually, and then as a group was conducted. The purpose of the debriefing was to identify how each DSP felt during the simulation exercise and provide context to the learning experience.

The dysphagia training also began with didactic instruction. Included in this information was the physiology of swallowing, rationale for the high occurrence of dysphagia in the ID/DD population, food consistencies, correct positioning, and following a

dining plan for individuals with dysphagia. Simulation included visual representations of various food types to be placed into the correct dietary category. Each DSP had the experience of transforming food into pureed and mechanical soft textures. Thickening agents were provided for hands on experience creating honey, pudding, and, nectar consistency liquids. Lastly, each DSP developed a dining plan, including correct positioning, based on a defined case study. Debriefing exercises focused on real life events, how to prevent aspiration, and how the DSPs felt the simulation would help them to provide better care to individuals at risk for aspiration and pneumonia due to dysphagia.

Methods

The One-Group Pre-Test –Post-Test Design was chosen for this study due to its appropriateness for collecting pre and post intervention data and measuring change within a group [26].

Pre-Post Test Results

Increased knowledge of direct support staff to manage seizures, dysphagia, as evidenced by improved post testing scores Seizure pre-post- test: statistically significant 6.79 ($p < .0005$) for sample of 7 (2 DSPs did not complete the post-test) Dysphagia pre-post- test: statistically significant -5.24 ($p < 000.5$) for a sample of 15.

Confidence Level Results

9 DSPs completed the confidence scale for the seizure session and fifteen DSPs completed the confidence scale for the dysphagia session by using a 1-4 likert scale:

1= Very prepared
2= Better Prepared

3= Somewhat Better Prepared

4= Not Better Prepared

Post session questions posed in the confidence scale:

1. I feel better prepared to identify and provide first aid for tonic clonic, partial complex, and absence seizures to persons with intellectual and developmental disability

    6 out of 9 rated at 1   3 out of 9 rated at 2

2. I feel better prepared to identify individuals who are at risk for choking.

    14 out of 15 rated at 1, 1 out of 15 rated at 2

3. I feel better prepared to identify/prepare foods that are pureed or mechanical soft.

    13 out of 15 rated at 1, 2 out of 15 rated at 2

4. I feel better prepared to identify/prepare fluids that are nectar, honey, or pudding consistency

    12 out of 15 rated at 1,   3 out of 15 rated at 2

Results Through the Lens of Community-based Participatory Research

An immediate increase in knowledge was demonstrated by pre-post testing scores. Simulation instruction information was provided to agency providers to ensure a comprehensive understanding of the training intervention. The qualitative and quantitative results of the pilot study were shared with the community providers who participated in the training. Sharing these study results may encourage future CBPR research that will include simulation and debriefing strategies into additional DSP training sessions.

Results were also disseminated via the East Indiana Area Health Education Center (EI-AHEC) website in order to enhance local knowledge related to the health disparities of the ID/DD population and possible gaps in DSP training. The global dissemination of this information provides a platform for connecting with other schools of nursing and ID/DD community providers to expand the research related to simulation and DSPs. It may also act as a catalyst to bring about policy changes in education requirements for DSPs at the state level. Lastly, sharing this information may assist researchers by increasing funding streams allowing for further studies using CBPR principles.

Limitations

This pilot study is limited due to the small number of participants in the study. It is also limited by the geographical region where the pilot study took place. Only two provider agencies participated, reflecting only those agency's training practices related to dysphagia and seizure management. The study was also limited by the participation of only one School of Nursing Simulation Center. In order to generalize the results, future research should include a larger geographical area involving more ID/DD service providers and more than one School of Nursing Simulation center. Nurse faculty with experience in ID/DD nursing can play an important role by providing both nursing students and DSPs clinical experiences related to this population [26].

While the objectives of the study focused on the confidence and skill mastery of DSPs, this pilot study was unable to determine if increased confidence of DSPs and the skills acquired during simulation, translated into better healthcare outcomes for persons with ID/DD with the co-morbid conditions of epilepsy and dysphagia. Using CBPR principles, future research should focus on a wider array of health topics for DSP training and include a longitudinal analysis of the benefits to the ID/DD population in using simulation and debriefing to augment DSP training.

Conclusion

This study sought to determine through the use of CBPR principles, if didactic instruction coupled with simulation and debriefing exercises would increase the confidence level and skill mastery of DSPs to manage dysphagia and epilepsy in the ID/DD population. In order to accomplish this goal, a partnership between a school of nursing, and agencies who provide care to this population needed to occur. Based on the evidence gained in this pilot study, it is possible to develop such relationships. These partnerships have the potential to benefit schools of nursing, community providers, DSPs, and possibly the health outcomes of persons with intellectual and developmental disability who live in community settings.

In this pilot study an increase in confidence and skill mastery of DSP knowledge was apparent. To determine if this change has a lasting impact on the DSP's learning, additional research should focus on the long-term benefits of simulation as evidenced by DSP retention and application of the knowledge gained. The use of technology can

also be employed to help sustain the knowledge gained. Researchers can make available to agency providers, the video tapes of the simulation exercises. These tapes can be viewed by former and future participants to demonstrate the effectiveness of simulation and debriefing educational interventions. Use of the IU School of Nursing Simulation Lab at IUPUC can be offered by the researcher to a broader cross section of community providers who support individuals with ID/DD to enhance provider's technical capabilities surrounding DSP education.

Future studies should also examine other health conditions where simulation and debriefing interventions may augment DSP training. Longitudinal studies to examine the impact on enhanced education for DSPs using simulation and debriefing on the health outcomes of persons with ID/DD should occur. Grants to support schools of nursing in this endeavor should be sought to lessen the financial burden on nursing schools and community provider agencies. Communities collaborating together through educational experiences in order to generate positive outcomes for its members, is a responsibility that ID/DD nurses [27], community providers, and schools of nursing all share. CBPR methodology provides a comprehensive framework to accomplish this.

Competing Interests

The authors have no conflict of interests to disclose.

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