

RESEARCH ARTICLE

Exploring nursing students' experiences of blindness simulation: A phenomenological study

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Abstract

Aim: The aim of this study was to explore the experiences of blindness simulation among a group of nursing students.

Design: This qualitative study was conducted using an interpretive phenomenological method.

Methods: Using purposeful sampling method, students were informed and invited to participate in the research through the Website of Tehran School of Nursing and Midwifery. We listed the candidates and until data saturation and compilation of the study, 8 students entered the study. They shared their experiences about blindness simulation through individual in-depth and semi-structured interviews. We continued the interviews until the data were saturated. The transcribed interviews were analysed by Colaizzi's approach.

Results: The results of data analysis resulted in three major themes and nine sub-themes, which were conceptually named based on their nature. The major themes included abandoned in the labyrinth puzzle, vision of heart and self-alienation.

KEYWORDS

blindness, care, nursing students, qualitative research, simulation

1 | INTRODUCTION

The visual *impairment* is a very important public health problem and a serious condition that imposes heavy costs on the healthcare system (Frick et al., 2010). Every 7 min, one person in the world encounter visual impairment (Shamshiri et al., 2016). According to the WHO (World Health Organization), about 90% of those with low vision and blindness live in developing countries such as Africa and Middle East including Iran (Pascolini & Mariotti, 2012). The existing statistics show that about 115,000 to 120,000 blind people live in Iran that is among the first 16 countries in terms of blind population (Shahbazzadegan et al., 2018). The most common causes of blindness were 41.8% cataracts, 15.5% trachoma, 13.5% glaucoma, 0.9% Onchocerciasis and 28.3% of other diseases (Maeiat et al., 2013).

Nurses, as the key healthcare professionals who deal with the blind people, should identify patients' social, health and rehabilitation needs and problems (Kopp, 2013), but they are often confused about how to care for the blind patients as they have been trained to care for non-blind ones, as a result they provide a typical care to blind patients as they would to non-blind ones (Shahbazzadegan et al., 2018). One of the methods that can be applied to better understand disable people is to simulate disability. Disability simulation is a form of active learning in which, physical limitations such as blindness is simulated for healthy people like wearing the blindfold. This method can affect individuals' attitudes, especially for students and is useful for in-service training for those who deal with disable people (Silverman, 2015).

Currently, most universities around the world are looking for educational methods that can expand and enhance clinical and

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self-directed learning as well as clinical decision-making capacities (Kassab & Kenner, 2011). Simulation is an educational technique that can facilitate learning and improve learner's performance (Pazargadi & Sadeghi, 2011). Simulation of disabilities is a type of active learning in which, temporary occurrence of physical injuries such as blind-folds can affect people's attitudes, which is especially useful not only for students but also for training of those who work with the disable people (Silverman, 2015). Simulation as a Learning Tool can lead to the development of learning activities, knowledge acquisition or change of attitude about a truth (Burgstahler, 2014), it creates a representation of elements of reality to develop a learning activity so participants develop skills, gain knowledge or change their attitude about that reality (Burgstahler, 2014). Ideally, the experiences of participants are as realistic as possible (Burgstahler, 2014) and cause students to understand blind people, empathize with them and accept them as much as possible (Silverman, 2015). Although empathy is an integral component of professional care, Levett-Jones, et al. reported in their study that vulnerable patients' groups, such as people with a disability, frequently experience health care that is less than optimal and lacking in empathy. While empathic care contributes substantially to both physiological and psychosocial patient outcomes, sometimes, that healthcare professionals have a limited understanding of the perspectives, concerns, needs and healthcare preferences of people with a disability. Educational interventions targeting empathy, such as simulation, have had encouraging results in changing healthcare students' attitudes to vulnerable patients and stigmatized groups. In particular, experiential simulations where learners are asked to "literally stand in the patient's shoes" have been identified as an effective approach for teaching empathy (Levett-Jones et al., 2017). Application of simulation in nursing can lead to the development of knowledge, skills, performance, critical thinking and self-confidence of nurses (Abdullah Al Gharibi, & Arulappan, 2020). Due to lack of access to adequate number of patient for training, lack of access to clinical situations, and large number of students in the clinical setting, the use of simulation in nursing education is suggested to be a useful and evidence-based methodology (Pazargadi & Sadeghi, 2011). Although the simulation cannot cause students to truly understand disabilities due to the lack of time to adapt to the reality of disability and also having assurance that the existing conditions are temporary, this method often stimulates the peoples and encourages them to learn more. This method is also known for its approach in changing perspectives, and increasing empathy and self-awareness (Burgstahler, 2014). However, if the simulation is not done correctly, it can lead to a misunderstanding towards disable people, their adaptation time, support systems and strengthening of other abilities (Silverman, 2015). Nurses should be able to understand their clients in order to provide better care; simulation allows the students to go to the patient's skin and experience his world and provide better care according to their new experience (Levett-Jones et al., 2018). The main objective of phenomenological qualitative study is to describe the lived experiences of target group (Streubert-Speziale & Carpenter, 2011). The present study seeks to identify and describe nursing students' experience of blindness simulation. Although a range

of different simulation modalities have been used in different studies, for example, standardized patients, manikins, role-plays, games and virtual reality; a systematic review identified that the most effective empathy simulations are those where the learner assumes the role of the patient. These simulation approaches, by taking on the patient role, enabled learners to reflect on the patient's perspective and consider their feelings, perspectives, needs and concerns (Levett-Jones et al., 2017). Therefore, in this study, the students themselves played the role of blind people.

2 | BACKGROUND

There have been various simulation studies in the world that have simulated disabilities such as limb paralysis, acquired brain injury blindness, deafness, Etc. (Levett-Jones et al., 2017; Silverman, 2015). Silverman reports a simulation study in which a number of students were randomly divided into two groups. One group used a wheelchair for 25 min on campus and one group walked normally on campus. The results of the study showed that people who used wheelchairs found more empathy towards people with disabilities and were more likely to donate to these people and volunteer to help the disabled when needed (Silverman, 2015). Another study was to examine the impact of an immersive point-of-view simulation on nursing students' empathy towards people with an acquired brain injury. The simulated "patients" wore a hemiparesis suit that replicated the experience of dysphasia, hemianopia and hemiparesis. Results from this study attest to the potential of point-of-view simulations to positively impact nursing students' empathy towards people with a disability (Levett-Jones et al., 2017). In fact, in-depth study of these experiences can help to shed light on their overt and covert aspects and analyse them in detail. This objective is only possible through qualitative study. Studying and analysing individuals' experiences can help community to have a more appropriate behaviour towards blind people. At the same time, the result of such studies and analysis can be used to provide a more appropriate health, psychological, social and support services for blind people.

2.1 | Study aim

The aim of this study was to explore the experience of blindness simulation among a group of nursing students.

3 | METHOD

3.1 | Study setting

This study was conducted in different areas of the School of Nursing and Midwifery, Tehran University of Medical Sciences (such as classroom, dining room, yard, library, restroom, hall, etc).

FIGURE 1 Preparing nursing students to blindness simulation



FIGURE 2 Simulation of blindness



3.2 | Study design

This is a qualitative study with phenomenological approach that was conducted by Colaizzi's approach (Colaizzi et al., 1978). The purpose of phenomenological research is to explicitly describe and identify phenomena, as perceived by individuals in a particular situation. Phenomenology is useful for examining lived experiences and examines the people as it is experienced (Vanderstoep, 2009). Phenomenology helps to gain a deeper understanding of the nature and meanings of daily experiences. The phenomenologist asks what is this experience and what does it look like? (De marrais & tisdale, 2002).

3.3 | Participants

Since there is no predetermined sample size in the qualitative studies, sampling in such situations where no new data are extracted, continues until data saturation, that is, until the quality, completeness and amount of the information was sufficient and no new themes were elicited in the interviews. In order to find volunteer students to simulate blindness, after announcing the project in the faculty's information website, the students welcomed the project and entered the study. We registered the candidates and entered 8 students in the study until data saturation and compilation of the study. A total of 8 participants were interviewed. Data saturation

was reached after 6 interviews but two additional interviews were completed to make certain that no new themes developed. Inclusion criteria in this study were second semester or higher in nursing. Bachelor of Nursing in Iran consists of 8 semesters (two semesters per year); Nursing students go to the hospital from the second semester and start clinical nursing care. Exclusion criteria were as follows: having refractive and visual impairment, having disorder that could potentially cause injury when wearing blindfold (such as hemodynamic, balance and musculoskeletal disorders) and having a blind family members.

3.4 | Data collection

In order to conduct this qualitative study, in a group meeting, the researchers explained the purpose (which was to have the experience of someone who has suddenly become blind through simulation) and method of study to the participants after obtaining their consent. For this purpose, the researcher closed the participant's eyes using a blindfold for at least 3 hr in a way that they were not be able to see the surroundings and perceive light. Also, we gave one cane to each student to prevention of their physical injury. The participants were then asked to perform their normal activities at the school during this time with their eyes closed.

The study started at different hours in the morning (Whenever the students were more comfortable; but it usually started around 10 o'clock in the morning) and lasted at least 3 hr. During the 3 hr (and more), students attended classes, walked the hallways of the college, ate at the university restaurant, went to the restroom, interacted with their friends and their teachers, prayed and did other miscellaneous activities (Figures 1 and 2).

The interview session was held upon the participant's prior notice and readiness. After at least 3 hr of restricted vision, the students were asked to describe their experiences. The in-depth and semi-structured interview was the main method of data collection. All interviews were conducted individually by one open-ended question: What was your experience of blindness simulation? We used digital audio recorders to record the interviews. Interviews were held at participants' preferred time and in a quiet place and lasted 30–60 min. Interviews were transcribed verbatim at the suitable time.

3.5 | Data analysis

In order to analyse the data, Colaizzi's 6-step method was used. This procedure entails the following steps: (a) Read all the participants' descriptions of the phenomenon under study in order to obtain a feel for them. (b) Extract from each transcript significant statements that directly pertain to the phenomenon being studied. (c) Formulate meanings for each of these significant statements. (d) Organize the formulated meanings into theme clusters. (e) Integrate the results of the data analysis so far into an exhaustive description of the phenomenon under study and (f) return to

the participants with the exhaustive description to achieve final validation. (Colaizzi et al., 1978).

The research team consisted of four researchers who had experience in phenomenological research. Two people were responsible for conducting the interviews and taking notes, and two were responsible for analysing the data.

3.6 | Trustworthiness

Credibility was confirmed by selecting the appropriate data collection method for the interviews. Member check was used to prolong the involvement of the researcher to increase the credibility of the data and, after encoding, the interview transcripts were returned to the participants to ensure the accuracy of the codes and the relevant interpretations. Dependability was established by detailed and descriptive data analysis and direct references to the professional experiences of the individual. Raw data were translated by a professional translator from Farsi (Persian) into English and vice versa to preserve maximum accuracy of participant expressions in the context. The conformability and consistency of the analysis were maintained through research team meetings to discuss and dissect the preliminary findings (Yilmaz, 2013).

3.7 | Ethical consideration

This research carried out under the supervision of Tehran University of medical sciences research ethical committee with IR.TUMS.VCR.REC.1396.4576 ethical code. All participants were asked to sign the written consent upon knowing the study aims. Confidentiality of the data and early withdrawal of the participants were in compliance with the research rights.

4 | RESULTS

Volunteer students who participated in the study were studying in the 3rd semester (1 person), 5th semester (3 people), 6th semester (2 people) and 7th semester (2 people) who were studying Tehran University of Medical Sciences with a mean age of 20 years, one of the participants was a girl and seven of them were boys. After data analysis and encoding, 357 initial codes were obtained. The codes were classified in three major themes (Abandoned in the labyrinth puzzle, vision of heart and self-alienation) and 9 sub-themes (Table 1).

4.1 | Abandoned in the labyrinth puzzle

The participants described their experience of blindness simulation as being abandoned in the labyrinth puzzle of life. This theme had three sub-themes: living in ambiguous darkness, living in fear and unpredictable surrounding.

TABLE 1 The study results' themes

Major themes	Sub-themes
Abandoned in the labyrinth puzzle	Living in ambiguous darkness, living in fear unpredictable surrounding
vision of heart	Revelation; an unknown power, enhanced focus and precision optimal use of other senses
Self-alienation	Dependence emotional isolation reduced self-confidence

4.2 | Living in ambiguous darkness

The study participants described their blindness experience as living with ambiguity, which was stressful and unpleasant. The uncertainty and confusion about doing things that they normally have no problem doing them had left them in an ambiguous darkness.

It was like riding a car that has no steering wheel. You just have the accelerator and brake pedals with no steering wheel to control the car. You can't drive when you have no steering wheel.

(P7)

Blindness is like a dark room and you can't see anything, like watching a movie without sound; you think something is missing

(P1)

It's like you are in a dark black hole with open eyes. You try so hard to figure out what you're doing, where you're going. Whatever you try, there is nothing

(P8)

4.3 | Living in fear

Fear is a feeling, which is created in human as a result of being threatened. Undoubtedly, for a person who has always relied on his vision for navigation and everyday living, the loss of strongest and most helpful sense of vision can be a powerful experience that is associated with fear. The participants referred to the loss of vision as a dominant experience.

Fear of abuse; some directed us to wrong direction. Anything could have happened to us. I might even fall to the ground and suffer physical injuries. I was also scared of such thing happen to me in reality.

(P5)

I felt insecure as people could easily take my purse and hurt me" It's as if this fear is always with you. In the cafeteria, my friends would take my food to have fun.

(P4)

When the class was over, someone came and took me to the midwifery building. I didn't know how much I could trust him, or where he is taking me and what is happening

(P8)

4.4 | Unpredictable surrounding

The notion that the participants had lived with vision to this day and they suddenly had to continue living in the dark world, induced a sense of unpredictability towards surrounding and individuals in them. The students also believed that prior knowledge reduces this feeling and patients who have no idea of surroundings and individuals in their mind are unable to predict their surroundings.

At first, I felt confused about where I was and half an hour, I could guess that I was near the stairs and I could go up and down, but still didn't know where I exactly was

(P1)

Nothing is like what you think. I was talking to someone as at first I thought he is someone I know. When I asked his name, I found it is nothing like what I thought

(P3)

I thought I knew the school well. After all, I've been here for a few years. But when my eyes were closed, I realized I had a serious problem recognizing my situation. I told myself that what a real blind person does when enters in a completely different environment.

(P7)

4.5 | Vision of heart

Revelation; an unknown power, the enhancement of focus and precision, and the optimal use of other senses are among factors that allow people who experience blindness to see with vision of their hearts.

4.6 | Revelation; an unknown power

Often, Human being receives information through his five senses, but sometime, we receive some information without this logical ways, it is like revelation; the divine or supernatural disclosure to humans of something relating to human existence.

They don't see, but they understand everything. They even understand the heavy look

(P1)

It was like as if something was shaking in my head and I was just guessing, most of them were right. Whoever came, not only because of his voice, but also because of his movements, I could guess who he was. I guessed more than 15 people around me without seeing them.

(P6)

My sixth sense got very strong. Especially after an hour that passed and I was a little out of confusion. I could have guessed very well. It was as if someone was telling me what was going on around me now.

(P4)

4.7 | Enhanced focus and precision

When the sense of vision is impaired, people use all sense of precision and focus to do things and continue living.

I may not care about everything during the day. For example, I have a friend who wears a special deodorant. I might not pay attention to that, but today when he passed me, I recognized the scent and guessed that might be him.

(P3)

Not seeing will make you notice someone who passes you by. You try to focus more

(P2)

Although I always pay attention to slides in class, today I couldn't see and I could only hear lecturer's voice. I realized that I understood very well.

Normally, I usually don't pay much attention to lectures in class.

(P8)

4.8 | Optimal use of other senses

According to the participants' experiences, in the absence of vision, focusing on other senses helps to partially compensate for the vision lost and reinforce other senses.

I lost my vision but instead I use my hands a lot. Other senses will be reinforced when someone loses a sense. The lost sense cannot be replaced, but this helps a little

(P7)

It was a very interesting feeling for me. I had never touched the college stairs before this, but today I touched it frequently with my hands. I felt my ears get sharper too. We were sitting in classroom, someone passed me and I understood. My friends were surprised and said, "How did you find out?" But I understood.

(P6)

In the dining room, I touched my food with my hands. For example, I realized where the rice was and where the kebab was. The sense of smell also helped me a lot. I smelled almost everything I could get my hands on, and I understood very well what it was.

(P4)

4.9 | Self-alienation

Alienation literally means losing or cutting off from something. In this case, the person loses self-awareness. Also, dependency, emotional isolation and reduced self-confidence were the cases of alienation from the perspective of participants.

4.10 | Dependency

Dependency is a term that evokes a sense of need. The need for help and support of others for daily tasks, mobility, routing and affairs that the healthy people alone can accomplish. Dependency along with blindness was an experience that the participants mentioned in their statements.

Nothing really can be done alone. You can't even walk never mind going out to do important work. There should always be someone there to help you.

Dependency is always there. You should have someone to take care of you.

(P3)

When I entered the self-service, they gave me a tray. I took two steps and said: I can't go any further. I felt that I was about to fall at any moment so, I gave the tray to someone else to carry it for me.

(P6)

I wanted to go to the restroom, but I gave up it and preferred to control myself until my eyesight would return, because I really couldn't do anything and couldn't ask my friends to help....

(P4)

4.11 | Emotional isolation

The need to communicate is one of the most basic needs of every person in life. The emotional isolation was referred to by the participants as a component of self-alienation. According to the participants, not seeing and being deprived of the sense of vision can lead to emotional isolation.

It can affect one's emotional relationships. For example, appearance is one of the things that attracts opposite sex. You can't see the personality of someone

(P6)

I think we have to be very careful with the blind because they become isolated and don't communicate with others, and as a nurse I try to be more careful with them.

(P2)

I didn't want to communicate with others. I didn't feel well. It was as if everyone was talking about me. I wanted to be in a place where no one could see me. Even though I couldn't see, I could feel the way others looked at me which was bothering. Except My friend, who was with me all the day today, I wanted to be away from everyone.

(P1)

4.12 | Reduced self-confidence

Self-confidence is a psychological condition in which, one has the confidence and ability to successfully perform a task because of previous experiences. For students, the others' sense of compassion and perception, and negative feelings about own self affect the self-confidence of blind person.

Others' sense compassion towards blind people does not increase their confidence. Sense of compassion may help them, but it is very harmful mentally

(P5)

I was always afraid that I wouldn't be able to do things right; when I ate my lunch, I was afraid that I would spill water now, or for example, drop the food on myself

(P2)

At first, I didn't trust myself at all. I was always afraid of ruining everything I did. For example, I was afraid of falling on the ground or hitting someone or doing something to make fun of others. That's why I tried not to do anything to avoid any problems. But little by little I got better. Little by little, I realized how I could do my job properly.

(P7)

5 | DISCUSSION

The results of this phenomenological study suggested that the experience of blindness simulation by nursing students could be classified in three major themes, including abandoned in the labyrinth puzzle, vision of heart and self-alienation. Living in ambiguous darkness, fear and unpredictable surroundings create a labyrinth puzzle in the life of blind people. Living in ambiguous darkness was one of the experiences mentioned by the participants during the simulation. A moderate level of ambiguity can have positive effects on the human life. Individuals, according to their understanding, search the solutions, so some degree of ambiguity is essential for personal development (Grenier & Ladouceur, 2005). Of course, ambiguity and uncertainty tolerance is different among people. People with lower tolerance considered the ambiguous situation as threatening but people with high tolerance considered ambiguity as an advantage, and looked for better answers (Hosseini et al., 2014). Along with the ambiguous darkness, living in fear was another theme that was mentioned by the participants. Fear is a passive and psychoactive reaction that a person shows against a threat or danger (Alaee-Rahmani & Hasanzade, 2013). Fear of being in an environment that is unpredictable and having the ability to control the environment depend on the use of all five senses.

Vision of heart was another theme in this study, which had three sub-themes; Revelation; an unknown power, enhanced focus and precision and optimal use of other senses. The meaning of "revelation" is "to unveil or uncover something that has been hidden" (Conver, 2006). Blind people learn to use other ability such as Revelation, and sense of hearing and smell or touch to compensate for their lack of vision (Kohal et al., 2015). Sense of hearing plays an important role in the life of blind people (Ahadian, 2011), as they use hearing through voice recognition, interpretation and orientation to

move and detect their surroundings. Also, many blind people use this skill to walk in hallways and indoors by using sonar waves which is reflection of the sound of their footsteps (Etebari et al., 2001). In other words, taking advantage of revelation and other abilities will partly replace their lost sense of vision.

Personality alienation is the third theme found in this study. Dependency, emotional isolation and reduced self-confidence were the sub-themes of self-alienation as mentioned by the students. Dependency, as one of the most obvious limitation induced by the simulation, was referred to by all students as the experience of helplessness. Following the loss of support a strong sense of helplessness is created in the dependent person. They also have high level of mental concern about the possibility of being abandoned (Farsham & Khodabakhsh, 2015). The emotional isolation caused by lack of vision was another experience mentioned by the participants, which is consistent with the results of Tuttle and Tuttle study as they showed that blind people have a more tendency towards isolation and avoid crowded places (Tuttle & Tuttle, 2004). Also, restrictions on transportation and fear of being ridiculed, punished and judged as well as traditional attitude of community towards blindness make those with visual impairments to have a more tendency towards isolation and loneliness (Shahbazzadegan et al., 2018). The challenge of self-confidence to fit in the community was one of the experiences mentioned by the students. Dealing with those around us is one of the obstacles that exist in our psychosocial environment. These negative attitudes and psychosocial obstacles affect the mental health of blind people and cause them to have lower self-esteem and self-confidence than others (Moradi & Kalantary, 2006).

In this study, the simulation method was used to induce a sense of blindness in the students, which changed their attitude and perspective in regard to caring for blind patients. Pazargadi and Sadeghi (2011) in their study showed that simulation leads to changes in the attitudes of learners and readiness of them to learn new roles, helps learners to understand professional role, displays the influential roles of the learners, increases motivation and interest of the learner and creates critical thinking skills in the learner (Pazargadi & Sadeghi, 2011). The study of Tivener & Gloe, (2015) showed that accurate simulation is effective in student's education and has similar effect on their knowledge acquisition, self-confidence and emotional response (Tivener & Gloe, 2015). In this study, we found that nursing students' attitudes towards patient care have changed. "We can now become better nurses for blind patients and have a better understanding of their needs," they said. They described the experience of blindness as very valuable and suggested that these methods should be implemented as much as possible for other disabilities to better understand the condition of disabled patients. We believe that in order to be able to understand someone, we must be in their place.

As we have said, if simulation is not done properly, it can lead to misunderstandings about disabling people, the timing of their adaptation, their support systems and strengthening other abilities (Silverman, 2015). Poorly designed simulations outcomes might also be detrimental. Because, they focus on what people with disabilities cannot do rather than on what they could do with appropriate

access, technology, or skills. Critics of these types of simulations do not deny there are some difficulties associated with living with disabilities. Because a participant's "impairment" is for a short period of time, there is no chance for the learner to truly experience real physical limitations, chronic pain or cognitive limitations. More importantly, there is no opportunity for a participant to learn strategies to succeed, given the limitations imposed by disability and society. Negative outcomes from the use of poorly designed simulations include unintended attitudinal shifts, increased anxiety about working with individuals with disabilities, and misunderstandings about disability experiences. However, with appropriate designs, careful facilitation, open discussion and involvement of people with disabilities, negative consequences of simulations can be avoided (Burgstahler, 2014). In her study, Burgstahler points out things that need to be considered in simulation. Execution of these cases can eliminate the possible negative effects of simulation. Some of these are given as: guidelines for creating effective simulations, state objectives clearly, ensure voluntary participation, support positive attitude change and so on (Burgstahler, 2014).

Therefore, we paid attention to these points in designing this research. Students volunteered to study, and in a group session, they were told that their experiences would be similar to those of a person with a sudden visual impairment who had not yet acquired the skills needed to adapt. Positive views and capabilities were also discussed, but only those that fit the title of the article were used in this study.

5.1 | Limitations

The main limitation of this study is related to sample size. Although this was a qualitative study and we reached data saturation, we still wonder if a larger group of participants could have generated different results. And the learners' anxiety during the simulation was the limitation of the present study which could affect our data. Therefore, we attempted to greatly reduce anxiety by reassuring the students and increasing their knowledge.

6 | CONCLUSION AND IMPLICATIONS

The main objective of this study was to simulate blindness in nursing students in order to help them better manage all aspects of care for blind patients. The results of present study can help to better understand the conditions of blind people to reduce their negative emotions and improve the quality of care for them.

Although the results of qualitative studies cannot be easily generalized, this study changed the attitude of a number of nursing students. The simulations led to the conclusion that all of them now have a better understanding of the needs of the blind and will be better able to take care of themselves than before. A better understanding of the world of the blind can also be helpful for the design and intervention by the community and policymakers.

The results of this qualitative study can also provide suggestions and strategies for future planning, policy making and interventions.

Overall, the results of this study can be used in management (implementing community-based facilitation programmes for the blind), education (providing teaching methods to improve the quality of nursing student care) and research (explaining and providing qualitative research).

It is recommended to simulate conditions for other disabilities in order to increased knowledge and promote care and management for disable patients. Also, it is recommended to use simulation method to enhance the perception, knowledge and skills of health-care staff that care for patients with disabilities, especially blindness.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest that could be perceived as prejudicing the impartiality of the research reported.

AUTHORS' CONTRIBUTION

This study was designed by HJ and ANN. HJ and MM: wrote the proposal and ANN reviewed and modified this. ANN, HJ and MM: performed simulations of blindness and conducted interviews. All authors were involved in the analysis of the interviews. MSH: wrote the manuscript. All authors have read and approved the manuscript.

ETHICAL APPROVAL

The ethical principles observed by the researchers included obtaining permission from the Ethics Committee of Tehran University of Medical Sciences with the code: IR.TUMS.VCR.REC.1396.4576, obtaining written informed consent from all participants, granting participants the right to withdraw from the study at any, applying the principles of anonymity and confidentiality, and providing participants with the results upon their request.

DATA AVAILABILITY STATEMENT

The data are publicly available.

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