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Nurse Faculty Perceptions of Simulation Use in Nursing Education

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In this study nursing faculty perceptions of the implementation of simulation in schools of nursing across Ontario, Canada, were explored using the Q-methodology technique. Following Q-methodology guidelines, 104 statements were collected from faculty and students with exposure to simulation to determine the concourse (what people say about the issue). The statements were classified into six domains, including teaching and learning, access/reach, communication, technical features, technology set-up and training, and comfort/ease of use with technology. They were then refined into 43 final statements for the Q-sample. Next, 28 faculty from 17 nursing schools participated in the Q-sorting process. A by-person factor analysis of the Q-sort was conducted to identify groups of participants with similar viewpoints. Results revealed four major viewpoints held by faculty including: (a) Positive Enthusiasts, (b) Traditionalists, (c) Help Seekers, and (d) Supporters. In conclusion, simulation was perceived to be an important element in nursing education. Overall, there was a belief that clinical simulation requires (a) additional support in terms of the time required to engage in teaching using this modality, (b) additional human resources to support its use, and (c) other types of support such as a repository of clinical simulations to reduce the time from development of a scenario to implementation. Few negative voices were heard. It was evident that with correct support (human resources) and training, many faculty members would embrace clinical simulation because it could support and enhance nursing education.

Keywords: *qualitative methods; nursing education; nurses as participants; statistical analysis; methods*

How nursing faculty members perceive the effectiveness of simulation in their respective programs can be the difference between whether or not the equipment is utilized effectively to promote and enhance student learning. This article presents findings from a substudy of a larger study that sought to explore how schools of nursing across Ontario, Canada, integrated simulation into their undergraduate nursing curriculum and the influence that this teaching modality had on teaching and student's learning. This substudy employed Q-methodology to explore nursing faculty members' views about the use of simulation in nursing education in general rather than to examine the adoption of simulation in education or the different levels of fidelity.

Use of Simulation in Nursing Education

The increasing use of simulation in schools of nursing across North America and abroad has resulted in many positive outcomes for nurse educators, nursing students, and patients. From a practical perspective, simulation offers an opportunity for students to engage in clinical activities that may not be available to them otherwise due to the decreasing number of clinical settings that are open to nursing students and severely limited clinical time (Curl, Smith, Chisholm, Hamilton, & McGee, 2007). In addition, the level of patient acuity has risen over time (McGillis, Doran, & Pink, 2004) and students find themselves caring for critically ill patients early in their education. Because of this, every attempt needs to be made to ensure that the students enter into the clinical area as prepared as possible. One strategy is the use of simulation.

Simulation technology is often referred to as having high, medium, or low fidelity. However, there is little agreement among educators and researchers to the definitions of each. Generally speaking, the level of fidelity refers to the degree of lifelikeness the simulation portrays (Havighurst, Fields, & Fields, 2003). Bradley (2006) suggested that simulation can be described as a spectrum of fidelity from simple to complex. Low-fidelity simulators refer to simple replications of isolated body parts. These are particularly helpful in teaching students to perform specific skills such as how to administer an intramuscular injection or start an intravenous. Decker, Sportsman, Puetz,

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and Billings (2008) distinguished between low- and medium-fidelity simulators: "Medium-fidelity task trainers integrate the use of computer technology to assist learners in developing competencies in skills such as the identification of various heart, lung, and bowel sounds" (p. 76). High-fidelity simulators attempt to replicate the entire body and are capable of reproducing many human physiologic responses. These high-fidelity simulators are often used to teach about complex physiological conditions (e.g., cardiogenic shock, anaphylaxis; Decker et al., 2008).

The benefits of using high-fidelity simulators (mannequins such as SimMan) in nursing education have been discussed in the literature from students' perspectives. Students see the opportunity to learn new clinical and cognitive skills within the safety of a clinical learning center that houses high-fidelity simulators capable of mimicking real-life clinical symptoms and responding to interventions (Issenberg, McGaghie, Petrusa, Lee Gordon, & Scalese, 2005). They appreciate the opportunity to receive immediate feedback during and following simulations and recognize that simulation is one strategy to prepare them for the "real world" (Childs & Sepples, 2006). The use of simulation as a teaching strategy also plays a key role in remediation, offering students the opportunity to further develop their skills (Haskvitz & Koop, 2004). Simulation can also decrease attrition from schools of nursing, increase student confidence in their skills, enable them to link theory to practice (Hanberg & Brown, 2006), and ultimately enhance patient care.

High-fidelity simulators provide an opportunity to enable students to engage in clinical activities without fear of harming a patient or themselves (Curl et al., 2007; Issenberg et al., 2005). In general, it is suggested that this teaching strategy promotes self-reflection while increasing critical thinking and clinical reasoning skills (Weis & Guyton-Simmons, 1998). Some suggest that simulation improves nursing students' confidence in their clinical skills (Goldenberg, Andrusyszyn, & Iwasiw, 2005).

Much has been written about how nursing students view simulation and how it can be applied in undergraduate education. However, few studies explore how nursing faculty members perceive the usefulness of simulation and their role in implementing and applying these innovative technologies as a teaching modality. In broader terms, the literature suggests that there are various barriers and facilitators to the adoption of new technologies. The most common barriers to implementing technology are a lack of time to learn, too many conflicting demands on time, and the number of resources required (Lewis & Watson, 1997). Using the Stages of Concern Questionnaire, Lewis and Watson (1997) showed that nursing faculty members were highly anxious about learning new technologies. This finding is important due to the

fact that various sources suggest that adoption of new technology is directly correlated to faculty members' attitudes. Faculty can either perceive the introduction of a new technology such as high-fidelity simulators as a threat or a challenge. They can either be frightened or excited by the prospects of integrating this type of technology into their preexisting courses. An international survey of current use and opinions regarding high-fidelity simulators in nursing education discovered that generally nursing faculty members were receptive to using simulation technology in their courses (Nehring & Lashley, 2004). However, a few were not receptive because they were fearful of the technology, hesitant to change their teaching methodology, and reluctant to use simulation because they felt that the technology was too advanced for their nursing students to use (Nehring & Lashley, 2004). These naysayers also felt that simulation technology could only accommodate a small number of students at any one time and that the time required learning the technology was too great to warrant its use.

Method

Q-methodology was used to identify common viewpoints of faculty members who had experience with simulation in nursing schools across Ontario. This method was introduced in 1935 by Stephenson (1935a, 1935b) and only employed sporadically until recently emerging as a more widely used method, mainly because of advances in the statistical analysis component (McKeown & Thomas, 1988). This method is used to identify unique viewpoints as well as commonly shared views, and it is particularly valuable in research that explores human perceptions and interpersonal relationships (Dennis, 1986). The method allows the researcher to identify groups of participants having similar and alternate viewpoints and in turn to ascertain similarities and differences between groups. It mixes qualitative and quantitative methods. In a Q-methodology study the goal is to uncover different patterns of thought rather than their numerical distribution among the larger population. In other words, the number of participants is not the important issue; rather, it is the representation of different points of view about the topic of study (Brown, 1993). Q-studies typically use small sample sizes compared to, for example, survey research; and low response rates do not bias the results because the primary objective is to identify a typology, not to test the typology's proportional distribution within the larger population (Brown, 1993). Brown (1980) recommended that 40 to 60 participants are more than adequate for most studies and far

fewer may be needed for some specific studies. He maintained that "what is of interest ultimately are the factors with at least four or five persons defining each; beyond that, additional subjects add very little" (p. 260). Therefore, a factor with at least four subjects and an eigenvalue greater than one would be considered a significant factor.

Q-methodology uses correlation and by-person factor analysis (i.e., the statistical analysis is performed by person rather than by variable, trait, or statement). Respondents are grouped based on the similarities of their Q-sorts, with each group (or factor) representing individuals with similar views, feelings, or experiences about the topic. Each individual with a significant loading ($p \leq .05$) on one factor is counted on that factor. A factor loading is a correlation between a Q-sort and the factor itself. The standard error of this correlation is estimated by $SE = 1/\sqrt{N}$ where N is the number of statements (Brown, 1980). Then, a correlation is statistically significant if it is ≥ 1.96 times the standard error.

In other contexts, the test-retest reliability of Q-sorting has been found to be 0.80 or higher (Dennis, 1988, 1992). Content validity is typically assessed by literature review and a team of three to five domain experts. The face validity of the statements is assured by using participants' exact wording of the statements with slight editing only for grammar and readability (Akhtar-Danesh, Baumann, & Cordingley, 2008). Member checking (i.e., reviewing factor interpretation with participants) is also useful, though it was not conducted in this study due to anonymity of the participants at the data analysis stage. For a complete review of Q-methodology, readers are referred to Akhtar-Danesh et al. (2008) for practical guidance and to Brown (1980) for a theoretical account.

A wide variety of statements about the use of simulation and its facilitators and barriers in nursing education was collected by reviewing data from another phase of this study. This phase included focus groups conducted with 37 faculty in four colleges and three universities. All faculty had at least 5 years of teaching experience. Statements were drawn directly from transcripts of these focus groups. In all, 104 statements were compiled into one data set (the concourse). To have a representative Q-sample we used an inductive process as there was no theoretical hypothesis or framework involved. The statements in the concourse were classified into six domains emerging from the statements themselves, including teaching and learning, access/reach, communication, technical features, technology set-up and training, and comfort/ease of use with technology. The statements within each domain were refined by the research team. An iterative consensus process was used in which each coauthor independently considered how the statements might be combined,

rephrased, or deleted for the sake of clarity and avoidance of redundancy. This process was followed by a group meeting and more independent consideration, continuing back and forth in this way until consensus had been achieved regarding the most appropriate list of statements. Two faculty members who had experience with simulation volunteered to pilot test the tool, which resulted in minor edits to clarify some statements. The final set included 43 statements that represented key ideas from each domain about the use of simulation in nursing education.

Participants in this Q-study were then asked to sort the randomly numbered final statements onto a grid, scoring each statement between –4 and +4, where negative scores indicate disagreement, until all blanks on the grid were completed (Akhtar-Danesh et al., 2008). The grid was constructed such that participants could only assign two statements a score of –4 and two statements a score of +4. Three statements could get a score of –3 and three could score +3, and so on. A package was mailed to each participant, which included detailed instructions including an example of a Q-sort. The Q-sort was completed by each respondent independently. Participants were also asked to complete a short survey including questions pertaining to demographics and previous experiences with simulation.

Analysis

The PQMethod 2.11 program was used for the analysis of Q-sorts. PQMethod 2.11 is a frequently used program developed by Schmolck (2002) and can be downloaded freely from his Web site. A by-person factor analysis of the Q-sort was conducted to identify groups of participants with similar viewpoints. So far, only two methods of factor extraction are implemented in this program: principal component method and centroid method. In addition, only two methods of rotation are available in this program: varimax and judgmental (or manual) rotations. Usually, rotation methods are informed by theoretical framework rather than simply statistical criteria. The main difference between principal component and centroid is that in principal component the variance of "loadings" is maximized where in centroid the average of the "loadings" is maximized. Although no clear statistical or theoretical advantage is provided in Q-methodology literature, there is a great support for using centroid method among Q-methodologists. In this analysis centroid method was used for factor extraction followed by varimax rotation. Then, all authors met as a group over a half day to interpret the factors; consensus was reached to assign a name to each factor and describe the viewpoint.

Results

Participants

In total, 28 faculty from 17 schools of nursing (includes universities and college/university collaborative programs) participated in this study. The age of the participants varied from 31 to 60 ($M = 45.4$ years, $SD = 9.0$ years) and their years of teaching experience varied from 1 to 31 years ($M = 9.8$ years, $SD = 8.8$ years). Faculty reported that they taught in Level 2 ($n = 3$, 31%), Level 3 ($n = 6$, 31.6%), or Level 4 ($n = 7$, 36.8%) of their nursing program. Of participants, 9 did not answer this question. Most participants felt either a medium ($n = 13$, 46.4%) or high level ($n = 14$, 50%) of comfort with technology with one person reporting low comfort (3.6%). Most faculty ($n = 22$, 78.6%) had medium or high exposure with high-fidelity simulation (SimMan), whereas 23 (82.2%) had medium or high exposure to medium-fidelity (task trainers) and 19 faculty (67.9%) had medium or high exposure to low-fidelity simulation (partial task trainers). Simulation was most often used to support theoretical/problem-based learning (82.1%) or clinical learning (75.0%) compared to remediation (32.1%) or replacement of clinical experiences (32.1%).

Faculty Major Viewpoints

Factor analysis of Q-sorts revealed major viewpoints that describe four groups of faculty: (1) Positive Enthusiasts, (2) Supporters, (3) Traditionalists, and (4) Help Seekers. Among the participants, 24 faculty significantly loaded on these four factors. A total of 4 faculty members did not load on any factors, thus they are not represented by these major viewpoints. There was no statistically significant relationship between the factors and any of the demographic variables.

Factor 1 (Positive Enthusiasts). Of the faculty, 9 loaded on this factor (Table 1). Positive Enthusiasts reflected the view that simulations have great potential to support learning and makes learning in the clinical settings much more valuable. They disagreed that limitations on space and equipment in the lab make it very difficult to fully simulate the clinical experience and that scheduling is a nightmare. They strongly opposed the statement that "the hardest part is developing accurate and believable scenarios."

Table 1
Distinguishing Statements and Statements With Extreme Scores for Positive Enthusiasts (Factor 1)

Statement	Factor 1	Factor 2	Factor 3	Factor 4
Distinguishing statements				
Simulations have great potential to support learning and we're looking toward using them to their fullest capacity.	3	1	0	1
It makes learning in the clinical setting that much more valuable. If the students get used to seeing the simulators and related equipment and touching things and working with things in the lab, it will decrease their anxiety when they're in the clinical setting.	2	3	0	0
Limitations on space and equipment in the lab make it very difficult to fully simulate the clinical experience.	–2	–1	0	0
The learning curve to use simulation technology is a huge stumbling block. You have to be motivated to use it.	–3	1	0	1
It's a scheduling nightmare.	–3	–2	0	1
The hardest part is developing accurate and believable scenarios.	–4	1	0	–2
Statements with extreme scores				
I think the purpose of the mannequins is for complex skills like resuscitation, not just going in to practice. We have other resources to practice basic skills.	–3	–4	–2	–2
The simulators facilitate the critical thinking because we can create abnormalities that the students are asked to recognize.	3	4	2	2
Going out to clinical weeds out the people who shouldn't be nurses. You can't get that from simulation.	–3	–3	–1	–4
Under the safety of the simulation, you can help students develop and that facilitates more advanced thinking. It becomes a pattern prior to going out to practicum.	4	3	1	0
Simulations help students in learning clinical decision making.	4	4	1	–1

Factor 2 (Supporters). This factor was loaded by 5 faculty members (Table 2). Supporters believed that simulation makes learning in the clinical setting much more valuable and provides opportunities for faculty to facilitate student critical thinking, especially in Year 1 when the students are not familiar with how to deal with a clinical situation. They also believed that after using simulations students are able to adapt to clinical setting much better than coming in cold. They did not believe that scheduling is a nightmare and feel that students see the mannequin as a client. In addition, they believed that students can tell if they are actually hurting the patient when working with the mannequins and they were able to gain a realistic point of view about patients' feelings.

Factor 3 (Traditionalists). In all, 7 faculty members loaded on this factor (Table 3). Traditionalists believed that simulation can enhance but not replace clinical experiences and that they would never support less clinical time over these labs or scenarios. They thought that students don't have sufficient access to real people. This group insisted that they will not replace the real practical learning with simulation. They disagreed that simulations help students get more comfortable with the nursing role. They felt that there are not enough human resources in their programs and propose a provincial repository of creative resources, such as simulation scenarios. Respondents felt strongly that simulations did not help students learn about communication or prepare them for community health placements.

Factor 4 (Help Seekers). This factor included 3 faculty members (Table 4). Help Seekers expressed the need for more education for faculty on simulation and a provincial repository of creative simulation applications. They also shared the view with Factor 3 that there are not enough human resources in their program to fully integrate simulation within the curriculum and that simulation is time-intensive for faculty, which is not built into their teaching time. However, they disagreed that the hardest part is developing accurate and believable scenarios and felt that there are not enough mannequins to support learning.

Consensus statements. Finally, we identified six consensus statements that did not distinguish between any pair of factors and were scored similarly by all faculty members. All faculty members agreed that in regard to clinical activities, "simulation fills the gap because they are not always going to have a chance to perform the activity in a clinical setting and if

Table 2
Distinguishing Statements and Statements With Extreme Scores for Supporters (Factor 2)

Statement	Factor 1	Factor 2	Factor 3	Factor 4
Distinguishing statements				
It makes learning in the clinical setting that much more valuable. If the students get used to seeing the simulators and related equipment and touching things and working with things in the lab, it will decrease their anxiety when they're in the clinical setting.	2	3	0	0
It provides an opportunity for faculty to facilitate the critical thinking steps especially in Year 1 when they're not familiar with how to deal with a situation.	–1	2	–1	0
After using simulations, students are able to adapt to the clinical setting much better than coming in cold.	1	2	–1	0
It's a scheduling nightmare.	–3	–2	0	1
The students see the equipment (mannequin and supplies) and not the client.	0	–3	1	–1
On the simulator students can't tell if they're actually hurting them. Students don't get that realistic point of view about how that patient really feels.	–1	–3	3	1
Statements with extreme scores				
I think the purpose of the mannequins is for complex skills like resuscitation, not just going in to practice. We have other resources to practice basic skills.	–3	–4	–2	–2
Overall the more students are using simulation the more they're starting to accept mannequins as real people.	–1	–4	–3	–2
The simulators facilitate the critical thinking because we can create abnormalities that the students are asked to recognize.	3	4	2	2
Going out to clinical weeds out the people who shouldn't be nurses. You can't get that from simulation.	–3	–3	–1	–4
Under the safety of the simulation, you can help students develop and that facilitates that more advanced thinking. It becomes a pattern prior to going out to practicum.	4	3	1	0
Simulations help students in learning clinical decision making.	4	4	1	–1

Table 3
Distinguishing Statements and Statements With Extreme Scores for Traditionalists (Factor 3)

Statement	Factor 1	Factor 2	Factor 3	Factor 4
Distinguishing statements				
Simulation is an enhancer, not a replacement to clinical. I would never support less clinical over these labs or scenarios.	2	0	4	2
You can't replace the real world. Nursing students are not having sufficient access to real people; we need that real contact.	0	–2	4	–3
On the simulator students can't tell if they're actually hurting them. Students don't get that realistic point of view about how that patient really feels.	–1	–3	3	1
There are not enough human resources in our program to do this in a fully integrated way within the entire curriculum.	–2	–1	2	3
Even though students say it was very useful to them, we may not necessarily have seen that translate in the clinical setting.	–2	–2	2	0
We need a provincial repository of the creative work that other people have done, some centralized holding tank of scenarios that you could electronically tap into.	0	0	2	4
Simulations help students get more comfortable with the role of the nurse.	2	1	–3	0
Simulations can help prepare students for community health placements.	0	–1	–3	–1
Simulations help students learn about communication.	1	0	–4	–1
Statements with extreme scores				
Simulations help students learn psychomotor skills.	2	1	3	0
Overall the more students are using simulation the more they're starting to accept mannequins as real people.	–1	–4	–3	–2
The mannequins are pretty close to reality.	–1	–2	–4	–4
To be successful you start with simple simulations, learn from it and build on it.	2	2	3	–1

Table 4
Distinguishing Statements and Statements With Extreme Scores for Help Seekers (Factor 4)

Statement	Factor 1	Factor 2	Factor 3	Factor 4
Distinguishing statements				
You need more education for faculty on simulation.	1	2	1	4
We need a provincial repository of the creative work that other people have done, some centralized holding tank of scenarios that you could electronically tap into.	0	0	2	4
There are not enough human resources in our program to do this in a fully integrated way within the entire curriculum.	–2	–1	2	3
You need set up time; it is time-intensive (faculty) and that's not built into teaching time.	–1	0	1	3
The hardest part is developing accurate and believable scenarios.	–4	1	0	–2
The difficulty we presently have is not enough mannequins (all types).	–1	–1	–1	–3
Statements with extreme scores				
Going out to clinical weeds out the people who shouldn't be nurses. You can't get that from simulation.	–3	–3	–1	–4
The mannequins are pretty close to reality.	–1	–2	–4	–4
With simulation experience, students are more eager to get involved with the clients in the clinical setting; students in the past tended to be a little more hesitant.	1	0	–2	–3
You can't replace the real world. Nursing students are not having sufficient access to real people; we need that real contact.	0	–2	4	–3

they can simulate it, then students can at least get a feel for it" (scores ranged from +2 to +3). Faculty members generally disagreed with the following statements: "The difficulty we presently have is not enough mannequins (all types)" (scores ranged from –1 to –3); "the more you use simulation, the greater the cost" (score for all factors was –2); and "using simulations, students learn prioritizing the care of more than one client" (scores ranged from 0 to –1). All four groups generally felt neutral about

the following statements: "Using simulation does build student's confidence; when they are in clinical they're not afraid to speak out about their findings" (scores ranged from 0 to +1) and "we have been using simulations in nursing education for years (video, DVDs, CDROM, task trainers)" (scores ranged from –1 to 0).

Discussion

Results from this study show that nursing faculty members, in general, are very supportive of the use of simulation equipment and simulations to support learning. They also feel that it is a valuable teaching strategy to fill learning gaps. We identified four major viewpoints that reflected faculty members' perceptions of the use of simulation (whether it was the simple use of equipment or full simulations) in undergraduate nursing education. The four perspectives were described as Positive Enthusiasts, Supporters, Traditionalists, and Help Seekers. Each of these groups held unique views about barriers and best uses of simulation in nursing education. These varying viewpoints are important for faculty and administrators to recognize as they implement the use of simulation in their nursing programs.

Positive Enthusiasts could also be described as the champions for simulation in their respective institutions. These individuals who exhibited a very positive attitude felt that simulation had great potential to support learning of simple to complex skills and could help reduce student anxiety before entering the clinical setting. They also felt that using simulations could help weed out weak students and did not see many problems or barriers with using simulations. A positive attitude toward simulation was also discovered by Feingold, Calaluce, and Kallen (2004); Nehring and Lashley (2004); and King, Moseley, Hindenlang, and Kuritz (2008) as influencing the use of simulation. Others have also found that a positive attitude was directly related to whether or not simulation was integrated into the curriculum and whether or not it was used effectively by faculty and students (Hu & Chau, 1999; Parr & Sweeney, 2006). The faculty members in our study were also positive about the amount of equipment, supplies, and mannequins required to engage in simulation. This is not surprising given that in 2003 to 2005, the Ontario Ministry of Health and Long-Term Care provided colleges and universities in Ontario with more than $20 million in funding to supply schools with simulation equipment to help prepare students to enter clinical settings (Ministry of Health and Long-Term Care, 2005).

Results from the current study showed that all faculty members felt that the use of simulations was a valuable way to fill learning gaps, a finding that has been supported by others (Curl et al., 2007). Because of their positive attitudes, administrators may find it beneficial to team up Positive Enthusiasts and Supporters with Help Seekers in an attempt to provide them with more support.

Help Seekers are similar to Positive Enthusiasts and Supporters in that they too are keen on using simulation to support nursing education. However, Help Seekers recognize several practical barriers, including time to set up the simulations and inadequate human resources to integrate this teaching strategy into the curriculum. In order to save time, these individuals suggest that a repository of scenarios be developed to decrease the burden on faculty from having to develop them. This group is not alone. A study by Feingold et al. (2004) discovered that 75% of the faculty indicated that they would use simulation more if they had additional time and support. A study of the use of simulation by anesthesiology staff and residents in Ontario showed that medical staff identified more barriers for the use of simulation and found it less relevant for training compared to residents (Savoldelli, Naik, Hamstra, & Morgan, 2005). The authors concluded that although anesthesiologists have been leaders in the use of simulation for training, it is still not well integrated as a regular activity among staff. Barriers are somewhat similar to those perceived by Help Seekers. They include a lack of free time, financial issues, and stress and fear of educators' or peers' judgment of abilities. They argue that a "culture of safety" needs to be promoted where learners and educators reflect, disclose, and analyze errors that occur when using simulation. Although Positive Enthusiasts may be valued as mentors to support Help Seekers, they may not be as helpful to Traditionalists who might view Positive Enthusiasts as zealots for simulation.

Traditionalists differ significantly from Positive Enthusiasts about their views on simulation. The Traditionalists group places high value on face-to-face learning and feels that simulation is an enhancer rather than a replacement for clinical experience. They see limits in learning with simulation. For example, they disagree that simulation can help students learn communication skills, become comfortable with the role of nursing, and get prepared for community health placement experiences. The Traditionalists do not feel that mannequins reflect reality. These findings are contrary to those found in the literature that suggest that simulations can and do reflect reality when the proper amount of time is allotted for the development and implementation of scenarios. In addition, the literature suggests that scenarios using simulators is an effective strategy for improving a variety of clinical skills, including communication.

However, much of the nursing literature describes self-reported outcomes that may be challenged. Supporters may also be able to assist Traditionalists to see the potential for simulation to enhance critical thinking, although it should be noted that they will conflict with Traditionalists in their beliefs about simulation reflecting reality.

Similar to the Positive Enthusiasts, Supporters feel that simulations can support learning in a number of ways. Simulation is seen as decreasing anxiety and assisting adaptation to the clinical setting as well as supporting clinical decision making, critical thinking, and advanced thinking. The Supporters group views simulation as a strategy to enhance multiple aspects of learning that goes beyond the perceptions of the other three groups. They also feel that students can see the client past the mannequin and feel a sense of reality (i.e., when they are hurting the patient) in the simulation. King et al. (2008) also discovered that faculty believed that the patient simulator was capable of providing students with a realistic clinical experience and therefore was an effective teaching strategy. This was particularly interesting considering the fact that the majority of faculty surveyed had no formal training or experience using the patient simulator.

These results suggest that schools of nursing will likely have a mix of faculty viewpoints about the value and potential uses of simulation in nursing education. This was also seen in the varying views of simulation held by staff and residents in anesthesiology (Savoldelli et al., 2005). There may therefore be some value in administrators structuring teams to implement, train, and promote the integration of simulation in curricula taking into account a match with the activities required with the viewpoints of faculty. King et al. (2008) found that attitude was the most important predictor of whether or not nursing faculty members integrated the patient simulator into their teaching. One important element that also influenced the uptake of this technology was whether or not there was technological support for the faculty, so that they could focus more on the content being taught and less on the technology and its related challenges (King et al., 2008).

There may be value in providing ongoing training in simulation to increase uptake of the technology. The Supporters and Positive Enthusiasts may be the faculty to enlist in providing this training. Lewis and Watson (1997) showed in a before and after study that faculty involvement in a series of computer technology workshops was related to increased faculty interest in learning more about computers. King et al. (2008) developed an educational program intervention designed to enhance nursing faculty members' beliefs about human patient simulators and found that this training had a statistically significant ($p < .05$) impact on the faculty members' attitudes about simulation. These individuals felt more comfortable and competent to

use the simulators after the teaching session and were also more convinced that the simulators provided a realistic patient care experience.

This study is the first to examine faculty attitudes regarding simulation on a large scale. It provided new insight into the barriers related to the implementation of simulation equipment and the development of simulations for the purposes of educating nurses in a variety of clinical and nonclinical skills. This study has provided some descriptors for the types of faculty members found within a large number of schools of nursing across Ontario. However, there were some limitations to this study. First, not all schools participated in the exercise, so these data may not be fully representative of all faculty members' experiences. Second, data were collected within 2 to 3 years of the schools of nursing receiving the new equipment, so faculty may have had limited exposure to the equipment and even less opportunity to integrate it into their curriculum. In addition, more research is needed to identify best practices for the use of simulations in nursing education. What learning can be best supported by simulation? Where is the best value added? Obtaining answers to these questions with empirical data may assist faculty and administrators who have divergent viewpoints to overcome potential conflicts about where and how to implement simulation most effectively in nursing education.

Simulation is perceived by nursing faculty to be an important element in nursing education. It is one that can be used to support learning but cannot be used to replace "real-life" clinical learning. Findings from this study suggest that when examining the attitudes of nursing faculty regarding simulation there are four types of individuals: Positive Enthusiasts, Supporters, Traditionalists, and Help Seekers. Overall, there is a belief that clinical simulation requires additional support in terms of the time required to engage in teaching using this modality, additional human resources to support the use of this technology, and other types of support such as a repository for clinical simulations to reduce the time from development of a scenario to its implementation in teaching. Few negative voices were heard and it was evident that with the correct support (human resources) and training, many faculty members would embrace clinical simulation because they felt that it could support and enhance nursing education.

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