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Attitudes of Nurses Toward Children With Disabilities: The Attitudes of Nursing Students Toward Children With Disabilities: An Experimental Design

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Abstract

The attitudes of U. S. nurses toward children with disabilities have not been adequately measured over time and after an educational intervention. Disability content has not been a priority in nursing education and, if present, the focus has been on adults with disabilities. The attitudes of nurses play a significant role in the provision of quality healthcare services they provide for children with disabilities. This quantitative, experimental research measured the attitudes of graduating nursing students (N=88) toward children with disabilities utilizing the Attitudes Towards Disabled Persons Scale (ATDP-B) before and after disability education. The control group consisted of 44 nurses while a group of 44 nurses received the treatment. The differences between the groups was measured at pretest (time 1), immediate posttest (time 2) after an educational module, and delayed posttest (time 3) one month follow up, utilizing repeated measures analysis of variance (ANOVA). Multivariate tests for within subject effect of the ATDP-B demonstrated that the dependent variable of attitudes as measured by the ATDP-B scale changes over time and after an educational module based on children with disabilities were (F=[2,85]=28.59, p<0.01). It was discovered that the ATDP-B level changes over time, dependent on the group (F=[2,85]=51.15, p<0.01). Also, the between subjects main effect of group was significant across ATDP-B measurements (F=[1,86]=32.53, p<0.01) (Table 6 and 7). The results of this research suggest that there is a significant difference in means of ATDP-B measurements between groups which indicates that the graduating nurses who received disability education performed significantly better on an assessment of attitudes toward children with disabilities than those who did not receive the education. The findings of this research should compel nursing faculty to reevaluate curriculum content, provide specific attitude measurements of nursing students at various levels of education, and develop protocols that can assist students in learning to care for children with disabilities. Future research on the attitudes of nurses toward children with disabilities can also be designed to measure attitudes of nurses in several nursing education programs across the U. S, or evaluate the attitudes of numerous other healthcare professionals caring for children with disabilities.

Keywords: Quantitative; ATDP-B level; Attitudes of nurses

Introduction

International research has concentrated on the attitudes of healthcare professionals toward disabled adults and rarely toward children with disabilities [1]. Attitudes are hypothetical constructs that embody what an individual views as positive, negative, or neutral; they are comprised from affective, behavioral, and cognitive responses and can be transformed by persuasion and experience [2]. Simply put an attitude is a mental state, belief, or a predisposition to behavior [3]. This statement implies attitudes are cognitive, effective, and behavioral in response to a stimulus. Attitudes, like all psychological constructs, are observed indirectly in human responses [4]. If attitudes affect the actions of nurses caring for patients, then it is appropriate to measure the attitudes of nurses, evaluate the implications for nursing practice, and recommend interventions. The attitudes of nurses play a direct role in the quality of the patient care experience and are currently not objectively measured in nursing education. There is scant research on attitudes of nursing students in publication as well as how the nursing profession will address this population.

Children with disabilities are cared for in a variety of healthcare and community settings by professional registered nurses. There are over 60 million people in the United States with some form of disability; approximately 13.9% are children [5]. The number of children born with disabilities continues to increase with the application of scientific and technological advances in healthcare as we continue to perfect saving the lives of premature infants and acutely ill children [6]. Baccalaureate nursing education assures student nurse clinical competency by upholding a moral imperative to keep patients safe by fostering a paradigm of demonstrating continual practice [7]. Nursing faculty are responsible for assessing student skill, knowledge, and attitude to care for children with disabilities. Curriculum in schools of nursing are focused on knowledge and skills in clinical courses, it is not clear how attitudes of nursing students are conceptualized or measured as an outcome of nursing education. Attitude plays an influential role in the quality of clinical services rendered by healthcare professionals [8]. Disabled individuals report dissatisfaction with healthcare professional contact stemming from inadequate personal experiences described as patronizing and disempowering practices [9]. Services to children with disabilities are described as inexpert, fragmented, and poorly coordinated [9]. Researchers designed a descriptive study was conducted to identify how nursing faculty addresses disability content in a stratified random sample of 1,000 schools of nursing [10]. Results of this study evaluated by the researchers indicated some disability content was present in nursing curriculum in some schools; citing barriers to disability education for nurses revolved around issues of time, interest, attitude, and expertise of the faculty. Nurses responsible

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for the care of children with disabilities do not exhibit the appropriate sensitivity and attitudes towards them, resulting in poor quality nursing care [1]. It is critical for the nursing profession to provide insight into the nursing curriculum experiences as it relates to disability issues and examine how nursing students conceptualize disability content in curricula to improve nursing care [11]. Theoretically, knowledge, skills, and attitudes of nursing students and faculty are intertwined in nursing education. The effect of disability curriculum content on the attitudes of nurses toward children with disabilities is a significant research agenda.

Nursing has and will continue to play a pivotal role in caring for all children and their families [12]. Attitudes of nursing students can positively or negatively affect their approach to patient care [13]. In order to provide quality nursing care to children with disabilities nurses need formal curricula content and clinical exposure. Disability researchers have focused on measuring the attitudes of healthcare professionals toward adults with various disabilities. Researchers have rarely focused on the attitudes of nursing students toward children with disabilities in the United States.

Problem Statement

Attitudes hold significant power relative to classroom outcomes in students [14,15]. Researchers have demonstrated that some undergraduate nursing students hold negative attitudes toward children with disabilities because of fear, ignorance, cultural, and societal influences [13]. Attitudes of nursing students are directly influenced both by faculty and by curricula content [13]. A cross sectional survey focused on measuring the attitudes of 383 healthcare students was developed by a researcher in the University of South Dakota utilizing the Attitudes Towards Disabled persons (ATDP) scale, Scales of Attitudes Toward Disabled Persons (SATDP), and Rehabilitations Situations Inventory (RSI) scale [14]. Researchers identified that nursing undergraduate students were at greatest risk for exhibiting poor attitudes towards the disabled. There were no attitudinal differences by gender, but those students who had previous experiences with the disabled had more positive scores than those with no experience.

Research Question

The research question to be answered is:

Q1. Is there a change in the attitudes of nursing students toward children with disabilities as measured by the ATDP-B who receive disability education as part of a required course as compared to nursing students who did not receive the disability education pretest, immediate posttest, and in one month?

Hypotheses

The null hypothesis is:

H1o. There is no difference in the change in attitudes of nursing students toward children with disabilities as measured by the ATDP-B for the students who received disability education as part of a required course and the students that did not receive disability education pretest, posttest, and in one month.

The alternative hypothesis is:

H1a. There is a difference in the change in attitudes of nursing students toward children with disabilities as measured by the ATDP-B for the students who received disability education as part of a required course and the students that did not receive disability education pretest, posttest, and in one month.

Significance of the Study

The Institute of Medicine [15] challenged all healthcare professions to adopt curricula content focused on the current healthcare needs in the United States. Many medical schools and schools of health professions struggle to implement this challenge. The Surgeon General has identified children with disabilities as a vulnerable and disenfranchised group relating to health prevention, promotion, and treatment usage. The Robert Wood Johnson Foundation funded an initiative, Quality and Safety in Education for Nurses [16], to close the gap between nursing education and practice, focused on knowledge, attitudes, and skills for nurses. Attitudinal barriers are the most recognized impediment to health care for children with disabilities [17]. Attitudes of nurses play a pivotal role in the care of children with disabilities and their families. Diminutive attention is furnished to disability education in undergraduate nursing curriculum in the United States. International healthcare researchers have suggested that education affects the attitudes of healthcare professional students, therefore affecting patient care outcomes [11]. Disability education warrants position in nursing curriculum in the United States.

Review of the Literature

While the focus of this research was on nurses attitudes towards children with disabilities the affluence of published research in nursing is limited, therefore literature from the healthcare professions will be employed to support this research. The preponderance of published research addresses adult disabilities.

History of Attitudes

The term attitude has been historically defined as a hypothetical construct expressed and sculptured within the confines of various professional disciplines. As early as 1935, Allport proposed the most widely utilized definition of attitudes [18]. Fazio [18] acknowledged Allport's description of attitude as "a mental or neural state of readiness, organized through experience, exerting a directive or dynamic influence upon the individual's response to all objects and situations with which it is related" (para 4.). Attitude is a hypothetical construct that represents the individual's like or dislike for an item [2]. Attitudes directly and indirectly influence cognition and behavior [19]. Cognitive foundations are central features to form an attitude, thus a behavior is exhibited in response to information [19]. Attitudes and behaviors shown strong correlations and attitudes are highly predictive of behavior [20]. Attitudes are a distinctive concept in social psychology that continues to be investigated by researchers from various fields. Theorists seek continual meaning in attitude research to explain human beliefs and behaviors. The continued vitality of attitude research correlates to the quest towards outcome evaluations in applied research.

Attitudes are associated with varying strengths, stored in memory to be activated when the individual encounters the attitude object [18]. This premise suggests that attitudes are not merely constructs but evaluative knowledge. Attitudes serve as a fundamental function in human behavior subjectively assisting one to organize and interpret the environment. Attitude constructs are further characterized as implicit or explicit in nature. Implicit, or automatic attitude, and explicit, or deliberate attitude, assumes an association between these distinctions requiring reasoning ability [21]. The recognition of an individual's attitude may require validation of the attitude or process of evaluation to produce an outcome. Attitude is a belief requiring consistency to avoid conflict. Attitudes are consistent with behaviors [22]. Dissonance requires cognition to change a belief. New knowledge, or education,

can serve as a vehicle to affect attitude allowing for homeostasis in the individual's attitude. This assertion suggests that learning may influence attitudes; therefore, attitudes can be changed over time. A central theme in current attitude research challenges the old paradigm of attitude studies expressing a need for an integrative model focused on evaluation and transformation.

The complexity of attitudes affects the behavior and interaction of nurses with children with disabilities. A quantitative quasi-experimental study in New Zealand utilized a two group, pretest- posttest design, measuring attitudes of nursing students with the ATDP-B [11]. The research question in this study explored the inclusion of a significant disability theory unit added into the curriculum for 219 students at the second and third year of study. Results of pretest mean scores were 116.91, 117.23 respectively, while the posttest mean scores were 123.01, 120.87 respectively, degrees of freedom were not reported in this article. There weren't significant attitudinal changes for 2nd and 3rd year students, t (20.65)=0.106, p>0.05 t (19.64)=0.634, p>0.05 respectively, concluding the educational module was not a factor in the attitudes of the sample group towards the disabled. Measurements of attitudes upon entry into the nursing program and after disability education in an experimental research design may have yielded different results.

Children with Disabilities

Disability research has focused on measuring the attitudes of healthcare professionals toward adults with various disabilities. The attitude and role of the registered nurse has not specifically been studied nor has the variable of attitudes toward children with disabilities. There are several reasons why the number of children with disabilities has drastically increased in America, but it remains difficult to gather statistics due to ambiguities in definitions of developmental disabilities and the service systems that remain fragmented. Statistics in the United States are ascertained by survey responses; therefore non- responses lead to a potential bias in statistical assessments.

The Annual Disabilities Compendium [23] reveals data that approximately 16% of children between the ages of birth and twenty-one that live in the community are disabled. There are no current accurate statistics collected in children with disabilities that live in institutional settings across the United States. According to the Developmental Disabilities Act, section 102 (8), the term "developmental disability" is a chronic, severe disability in children five years old or older that is attributed to; (a) a mental or physical impairment or both; (b) manifests itself before the age of 22; (c) is likely to continue indefinitely; (d) results in substantial functional limitations in three or more major life activities. Major life activities can be further defined as self-care, language, mobility, learning, and the capacity to be independent both in economics and in independent living. Children with disabilities require specialized, multidisciplinary healthcare services and support throughout the lifespan to improve function in daily activities of living, preventing illness, and avoiding complications. Under federal law, each state defines the labels of children with disabilities from a developmental and intellectual viewpoint. The state's definition is utilized to identify, plan, and implement managed and coordinated services to support the child that may include community based physical, occupational, or speech language therapists, social workers, and special education teachers.

The definitions of developmental disabilities and the approved services vary from state to state. The Centers for Disease Control and the Department of Health and Human Services of the United States federal government have identified autism, cerebral palsy, mental retardation, and epilepsy as the most commonly diagnosed developmental disabilities in children. This list can be expanded to thousands of other motor, behavioral, and genetic diseases diagnosed in children with developmental disabilities. The plight of families with children with developmental disabilities clearly warrants the need to focus on clinical services, research, education, and public policy initiatives. Clinical services for these children mandate healthcare professionals attain the needed knowledge, skills, and attitude in order to provide safe, appropriate, quality healthcare.

A review of the literature indicates that health care professionals, including nurses [24], view people with disabilities negatively. Research in the field of attitudes of healthcare professionals toward children with disabilities suggests that education may promote positive attitudes supporting an enhanced level of nursing care [24]. The philosophical framework of a nursing curriculum can influence the attitudes of students toward specific groups of patients. The development of an understanding of people with disabilities has not been given particular attention in undergraduate nursing curriculum. This pretest -posttest research design utilized the Attitudes Towards Disablement Scale with a convenience sample of 26 nursing students to ascertain general attitudes toward the disabled while on a rehabilitation unit in an acute care setting. A t test showed no statistical mean difference after the clinical rotation (t (0.560)=1.534, p=0.138, t (0.702), p=0.989, respectively). Conclusions from researchers in this study suggested that the disabilities course might have influenced student attitudes prior to clinical placement.

The US Surgeon General issued a goal of improving the health status of adults and children with disabilities. This challenge focused on the increasing the knowledge, understanding, access, and awareness of healthcare professionals providing care for the disabled community in order to promote health and prevent disease complications. During the last decade, legal mandates have provided the impetus for changes needed in society toward citizens with disabilities.

Attitudes of Medical Students

Many individuals with disabilities report their physicians are insensitive or patronizing, viewing them as poor, suffering, or in need of pity [25]. Negative provider attitudes often focus on the disability rather than the person, and can result in rendering inferior healthcare [25]. Perception that the disabled person's quality of life is poor may lead to less aggressive treatments even with an acute medical problem [25]. People with disabilities cite negative attitudes and behaviors of healthcare professionals as the most formidable barrier to healthcare [26]. Healthcare providers often lack necessary education to care for the disabled. Medical students lack training in the most common forms of children's disabilities such as cerebral palsy or learning disabilities [27]. Senior pediatric residents surveyed in California acknowledged the need for education in childhood disabilities, with only 21% of the residents reporting they received didactic and clinical education in this field [27]. Little attention has been devoted to the development of curricula content to prepare medical students to care for the disabled [28], recognized the need for disability content in medical schools and developed a six- step approach to develop curricula for medical education. This approach consisted of the development of a specific and general needs assessment, goals and objectives, instructional strategies, implementation and an evaluation plan for the school of medicine. This new curriculum content on disability included an attitudinal pre and post survey to measure the goal of instilling the "appropriate" attitude in students towards medical care for the disabled. The didactic and clinical curriculum spanned four years of medical student's exposure to the needs of the disabled from a patient

centered perspective. Preliminary outcome evaluations of this disability thread in the curriculum of the medical school find medical students are positive and appreciative for the disability education. Irrespective of specialty, all physicians treat individuals with chronic illnesses and functional limitations in a variety of settings.

The Association of Academic Physiatrists Council of Medical Student Clerkship Directors conducted a survey in 2007 of medical schools in the United States to determine if courses exist for students concerning chronic illnesses discovered dismal results. A group of physicians developed and proposed curricular content and methods for the inclusion of this vital topic in schools of medicine as a required clerkship [29]. This pilot course was offered at Johns Hopkins University School of Medicine in 2008 as part of curriculum restructuring to better prepare medical students to meet the health care needs in the 21st century. This is only one of a handful of medical schools that require courses on chronic illnesses in this country focused on the skills, knowledge, and attitudes required for future medical practitioners [29]. Researchers' results in this research support the premise that there are increasing numbers of children and adults with chronic illnesses and disabilities that future physicians are not prepared to care for appropriately. Outcome evaluations of this clerkship-measured student's attitudes measured with the Attitudes Towards Disabled Persons (ATDP) scale realized that knowledge and skills must be supported by positive attitudes in this innovative program. There is a need for health care professionals to assess the changing needs of the population it serves.

A cross sectional survey of 98 medical schools in the United States and Canada studied third and fourth year medical students to determine their attitude towards persons with disabilities [30]. Each medical student was given three attitude surveys to complete; the Attitudes Towards Disabled People Scale (ATDP), the Scale of Attitudes Towards Disabled Persons (SADP), and the Rehabilitations Situations Inventory (RSI). There was no statistical difference in results of attitude surveys between the medical students from the United States and Canada. Compared to the norms the medical students overall had a more positive attitude towards the disabled on the ATDP scale. Male students generally had poorer attitude scores in the surveys than female students. Medical students with a background in caring for those with disabilities had more positive scores than medical students with no experience caring for the disabled. Researchers conclusions in this comparative study suggest gender and background exposure to the disabled influenced the medical student's attitudes. Similar studies are published from the international medical community.

Trinity College Medical School in Dublin Ireland was the site for a study to evaluate the impact of disability awareness training for 56 fifth year medical students measuring their attitudes utilizing the Attitudes Towards Disability Persons scale (ATDP) pre and post a twelve hour training module [31]. The training module consisted of role playing in which students lived the reality of a type of disability, for example blindness, or being wheelchair bound, under the guidance of a physically disabled physician. Comparisons of the ATDP pretest and posttest scores in this experimental module reveal a significant improvement in the attitudes of the sample group. The mean score for the sample was 70.9 with a standard deviation of 15.8, while the post score mean was 78.5 with a standard deviation of 17.9. A paired t test was performed and results suggested that this change in measurement indicated a significant positive attitude toward the disabled ($p<0.001$). Further analysis of the gender of the medical students supported the hypothesis that females had a more positive attitude towards the disabled than males. While they suggested that a socialization model improved the attitudes of providers towards the disabled and therefore had a positive impact on their quality of life. The University of Newcastle in Australia placed 26 fourth year medical students in a pediatric community clinical rotation in a rural school setting with the purpose of assisting in activities to improve the motor skills of children with disabilities [32]. Medical students were paired with teachers to observe innovative educational methods that assist these children in educational settings. Medical students treated a variety of medical occurrences in the classroom with seizures being the most common, commenting on the stress of school medical emergencies. A questionnaire given to the medical students and their teachers after the clinical rotation rated the experience as very valuable and encouraged the continuity of school placements for students. Traditional tertiary pediatric clinical placements for medical students will be augmented by community placements to broaden student experiences to include children with disabilities and their families.

It is generally accepted that medical education should enable students to acquire knowledge, skills, and attitudes necessary to practice medicine in a variety of settings. Healthcare education emphasizes the importance of recalling large quantities of information. The evolution of healthcare curricula is the identification of critical knowledge elements to produce self-directed practitioners who understand the importance of continual lifelong learning. It is vital to acknowledge that effective healthcare depends upon accurate information and clinical exposure, bridging the gap between attitude and behavior towards the disabled. Attitudes are learned predispositions that elicit consistent responses towards a person [19]. Therefore, attitude contains a component of affect, cognition, and behavior that must be interconnected. Attitude and behavior, when consistent, provide stability in one's belief pattern. The characteristics of one's disability, such as the visual appearance of the disabled individual, can attribute to an attitude [33]. The quality of the interaction between the disabled and non-disabled individual focuses on the disability, and not the person behind the disability, leading to negative attitudes. It is the characteristics of prior beliefs, occupational training, demographic variables, and the perception of status relative the disabled that influence attitude [33]. Education can influence attitude formation.

Attitudes of Dental Students

The American Academy of Pediatrics supports the premise that children with disabilities possess specific medical, behavioral, and pharmacological factors that create complex needs that heighten susceptibility to dental disease. The Commission of Dental Educational Standards has identified children with disabilities as prone to dental caries and infections requiring improved oral health assessments and referrals to dentists. A needs assessment conducted by the Louisiana Health Sciences Center School of Dentistry found that pre doctoral healthcare education of students was inadequate in dental assessment for both the medical and dental curriculum. The researchers of this study acknowledged that 81% of medical students lacked dental hygiene curriculum while 74% of the students were not interested in treating children with disabilities [34]. A research study paired dental students and school nurses in 15 elementary schools in low socio-economic areas of Louisiana to screen 255 children with disabilities for dental concerns. Researchers documented 43% of the children had untreated dental caries, 17% needed urgent dental care, and only 4% ever had dental care [34]. This experimental study lead to the addition of a didactic and clinical education model in dental schools and post intervention over 70% of the dental students stated they positively influenced the dental health of these children, with 92% claiming the importance of the program. The faculty of the dental school developed

the tools of measurement in this study and while attitudes were not directly measured, the outcome behaviors of medical, nursing, and dental students had a positive impact on the dental care of children with disabilities. The relationship between dental student's attitudes towards care of individuals with intellectual disabilities was studied to assess the impact of instruction and experience expected of third year dental students [35]. Dental students were surveyed before, and one week, six months, and one year after disability lectures at the university to assess their general capability and comfort caring for individuals with disabilities requiring dental work. Repeated measures ANOVA indicated significantly higher expectations of dental students after instruction, but no change in their level of comfort. One year follow up resulted in no change in attitude or level of comfort of dental students providing dental care to this populace. While regression analysis indicated significant positive relationships between experience and comfort for these students, there was no significant relationship existed between experience and expectation of dental student capabilities. The dental faculty elected to revise the curricula in the school of dentistry to include experiential learning with a reflective component to address the comfort level of dental students caring for individuals with intellectual disabilities.

Attitudes of Physicians, Nurses, and Therapists

The affect of attitude tends to have a central tendency, either positive or negative, so it is easier to judge, classify or act quickly. Attitudes are thereby learned and affect our behavior. The Scales of Attitudes Towards Disabled Persons (SATDP) was mailed to 269 physicians and nurses in Bhutan to study the impact of these professionals in three major hospitals [8]. Researchers noted 63% of the physicians held significantly more positive attitudes towards the disabled than nurses. Mean scores for both groups were significantly lower than their western counterparts. The results of this study would permit policy makers to design interventions to improve care and better understand the multi-dimensional relationships that exist between attitudes and health care for the disabled. Further research is warranted in marginalized groups such as children with disabilities. A similar study was conducted in Hong Kong with the objective of exploring the attitudes of healthcare professional towards people with disabilities.

The attitudes of physiotherapists, occupational therapists, social workers, and nurses in Hong Kong were assessed utilizing the Attitudes Towards Disabled Persons (ATDP) scale form O [35,36]. The goal of this research was to compare healthcare students and practicing professionals in the groups described above. The survey tool was mailed to 511students and 489 professionals that were randomly selected for the study. The mean scores of these eastern students on the ATDP scale were lower than western counterparts indicating a less than acceptable attitude towards the disabled. Professionals had higher scores, or more positive attitudes, with nurses scoring the least favorable in attitudes towards the disabled community. The demographic data of age, educational level, knowledge and contact with disabled persons were cited as significant factors affected the ATDP scores. Significance was particularly relevant at 0.001 for the quality of interactions between the sample and the disabled population. Results will be utilized by the researchers to modify the curriculum and enhance the quality of healthcare services rendered to the disabled population.

It was hypothesized that attitudes differ with various health professional students according to gender and previous exposure to the disabled. A cross sectional survey utilizing the ATDP scale form B, SADP, and RSI scales was distributed to 383 students in the University of South Dakota [14]. Results displayed all students had less positive attitude scores on the SADP, with nurses having the least positive attitude scores. There were no attitudinal differences by gender, but those students who had previous experiences with the disabled had more positive scores than those with no experience. Nursing undergraduate students were at greatest risk for exhibiting poor attitudes towards the disabled. The researcher recommendations augmented the need for nursing students, specifically in pediatrics, to have educational experiences to promote positive nurse student attitudes when caring for the children with disabilities. Tervo et al. [14] conducted attitude research with healthcare professionals hypothesizing attitude and comfort would differ by discipline. A sample of 383 undergraduate and graduate healthcare students in the Midwest were administered the ADTP, SADP, and the RSI scales to assess if there is a difference in attitude among healthcare students. The results were similar despite community size in that all groups had positive attitudes regarding the disabled. A series of one way ANOVA has resulted in no statistical differences between gender, community size, optimism and human rights, and pessimism or hopelessness factors. Statistical significance existed for the factors of behavioral misconceptions ($F(4.392)$, $df=2$, $p=0.013$). The initial hypothesis assumed that individuals from urban areas would respond with a more positive attitude than those in rural areas based on the assumption that urbanites have more exposure to the disabled. It was concluded healthcare professionals in general hold less positive attitudes with nursing at the greatest risk. Specific education is needed to promote more positive attitudes. Tervo et al. [14] suggests that research on attitudes towards the disabled results in many confounding factors that include sensitivity, response styles, and reactivity to questions. Limitations to this study sample were college students who were Caucasian, healthcare students, and attended only one university. Replication of this research using different variables may yield interesting results.

Recreation and leisure undergraduate students are increasingly exposed to individuals with disabilities of all ages. Realizing the increasing shift towards societal inclusivity of the disabled, attitudes of these students were measured utilizing the ATDP scale form B to assess 289 students in five universities on the frequency of interaction with the disabled [37]. Student interactions with the disabled six or more times a day resulted in more positive student attitudes. It is estimated that recreation and leisure professionals interact with the public of which approximately 22% will have one or more disabilities. Attitude is a core competency in any role that deals with the public. The language of disabilities plays a pivotal role in the formation of attitudes.

The ATPD scale, form A, B and O, was utilized in 283 college students to determine if the language used to describe a disability would influence the participant's scores on attitude toward the disabled [38]. The researchers focused on three categories of individuals; those without head injury, those who had a head injury associated with loss of consciousness, and those who lived with a relative with head injury [38]. Versions of the ATDP were randomly assigned to groups with descriptors of disabled person, person with a disability, and the disabled. Results indicated no significant difference in ATDP scores. The use of language relative to the content and process in defining disability language may be of significance for further studies. The effects of contact, context, and social power affect attitudes towards the disabled. Hunt and Hunt [39] believes stereotyping can lead to negative attitudes towards the disabled community. Negative attitudes can be a barrier to the disabled face in society. The quality and quantity of social contact, context, social power, and the academic training of undergraduate students across disciplines can affect the overall attitude of professionals in evaluating a child with disabilities whether it is in an academic or

medical setting. The ATDP- B was administered to 218 undergraduate students in a Midwestern city to understand attitudes towards persons with disabilities [40]. Researcher developed questionnaires were also administered relating to the described variables. Results revealed there were no statistical differences using a factorial ANOVA across a range of social contexts. Analysis discussed by the researchers in this study suggests attitudes may change according to the discipline the student is enrolled in at the university. The role of the educator as a social power figure influenced student attitudes. The more positive the professor was in the field of disabilities the more positive the score of the student in attitude scales. It was hypothesized that while contact and context of disability studies directed towards students had some affect on attitude, it is the social power of the educator that is a phenomenon that affects not only student attitude, but the ability to change attitudes of students towards the disabled [40]. Power as a salient construct in disability education is an area of minute research.

In a society of multicultural, multiracial, and multilingual people, there may be a lack of awareness in cultural beliefs and attitudes towards the disabled. Culture effects how and why people make certain decisions concerning healthcare. Life choices are affected by function and context in the environment. The factors of knowledge, belief, and attitude affect how one functions in their daily routines. A cross sectional study in South Africa randomly assigned a dyad of 60 caregivers and children between two and thirteen with a disability, attending physical therapy at three local hospitals with various cultural influences [41]. A knowledge, attitude, and belief (KAB) questionnaire adapted from the World Health Organization's Global Program on Acquired Immuno-Defiency Syndrome (AIDS) research package was augmented by a demographic questionnaires containing both open and closed ended question design. Approximately 83% of the children had a diagnosis of cerebral palsy revealed no statistical difference on the knowledge of the syndrome with adult caregivers. Differences in why the disability occurred were related to the caregiver's cultural beliefs. Over 75% of the caregivers stated that disabled people struggle on a daily basis, while 92% indicated the children with disabilities were not inferior. The caregiver's claim 55% of society generally do not care for children with disabilities, and society is not functionally set up for inclusion of these children. Of interest is that 72% of the caregivers believe children with disabilities should be schooled separately for the reasons that society is not ready for them. A theme in cultural beliefs was one of human error due to something done during the pregnancy that caused the disability, for example taking medications. Researchers concluded that health professionals need culturally sensitive training focused on addressing negative attitudes, and adequate community services are available for children with disabilities. It is imperative that undergraduate healthcare curriculum relate to attitudes of children with disabilities and their adult caregivers. Cultural beliefs play a pivotal role when interacting with children with disabilities and their caregivers.

Yuker [42], an historical attitude expert, describes attitudes as complex, multifaceted, and difficult to measure. Attitude can guide behavior affecting the experience of lifestyle quality. Professionals that interact with children with disabilities are susceptible to a range of insensitive attitudes. It is assumed an occupational therapist, because of their close and constant interaction with these children, would have positive attitudes towards children with disabilities. Prior research in this area was not conclusive. A prospective study of 11 occupational therapy programs from the United States, Taiwan, Australia, and the United Kingdom surveyed 264 freshman and 221 senior students using a self reported Interactions with Disabled Persons Scale (IDP). The IDP likert scale is a tool focused on the concepts of discomfort, uncertainty, sympathy, fear, coping ability, and vulnerability of the participants. Descriptive statistics documented the mean score was lowest, poorer attitude, in the United Kingdom and highest, better attitude, in Taiwanese students occupational therapy students [43]. The analysis of variance demonstrated many significant differences ($p<0.05$) in entry-level occupational students in the overall total mean scores of discomfort, sympathy, and coping among students from different cultures. The Taiwanese students responded differently from the American, Australian, and British students. The analysis of variance of the senior students were statistically significant ($p<0.05$) in the categories of the IDP with the Taiwanese students. Independent *t* tests compared the freshman and senior level students as a total group and found the two groups scored significantly different in sympathy ($p<0.010$), uncertainty ($p<0.30$), and vulnerability factors ($p<0.017$). The authors do not report a-priori significance level is needed for this study but not reported in the article. Uncertainty is not significant unless there is a high significance therefore there is a probability of great Type I error. Potential reasons discussed for the differences could be previous experiences with the disabled and cultural influences. Differences in the occupational student's attitude towards the disabled could affect actual or potential care of clients with disabilities. The impact of education on attitudes is less studied in literature review. Negative attitudes towards children with disabilities are reinforced by the lack of knowledge, needing to be addressed at the earliest opportunity in primary childcare or education.

Children with developmental disabilities often present with complex communication needs requiring the expertise of speech language pathologists. A study of 34 third year speech language pathology undergraduates and 56 recent graduates completed the Interaction with Disabled Persons (IDP) attitudinal scale and a questionnaire about interests in augmentative communication with this population [44]. Researcher findings suggest a small but positive attitudinal shift for undergraduates who had previous clinical experience working with individuals with augmentative communication units but also found it to be a weak predictor of job choices after graduation. Working with developmentally disabled individuals ranked low among undergraduate preferences for employment. The results of the IDP sample utilized repeated measures ANOVA showed no effect of attitude and job choices ($F(1, 83)=0.007$, $p>0.05$) degrees of freedom not reported. Researchers suggest didactic and clinical curricula revision embrace the use of mentor support to meet the communication needs of children with disabilities.

Attitudes of Nursing Students

Disabled individuals report dissatisfaction with healthcare providers, specifically nurses and their systems of education [8]. A body of literature in the 1980's and 1990's identifies disability as the inequality of inequalities in planning and delivering nursing curriculum; modest research has been published since that period. Nursing as an independent discipline needs to focus on curriculum based in methodological pluralism and pragmatic approaches to changing societal needs in caring for patients. Questionnaires were devised by faculty from the English National Board of Nursing, Midwifery, and Health Visiting, an educational accrediting body in the United Kingdom that consisted of likert scale and rank order disability questions as well as vignettes [45]. Faculty sought to conceptualize and define disability for nursing students, led by Scullion, one of the first nurse educators to champion disability in nursing curriculum. Questionnaires and interviews were conducted on 51 nursing students to gather qualitative data. Themes that emerged focused on the

alignment of disability to illness as opposed to health, the tendency to treat patients and not people, and the lack of experiencing what it is like to be disabled. The language of disability is often confusing with many interpretations, such as retarded or impaired, definitions are unclear, and the need to normalize the individual is a prevalent thesis. Researcher results exemplify the need to study disability within a socially positive context. Nursing education can promote disability in partnership with the disabled as a core requirement for nursing curriculum. Nursing professional literature rarely focuses on children with disabilities but concentrates on adult disability issues. Children with disabilities depend upon adult caregivers to advocate for them and meet their needs. Disability education must also concentrate on the caregivers to the children with disabilities.

Children with disabilities generally live in their communities where they go to school and receive rehabilitative services consisting of occupational, physical, and speech therapies. Attitudes of healthcare professionals are an important aspect of rehabilitative services [14]. In relation to a conceptualization Tervo et al. [14] defines a positive attitude towards disability as:

A belief that those with disability can be productive community members, decides what their own self-interest is, and lead a normal life. At the affective level, it suggests sensitivity toward positive attitudes and liking the person. At the behavioral level, it implies fashioning conditions to help an individual actualize their creative capacity toward self-sufficiency and contribute to the community (P. 908-909).

Tervo's assumption correlates to Maslow's hierarchy of needs theory, which speculates positive attitudes of the self are intertwined with an individual's quest towards self-actualization. However, there are still gaps in the current knowledge of attitudes of nursing students and factors that influence these attitudes towards the disabled, specifically children.

A cross sectional studies of 128 baccalaureate nursing and non nursing students in the Netherlands were recruited to join this research and complete the ATDP forms A and the SADP [46] Nursing students scored more positive in attitude toward disability than non-nursing counterparts in school. Researchers are now exploring if the form of contact with the disabled influences attitude. Future researchers may study if the quality and not the quantity of an individual's contact with the disabled as a more significant attitude predictor. Attention to forms of contact beyond context may be necessary to understand a nurse's attitude towards the disabled [46]. The philosophy of a nursing curriculum influences a nursing student's attitude towards patients and groups of patients.

Little attention is given to disabilities in undergraduate nursing curriculum. International research has identified that the health student's education for practice affects their attitudes and the outcomes of patient care [28]. The educational approach needs to be broad so healthcare professionals can effectively manage the physical, social, and emotional outcomes of disability. Attitude changes are activated through knowledge, skill, and attitude acquisition. Positive education in attitude requires positive faculty role models. A convenience sample of 26 nursing students in Australia participated in a pretest -posttest research design offering 60 hours of clinical experience with the disabled [47]. Attitudes of the nursing students were measured pre and post treatments with the ATDS and SADP scale. The disabilities in this patient mix consisted of chronic medical, emotional, mental, physical, and sensory impairments. The community clinical placements consisted of 20 hours with adults with acquired disabilities, 20 hours in a community-based child with disabilities educational program, and 20 hours in a family based program in the home supporting the disabled of varying ages. Specific goals, journaling, and various other supportive assignments were designed for all three clinical experiences. The results of the means in paired samples t tests identify a difference pre and post intervention ($p<0.05$). Participants changed their attitudes in a positive direction towards the disabled. Researchers provided evidence to support the premise that the attitudes of nursing students toward the disabled may be related to the type of educational preparation received in the clinical setting.

The complexities of attitudes and attitude development affect the behavior and interaction of nurses with the disabled. A quantitative study in New Zealand utilized a two group, pretest- posttest design measuring attitudes of nursing students with the ATDP form B [48]. The research question explored the inclusion of a significant disability theory unit into the curriculum. This research recruited 219 second and third year nursing students for the sample in this study. There were no statistical mean differences between pretest and posttest, concluding the educational module was not a factor in the attitudes of the sample group towards the disabled. The sample group demographics were 95% female, ages 17-30, typically found in nursing programs around the world. It is suggested by the researcher that the cultural focus towards the disabled in New Zealand may account for the results. Seccombe suggests nursing curriculum that identifies disability specifics in nursing programs on a global perspective may be beneficial to influence attitude. Additional findings suggest it may be useful to study attitudes over time and utilize disabled professors as primary instructors in nursing specific disability modules offered in schools of nursing. Replication of this study utilizing a different sample may yield different results.

Interdisciplinary learning opportunities for the pre-qualification of medical students and pediatric nursing student's utilized community based child disability case studies for entry into healthcare education in England [49]. Paired groups of nurse and physician students consisted of 160 students visiting a disabled child in school and at home. Quantitative and qualitative evaluation methods explored the experience and measured attitude in relation to the experience with a tool developed at the site called the Interprofessional Learning (IPL). This tool had been validated in previous studies at the study site, the University of West England, and concurrent validity was established utilizing the Readiness for Interprofessional Learning Scale. Reliability was established with a questionnaire revealing a Chronbach's alpha coefficient of 0.86 (n=147). Students from both disciplines cited the value of a community setting and independent visits as a positive learning experience. Professional differences were learning points as well as the design approach. Nursing students showed more positive attitudes than medical students did, but both groups had attitudes that are more positive after the experience when compared using ANOVA for the pre score as a covariate. Future studies with different professional student groups may identify areas of collaboration and recognize stereotypical attitudes towards the disabled. The researchers acknowledged the strength of a mixed methodology in knowledge acquisition of the concept of attitudes towards children with disabilities.

There is negligible research that has focused on nursing students that are required to attend both a theory and clinical course in their education on the topic of caring for children with disabilities. The University of Sydney recruited and randomly assigned 291 second year nursing students to a disability related theory course with a 30 hour clinical component, to assess quantitative and qualitative data to see if attitudes can be changed over time [13]. A researcher open and closed question survey obtained information from student logs of their

clinical experiences. The researchers' results documented that 61% of the students wrote they would work with children with disabilities and 87% of the students were able to apply theory to practice. Negative feedback from the students consisted of frustration handling behavior issues, lack of skill development, too much responsibility, and poor communication in handling children with disabilities. Behavior management of children with disabilities is an essential topic to include in a course on disabilities.

Children with disabilities are generally thought of as having physical disabilities. A group of developmental disabilities causing significant social, communication, and behavioral issues for children is referred to as the autistic spectrum, affecting one out of every one hundred and ten children in the United States. The classification of autistic spectrum disorders as a psychiatric label lends unique complications that may affect the attitude of healthcare professionals. A quasi-experimental pretest- posttest research design was developed to measure Jordanian nursing students attitudes towards individuals with mental illness and assess if education changed nurses attitude at the Hashemite University [50]. The Opinion about Mental Illness questionnaire was completed by 193 nursing students. Results interpreted by the researchers revealed the students exhibited a positive attitude towards those with mental illness. A significant statistical difference in attitudes of students who had previous exposure to the mentally ill and those that did not was evident according to descriptive statistics. Conclusions from the researchers of this study suggests that positive attitudes in nurses influences the quality of nursing care rendered to the mentally ill, and these attitudes respond to education. It is significant to realize that children with disabilities can have developmental and intellectual alterations requiring equal attention and educational preparation of healthcare professionals.

Nurses and Children with Disabilities

Children with disabilities and their families depend upon professional nurses to be able to case find, screen, care, and make referrals to medical and social resources. More than one fifth of the households in the United States report caring for at least one disabled child at home [5]. Children with chronic functional disabilities have a basic right to healthcare by knowledgeable and caring professionals. The practice of nursing is across the lifespan and the landscape; taking place in the home, community, school, and hospital. The American Nurses Association describes responsibilities of the profession to health care consumers in the Social Policy Statement, which states: The Nursing Social Policy Statement describes the essence of the profession by incorporating and building upon earlier writings and thinking. This social policy statement serves as a resource to assist nurses in conceptualizing their practice and provides direction to educators, administrators, and researchers. This statement also informs other health professionals, legislators, and other regulators, funding bodies, and the public about nurse's responsibility, accountability and contribution to health care. The social context of nursing creates the foundation for the understanding the definition of nursing, appreciating the purpose and use of the scope and standards of nursing practice, and valuing the elements of professional, legal, and self regulation. (p. 1). The American with Disabilities Act (ADA) of 1991, amended in 2009, facilitates progress towards influencing societal behaviors towards persons with disabilities while improving access to an array of healthcare services. While a shift in attitudes is not mandated, behaviors can be influenced by legislation. In an effort to meet the needs of children with disabilities, the process must include training and role expectation for nurses.

The quality of healthcare services is directly influenced by the attitudes of healthcare professionals towards the disabled [51]. The researchers compared the attitudes of practicing nurses and student nurses toward children with disabilities in a convenience sample of 99 nurses employed in pediatrics and 189 nursing students. Researchers reviewed the descriptive data and an analysis of variance concluding that nurses in various roles had poor attitudes toward children with disabilities but practicing clinical nurses scored more positive attitudes scores on the ATDP scale. A better understanding of the complex relationship between healthcare professionals' knowledge, attitudes, and behaviors would improve services to the disabled.

The attitudes of pediatric nurses towards children with disabilities were presented in a comparative study in the University of Athens [1]. The sample consisted of 228-second year nursing students, 90 graduate nursing students, and 123 practicing pediatric nurses, all who were given the ATDP scale to assess attitude. Graduate nurses had significantly more positive attitude scores than second year students or practicing nurses. Second year nursing students had more positive attitude scores than practicing nurses. The researchers of this study documented female students had significantly more positive attitude scores than male counterparts, (F=9.5, p<0.002), degrees of freedom not reported. Poor attitude scores for nursing students and nurses can adversely affect the standard of nursing care for children with disabilities. Implications for the nursing profession rests in assuring disability content are present in nursing curricula as a core component of education. Nursing educators need to embrace this concept and redesign nursing curriculum so it is congruent with the current needs of society.

Nursing Education for Children with Disabilities

The American Academy of Pediatrics recognizes that a child with a disability resides in one out of every five households in the United States. Nurses, as health care providers in various environments for children with disabilities, must be both theoretically and clinically competent to care for this vulnerable population. The demand of nursing education continues to be insuperable as research and evidence- based practice initiatives introduce new information on a daily basis. The constant introduction of new content into curricula presents challenges for nursing faculty. Curricula reform is inevitable, yet relevant, as faculty prepare future registered nurses to care for the sick or disabled, prevent complications of disease, and promote creative health care strategies in a cost effective manner. Curricula reform ultimately occurs because of public health mandates, regulations of accreditation bodies, and the insights of the profession itself [52]. The need for nursing curricula reform has been a common theme in nursing literature for the last few years, but is now becoming an urgent issue. Nursing faculty is challenged to rethink curricula content and design a new paradigm that meets the needs of society. Theory and clinical intensives, specifically in rehabilitation and the nursing care of children, needs to be re-conceptualized utilizing new modalities of education [53]. Creativity in the syllabus is directly related to creativity in teaching [54]. Existing nursing literature provides little direction on essential disability content to be included in syllabi for adults and no literature could be identified for children with disabilities within the last decade.

A sample of 234 accredited schools of nursing returned a survey originally sent to 1,000 schools of nursing by researchers to identify details about disability related content in the curriculum [10]. These researchers developed a table of 23 disability related topics and requested the schools of nursing rank the frequency of inclusion of these topics anywhere in the curriculum. The results of this study

reported that content on children with disabilities were sporadically and rarely addressed in nursing curricula. Teaching strategies included primarily nursing textbooks and the clinical experiences for nursing students were in psychiatric wards, general adult hospital units, and nursing homes. Disability and medical models were the structured teaching design with simulated experiences viewed by faculty with disfavor. The low nursing faculty response rate in this study, 23%, is perhaps reflective of lack of interest for this vital subject. Limitations of this study are sketchy suggesting disability issues are not defined as core nursing curriculum content. Researchers support this premise based on contextual comments faculty wrote as comments on the questionnaire that identified time constraints, more important information to cover for national boards, and lack of interest as barriers for curricula inclusion of children with disabilities. General questions posed by researchers in this study on the evaluation of effective health promotion efforts for the disabled yielded negative responses and more than half the faculty surveyed reported far too little attention is given to this vital area of care. The researchers of this study propose that the overdue priority of integrating disability content into generic baccalaureate nursing curriculum categorizes nurses as not perceiving the disabled in a positive light, which may promote negative attitudes, leading to inadequate nursing care in the disabled. Factors contributing to negative attitudes in nurses towards the disabled may be related to the lack of exposure to this population during formal education.

Nurse educators find it challenging to prepare students in pediatrics for future nursing practice. Children comprise approximately 25% of the population in the United States and have significant health problems [55]. Some researchers suggest chronic diseases in children are as high as 30% [56]. A baccalaureate-nursing program responded to the changing needs in society for children by revising the pediatric curriculum [57]. The principles of pediatric nursing care were increasingly integrated into all required courses including lab sessions and an enhanced clinical experience in hospitals and community settings. A specific pediatric elective for chronically ill and disabled children was added to the curricula with an overwhelmingly positive response from students. This curricula revision fostered theories of growth and development with critical thinking skills, promoted health and safety issues, and enhanced communication skills in a community atmosphere. Children with disabilities present in clinical areas that service adults, but increasingly service children. Areas of hospitals that care for children and adults can be the emergency room, operating room, and multiple specialty units. Registered nurses need pediatric and rehabilitative knowledge and skills regardless of work environment. It is generally accepted in schools of nursing that 20% of graduates chose pediatrics as their area of professional practice based on survey data from the Health Resources and Services Administration (HRSA). A pediatric curriculum requires a disability component.

Nursing education programs reflect the intent to prepare graduates at beginning practice levels of competency in a variety of primary, secondary and tertiary clinical settings. Undergraduate nursing curricula demonstrate an underrepresentation of specialties that continue to be dominated by medical surgical adult curricula content [58]. Critical curricula evaluation of content in relation to societal nursing needs is omitted in most nursing programs [58]. A greater understanding of the impact of nursing education on the career choices for future nurses may be a result of the nursing curricula. A questionnaire was distributed by researchers to 834 nursing students in Victoria, Australia to determine career choices upon graduation from nursing school [58]. The number one choice was pediatrics in a hospital setting, supported by the statements that a positive attitude towards children was the predominate reason for choosing this field. Community health nursing was identified as one of the least favorite environments for student nursing citing it was boring and slow in pace. This researcher-recognized technology driven practice arena, the hospital, emerged as the most popular area of practice. Research characteristics associated with traditional caring practices were less frequently articulated in this study. The privilege of curing over caring was a significant theme nursing students utilize to chose future areas of practice. This statement should be a serious concern for the profession and perhaps best addressed in schools of nursing by faculty. Nursing, as a caring profession, needs to assure society they possess competent, caring, and positive attributes to care for children with disabilities both in the hospital and in the community setting. The profession of nursing defines itself as a caring profession. Transitioning a caring pedagogy into the teaching and learning environment requires faculty and students to be actively engaged and reflective in the classroom [59]. Caring behavior demonstrated by faculty and students is often an elusive and difficult to operationalize. Faculty serves as role models for students. Theoretically, a caring relationship between faculty and students fosters a caring attitude towards patients [60]. Caring as a universal need requires continual emphasis nursing courses across the curricula. The lack of literature addressing nursing care and children with disabilities may be a function of faculty attitude.

Summary

Research findings suggest that nurse's attitudes toward children with disabilities are inconsistent. Few longitudinal studies exist to assess attitudes over time as a core competency of a caring profession. The nursing faculty are responsible to teach and measure nursing student's knowledge, skills, and attitudes during formal education. Little emphasis has been placed on the measurement of attitudes of nursing students as compared to knowledge and skills assessments. Nursing faculty has rarely been a focal point in nursing research studies, yet faculty has a significant influence on students and attitudes. The complexities and richness of the nursing profession is paralleled by the context in which nurses learn and practice. The profound changes in society will radically transform the profession of nursing and the roles nurses play in the profession. Nursing faculty are in a position to dramatically improve the quality of nursing education to meet societal needs.

Children with disabilities have been underserved in society as well as in nursing curricula [61]. Research has established that children with disabilities and their families often do not receive adequate health care. The attitude of nurses has a colossal effect on the patients they serve. Winston Churchill once said, "attitude is a little thing that makes a big difference" (1874-1965).

Research Method

The purpose of this experimental pretest-posttest two group design was to evaluate the change in attitude of nursing students toward children with disabilities over specific time intervals before and after disability education, between the experimental and the control group. The site for this study is one of the few schools of nursing in the United States that include disability data in curriculum for both adults and children in an undergraduate program. Attitudes were measured utilizing the Attitudes Towards Disabled Persons scale (ATDP-B) which is the most common valid and reliable tool to measure attitudes in research over the last four decades [62]. Attitude measurements were assessed by this researcher at pretest (time 1), posttest (time 2), and delayed posttest (time 3, follow up) utilizing repeated measures

analysis of variance (ANOVA) prior to and after disability education. Participant demographic data were displayed with descriptive statistics.

Research Methods and Design

A pretest posttest two-group study allowed the researcher to measure the difference in the attitudes of nursing students toward children with disabilities at three specific time intervals surrounding disability education. From a group of 109 predicted nursing student participants this researcher randomly assigned 44 participants to a class, which will receive a 4 hour disability education intervention. The education intervention for the experimental group intervention consisted of an overview on children with disabilities in the United States, a case study on a child with cerebral palsy, nursing care requirements, required medical equipment, medications, school services, legal implications, and community resources. The teaching strategies for this disability intervention consisted of lecture, discussion, videos, and multiple web sites. The literature review on educational interventions rarely describes any detail in the educational components on disabilities. The designed syllabus for this study utilized a conceptual approach of a child with cerebral palsy that was imbedded in the nursing process of subject and objective knowledge, assessment, interventions, and evaluations specific to neurological diseases. The 4-hour module included a global overview of children with disabilities, resources, and referrals for nurses to teach to their patients. This intervention was interactive and augmented with technology that included video clips and websites. It is vital to understand the approach was not medical in nature but taught from a nursing care perspective. The one page reflection papers allowed student to think deeper about children with disabilities and alone could be a basis for further research. Data were collected during the Spring 2011 semester before, immediately after, and 1 month after an educational intervention. The disability intervention in class was evaluated with a reflection paper. This researcher also randomly assigned 44 nursing students to the control group, which does not receive disability education. All questionnaires were answered online at the secure website at the university study site to enhance efficient and effective turnaround of data. Institutional review board's approvals were obtained from the university.

Participants

Participants for this study were recruited from the senior nursing class in one of the largest private urban universities in the United States that has one of the largest and most respected schools of nursing in the United States. Students have a diverse background and vary in age, gender, religious affiliation, ethnicity, and socio economic background. For this study, the sample size of 88 nursing students resulted in a confidence level of. 99 with a sampling error of 1%. The sample consisted of two groups of 44 graduating nursing students in an inner city school of nursing based on historical data from prior graduating registered nursing students. Based on an a priori power analysis estimating an effect size of. 40, an alpha level of. 05, and a power of. 9501, 80 participants were sufficient to assess whether attitudes of nursing students are affected by disability education. Participant confidentiality was maintained as well as the right to decline involvement in this study (Table 1).

Group	N	M (SD)	Minimum	Maximum
Experimental group	44	26.2 (4.0)	21	41
Control group	44	27.7 (5.7)	21	45
Total	88	26.9 (5.0)	21	45

Note. N = 88

Table 1: Mean age distributions, all participants.

Instruments

Yuker [63] identified factors that contribute to the formation of perceptions towards persons with disabilities that include frequency of contact, the setting, the behavior, and the quality of the contact between the disabled and nondisabled individual that influence attitudes in the development of the ADTP tools [63]. Yuker and Hurley [64] states that for the interaction to create positive attitudes the non-disabled person should: have demographic and personality characteristics similar to those of the disabled individuals with whom they interact, and should have status that is equal to the disabled person. The interaction should involve cooperation and reciprocity, be rewarding to both disabled and nondisabled participants, result in the participants getting to know one another as individuals, and persist over time (p. 6).

The measurement in this study utilizes direct methods approach measured by the Attitudes Towards Disabled Persons scale, form B, which is in the public domain. The Attitudes Towards Disabled Persons scale (ATDP) was designed as a measure of attitudes towards individuals with disabilities. The ATDP form B scale is a thirty question Likert scale that requires individuals to rate their agreement to each statement using a six point likert type scale that ranges from + 3 (I agree very much) to -3 (I disagree very much). The interpretation of the scores is based on the perceived similarity or difference of persons with or without disabilities. The ATDP scales are the most common measurement of attitude in literature and the most widely utilized tool to measure attitude towards the disabled [62]. Yuker and Hurley [64] describes scores on the ATDP have shown acceptable split half reliabilities ranging from. 78-.81 with to gauge people's attitudes alpha estimates ranging from 0.79-0.89. Normative data presented by Yuker and Block summarizes over 200 studies. There is reported evidence that ATDP scale scores show a moderate to high correlation with other measures of attitude towards the disabled such as the Interaction of Disabled Persons Scale. Yuker and Hurley [64] report validity ranging from. 54 to. 98. Furthermore, the ATDP-B correlates negatively (-40) with a measure of prejudice and social restrictiveness as described by Yuker and Hurley [64]. Scores on the ATDP have shown test retest reliability of. 84 over five weeks but this estimate decreases to. 68 in studies over four months [65]. Scoring of the ATDP form B scale according to Yuker [63] is accomplished by changing the positive signs of each of the 30 item scale after participants have responded and then obtaining an algebraic score. The sign of this sum is then reversed. The ATDP-B 30 question likert scale survey was individually scored utilizing the following instructions: a) change the signs of positively worded items in questions 1, 3, 4,6,7,10,12,13,22,26, and 28; b) add the responses algebraically; c) change the sign of the resultant; and add a constant of 90 for the final score [63] The ATDP scale form B scores are between 0 and 180, with a score of 120 or above considered a positive attitude. The higher the obtained score the more positive the attitude. Yuker also provides reminders to researchers that if 10% or fewer items are omitted; the completed items are scored as usual with a constant added to eliminate negative values by keeping the value neutral.

The ATDP-B scale identifies factors that may contribute to the formation of perceptions towards disabled persons such as the setting, behavior, frequency, and quality of contact between individuals [42]. The ATDP is an accepted measure of attitudes that has been widely used in the literature [65]. Validity and reliability of this historical tool has been established over the last thirty years, and it is the standard tool to measure attitudes [46].

The demographic questionnaire was designed for nursing students for this research to gather such data. This research required study

participants answer questions requesting age, gender, highest college degree earned, if the participant had taken a course or has had clinical experience caring for children with disabilities.

Methodological Assumptions, Limitations, and Delimitations

The methodological design of this quantitative study is to determine the differences among the variables in the participant groups. Assumptions in this study presume participants answered survey questions in an honest and timely fashion. This researcher analyzed data impartially and relevant to the study. It was anticipated that the implication of studying attitudes in nursing students towards children with disabilities will assist the nursing profession in surveying attitudes more frequently and including disability content into all existing nursing courses. It is also assumed that the importance of this research will positively affect nurses in same way regardless of title or position. The limitations of this study may include: (a) randomization did not include any demographic data; (b) students may have done the surveys quickly because of the strains of an upcoming graduation; (c) students may have difficulty remembering school experiences over time; (d) students may want to rate themselves more positive for desirability factors; (e) participants may experience fatigue or disruption when answering survey questions; and (f) students may elect not to participate in this type of study.

The possible delimitations of this study may include: (a) entry-level nursing students may have prior experience caring for children with disabilities; (b) seniors who are graduating were asked to participate in this study; (c) knowledge, skills, and attitudes toward children with disabilities were threads throughout the nursing program in a variety of didactic and clinical courses; (d) a specific course on disabilities was not offered at the university; (e) variations in clinical experiences may exist between students; and (f) the study relies upon voluntary participation to assess nurses attitudes toward children with disabilities.

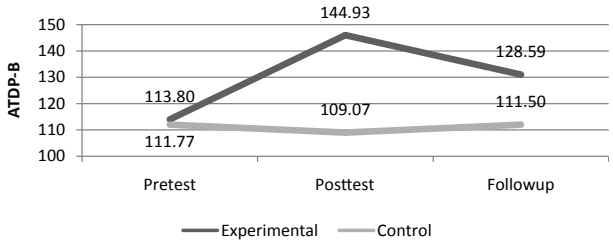
Results

A total of 88 students participated in this research. Eighty-one (92.0%) were female, including 42 in the experimental group and 39 in the treatment group. Inferential tests were not included on gender since the male subgroup in each treatment was very small and descriptively would not yield informative information.

Twenty-seven (30.7%) had a bachelor's degree, in disciplines including psychology, biology, computer science, and health education. No participants had a postgraduate degree.

A total of 22 participants (25.0%) had prior formal education in caring for children with disabilities, including 10 in the experimental group and 12 in the control group. A total of 40 participants (45.4%) had prior clinical experience caring for children with disabilities, including 17 in the experimental group and 23 in the control group. Sixty-nine participants (78.4%) were between 20 and 29 years of age, 15 (17.0%) were between 30 and 39, and 4 (4.5%) were between 40 and 49. Participants were randomly assigned but not matched on age, gender, or any other characteristics.

Data were gathered from the 88 participants at pretest (time 1, week 1 in the semester), immediate posttest (time 2, week 7 in the semester) after an educational intervention, and delayed posttest (time 3, week 11 in the semester) one month later. Possible scores range from 90 (lowest) to 180 (highest), with scores of 120 or above suggesting a more positive attitude of an individual toward persons with disabilities. The higher the ATDP-B score above 120 the more positive the attitude of the participant becomes. Mean scores were computed for the experimental and control groups for each time point of evaluation (pretest, posttest, and follow-up). Figure 1 shows the mean scores across all measures. Tables 2 and 3 shows the means scores on the ATDP-B based on whether the participants received formal education in caring for a child with disabilities. Tables 4 and 5 shows the mean scores on the ATDP-B based on whether the participants had clinical experience in caring for a child with disabilities.



Note. N=88
participants are presented in Table 1.

Figure 1: Mean Scores, Attitude Towards Disabled Persons Scale, Form B (ATDP-B).

		M (SD) [Minimum, maximum]		
	N	Pretest	Posttest	Follow up
Formal education	23	116.87 (14.90) [83, 137]	110.17 (13.01) [86, 132]	112.30 (13.54) [89, 143]
No formal education	21	110.43 (20.86) [77, 145]	107.86 (23.73) [76, 146]	110.62 (15.25) [87, 144]
Total	44	113.80 (18.07) [77, 145]	109.07 (18.70) [76, 146]	111.50 (14.23) [87, 144]

Note. [a]Formal education in caring for children with disabilities

Table 2: Mean ATDP-B Scores for Control Participants With and Without Formal Education[a].

		M (SD) [Minimum, maximum]		
	N	Pretest	Posttest	Follow up
Formal education	17	111.24 (19.84) [75, 139]	146.65 (17.93) [116, 182]	128.12 (19.84) [92, 160]
No formal education	27	112.11 (19.78) [77, 143]	143.85 (13.03) [122, 170]	128.89 (18.11) [90, 162]
Total	44	111.77 (19.57) [75, 143]	144.93 (14.97) [116, 182]	128.59 (18.57) [90, 162]

Note. [a]Formal education in caring for children with disabilities

Table 3: Mean ATDP-B Scores for Experimental Participants With and Without Formal Education:[a]

		M (SD) [Minimum, maximum]		
	N	Pretest	Posttest	Follow up
Clinical experience	12	114.67 (18.70) [83, 137]	111.17 (13.09) [88, 132]	116.75 (14.16) [89, 160]
No clinical experience	32	113.47 (18.12) [77, 145]	108.28 (20.55) [76, 146]	109.53 (13.97) [87, 144]
Total	44	113.80 (18.07) [77, 145]	109.07 (18.70) [76, 146]	111.50 (14.23) [87, 144]

Note. [a]Clinical experience in caring for children with disabilities

Table 4: Mean ATDP-B Scores for Control Participants With and Without Clinical Experience[a]

Mean scores increased in the experimental group after the education intervention, but dropped at follow-up. However, follow-up mean scores remained higher in the follow up as compared to the pretest.

The mean scores in the experimental group increased posttest and remained higher than pretest for the follow up regardless of prior formal education participants received concerning children with disabilities. This effect was not seen in the control group. In fact, pretest, posttest, and follow-up tended to show similar mean scores regardless of formal education.

The mean scores in the experimental group increased posttest and remained higher than pretest for the follow-up measurement regardless of prior clinical experiences participants received concerning children with disabilities. However, those experimental students without clinical experience showed slightly higher mean scores at pretest and follow-up than those experimental students with clinical experience. Mean ATDP-B scores were very close at the posttest measurement for students with and without clinical experience. This effect was not seen in the control group. The mean ATDP-B scores between control students with and without clinical experience remained consistent with the greatest difference being at follow-up (in favor of control students with clinical experience). It should be noted that there tends to be considerably less people (in either control or experimental groups) with clinical experience.

The mean scores in the experimental group increased for the posttest in participants who had a previous non-nursing Bachelor's degree. As in the previous tables, the mean ADTP-B scores for follow-up dropped compared to the posttest, but remained higher than the pretest mean scores. The mean ADTP-B scores for pretest and posttest were very close regardless of having or not having a Bachelors degree. The greatest difference in mean ATDP-B scores exists for the follow-up measurement (in favor of experimental students with a Bachelors degree). Overall, the number of experimental students that hold a Bachelors degree is considerably lower than experimental students without a Bachelors degree. The mean ATDP-B scores for the control students were higher for those with a Bachelors degree. The highest mean ATDP-B scores were at pretest particularly control students that hold a Bachelors degree. Control students with a Bachelors degree dropped at posttest and increased slightly at follow-up. On the other hand, control students without a Bachelors degree tended to remain consistent throughout the ATDP-B measurements.

Data were examined for assumptions of multivariate normality, homogeneity of covariance matrices, data independence, and sphericity. The assumption of homogeneity of covariance matrices required a univariate analysis because sphericity was violated since the variances for each set of difference scores were not equal. Violations of the sphericity assumption invalidated the analysis conclusions in repeated-measures ANOVA [66]. Mauchly's sphericity test was used to evaluate the data. Variances across ATDP-B measures were unequal, Mauchly's criterion=0.68, χ^2 (2, N=88)=32.25, p<0.0001, indicates that the sphericity assumption was not met. A multivariate approach was therefore used to analyze the data.

Pearson's correlation coefficients were computed to determine the intercorrelations of pretest, posttest, and 1-month follow-up scores. All repeated measures were significantly correlated and not independent. Table 8 shows the intercorrelations of test scores for the ATDP-B.

A repeated-measures analysis of variance (ANOVA), with a general linear model, was computed to determine the within-group main effect. The within-group between-groups interaction effect, and the between-groups main effect for the ATDP-B across all factors is displayed on table 9.

Table 9 shows the results of the least square means across the different administrations of the ATDP-B. The mean ATDP-B scores for the experimental increase from pretest to posttest and drop some at follow-up. Conversely, the ATDP-B scores for the control scores remain fairly consistent across ATDP-B administrations.

The within-group main effect of time on ATDP-B scores was significant, Wilks' lambda=0.60, Pillai's trace=0.40, F (2, 85)=28.59, p<0.0001 (Table 10). The between-group main effect of experimental

		M (SD) [Minimum, maximum]		
	N	Pretest	Posttest	Follow up
Clinical experience	10	104.30 (20.83) [75, 139]	145.70 (21.82) [116, 182]	122.50 (16.22) [99, 142]
No clinical experience	34	113.97 (18.95) [77, 143]	144.71 (12.72) [122, 170]	130.38 (19.05) [90, 162]
Total	44	111.77 (19.57) [75, 143]	144.93 (14.97) [116, 182]	128.59 (18.57) [90, 162]

Note. [a]Clinical experience in caring for children with disabilities

Table 5: Mean ATDP-B Scores for Experimental Participants With and Without Clinical Experience[a].

		M (SD) [Minimum, maximum]		
	N	Pretest	Posttest	Follow up
Bachelors Degree	18	120.72 (17.36) [81, 145]	113.56 (18.94) [78, 146]	116.78 (16.56) [89, 144]
No Bachelors Degree	26	109.00 (17.26) [77, 133]	105.96 (18.25) [76, 137]	107.85 (11.32) [87, 126]
Total	44	113.80 (18.07) [77, 145]	109.07 (18.70) [76, 146]	111.50 (14.23) [87, 144]

Note. [a] Participants with or without a Bachelors degree

Table 6: Mean ATDP-B Scores for Control Participants With and Without a Bachelors Degree[a].

		M (SD) [Minimum, maximum]		
	N	Pretest	Posttest	Follow up
Bachelors Degree	9	111.67 (18.63) [83, 138]	146.11 (13.90) [122, 170]	134.00 (18.08) [110, 159]
No Bachelors Degree	35	111.80 (20.07) [75, 143]	144.63 (15.41) [116, 182]	127.20 (18.70) [90, 162]
Total	44	111.77 (19.57) [75, 143]	144.93 (14.97) [116, 182]	128.59 (18.57) [90, 162]

Note. [a] Participants with or without a Bachelors degree

Table 7: Mean ATDP-B Scores for Experimental Participants With and Without a Bachelors Degree[a].

Test time point	Pretest	Posttest	Follow up
Pretest	--		
Posttest	.41 (p<0.0001)	--	
Follow-up	.31 (p=0.003)	.68 (p<0.0001)	--

Note. N = 88

Table 8: Intercorrelation Coefficients for ATDP-B Pretest, Posttest, and Follow-up Scores.

Group	Pretest	Posttest	Follow up
Experimental group	111.77	144.93	128.59
Control group	113.80	109.07	111.50

Note. N = 88

Table 9: Least Square Means for Pretest, Posttest, and Follow-up, Experimental Versus Control Groups.

versus control group was significant, F (1, 86)=32.53, p<0.0001 (Table 11). The ATDP-B*group interaction effect was significant, Wilks' lambda=0.45, Pillai's trace=0.55, F (2, 85)=51.15, p<0.0001 (Table 12). As mentioned previously, ATDP-B scores rose significantly at posttest for the experimental group but did not rise for the control group. At follow up, ATDP-B scores declined slightly from posttest but remained significantly higher than all scores for the control group.

Evaluation of Findings

The findings of this study showed that the attitudes of nurses toward children with disabilities were significantly more positive after an educational intervention, p<0.0001. The null hypothesis $H1_0$ was rejected; the $H1_a$ was accepted. This completed research was the only experimental design measuring attitudes of nurses toward children with disabilities in the United States utilizing repeated measures ANOVA. The statistically significant results of this research support the importance of disability education intervention for nursing students prior to licensure for practice. There are direct implications for nursing faculty to review and include into curricula disability education. The syntheses of educational theory with the necessary integration of key knowledge, skills, and attitudes can positively affect the attitudes of nurses caring for children with disabilities. Change can be a result of well-planned education designed in the interests of the patients under nurses' care.

The results of the repeated measures ANOVA maximizes the differences between the experimental and control groups when F is statistically significant thus attributing the effect of variances to the educational treatment. The results of the multivariate tests for interaction effect of the ATDP-B illustrate that attitudes change over time and after an educational intervention on disabilities. The univariate tests agree with the multivariate approach for within-subject and between subjects' effects of the education intervention.

Source	df	Wilks' lambda	Pillai's trace	F	Significance
ATDP-B (pretest, posttest, follow-up)	(2, 85)	0.60	0.40	28.59	p<0.0001
ATDP-B * group	(2,85)	0.45	0.55	51.15	P<0.0001

Note. N = 88

Table 10: Repeated Measures ANOVA for the ATDP-B Main Effect and ATDP*Group Interaction Effect.

Source	df	Type III sum of squares	F	Significance
Group (experimental, control)	(1,86)	19023.0	32.53	p<0.0001

Note. N = 88

Table 11: Repeated Measures ANOVA for the Group Main Effect.

Source	Mean Square	df	F	Significance
ATDP-B	4446.7	(2, 172)	26.89	p<0.0001
ATDP-B*group	7894.8	(2, 172)	47.74	p<0.0001

Note. N = 88
The Greenhouse-Geiser epsilon (ε) and the Huynh-Feldtepsilon (ε) are univariate tests that correct for violations of sphericity. The Greenhouse-Geiser epsilon was significant, ε=0.82, p<0.0001, and the Huynh-Feldt epsilon was significant, ε=0.85, p<0.0001. The results of the multivariate analysis were confirmed. The null hypothesis $H1_0$ was rejected

Table 12: Repeated-Measures ANOVA, Univariate Tests for Time Main Effect on Dependent Variable, General Linear Model.

Implications, Recommendations, and Conclusions

The findings of this research directly affect nursing curriculum content. Nursing faculty are compelled to reevaluate curriculum content, provide specific attitude measurements of nursing students at various level of education, and develop protocols that can assist students in learning to care for children with disabilities. The assessment of outcomes in education is essential to the teaching and learning processes. Future experimental research is needed for children with disabilities in relation to attitudes of nurses, nursing curriculum, and patient care outcomes.

Attitudes of nurses concerning children with disabilities are generally relatively negative [48,51]. Nevertheless, much about attitudes of nursing students toward patients with disabilities, particularly children, is not yet known. Attitude research in the healthcare professions exists, but only one identified quasiexperimental study has addressed nursing students working with children with disabilities [51]. Matziou et al. [51] compared the attitudes of 99 practicing pediatric nurses and 189 student nurses in Greece toward children with disabilities. Both groups of nurses were found to have poor attitudes toward children with disabilities. The nursing curriculum was then revised to include the topic of attitudes to disabilities, and a follow up study was then conducted using the ATDP [51]. Although overall ATDP scores remained low, there were significant posttest differences in the follow-up study, p<0.0001. The details of the nursing curriculum for children with disabilities were not published in this article. Matziou et al. [51] concluded that carefully designed curricula can influence the attitudes of nurses towards children with disabilities.

There is a lack of consensus concerning details of education for children with disabilities presents in healthcare curriculum. Even more concerning is the lack of attitude measurements in future healthcare professionals during formal education. Quality initiatives supported by the Surgeon General speak to the equal important of knowledge skill, and attitude in education for all healthcare professionals.

Recommendations

The results of this study have corroborated the need for nursing educators to require didactic educational materials and clinical experiences for children with disabilities in the nursing curriculum. The content of these courses must be designed to develop the skills, knowledge, and attitudes needed for nurses in clinical care for children with disabilities. Education affects the attitudes of students in the healthcare profession and therefore affects patient care outcomes [11]. There is a clear relationship that knowledge, skill, and attitude in professional nursing practice affects healthcare outcomes [16]. Disability research has been viewed primarily from the perspective of a social model, but there are academic implications for faculty members.

Future nursing research for people with disabilities is needed at a time when many Americans are living longer with disabilities and therefore are acquiring a variety of chronic medical conditions. Compelling insights of nurses, combined with quantitative research and larger sample sizes, can help in identifying solutions for people with disabilities who seek nursing care for healthcare issues.

Conclusions

The attitudes of nursing students toward children with disabilities were shown to change significantly in response to the introduction of a 4-hour educational module on the subject of children with disabilities. This study demonstrated the benefits of having nursing faculty members measure the attitudes of nursing students toward children

with disabilities as an outcome of nursing education. The results of this research represent a challenge to nursing faculty members to reform nursing curricula to meet the current needs of society.

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