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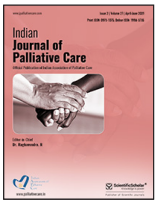

Original Article

Study to Assess the Effectiveness of Simulation Technique to Overcome Misperceptions of Undergraduate Nursing Students' About Paediatric Palliative Care

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ABSTRACT

Objectives: The purpose of the current study is to suggest a powerful strategy to overcome the misperceptions of undergraduate nursing students' about paediatric palliative care (PPC), through simulation technique.

Materials and Methods: A one-group pre-test-post-test design was carried out to assess changes in undergraduate nursing students' representations about PPC before and after the exposure to a simulation experience. A total of 24 undergraduate nursing students at the Higher Institute of Health Sciences (HIHS) of Settat have taken part in this study.

Results: The results have shown that there was a significant difference between mean pre- and post-test scores ($P = 0.00$).

Conclusion: The simulation technique can be a powerful pedagogical strategy to overcome undergraduate nursing students' misperceptions about PPC.

Keywords: Paediatric palliative care, Simulation, Higher Institute of Health Sciences, Undergraduate nursing students, Morocco

INTRODUCTION

Paediatric palliative care (PPC) is defined by the World Health Organisation as 'the active total care of the child's body, mind and spirit and also involves giving support to the family. It begins when illness is diagnosed and continues regardless of whether or not a child receives treatment directed at the disease. Health providers must evaluate and alleviate a child's physical, psychological and social distress. Effective palliative care requires a broad multidisciplinary approach that includes the family and makes use of available community resources; it can be successfully implemented even if resources are limited. It can be provided in tertiary care facilities, in community health centres and even in children's homes.'[1]

The total number of children requiring PPC worldwide is unknown.[2] However, research estimates that annually over 21 million children may need palliative care.[2-4] About 98% of these children reside in low- and middle-income countries and nearly half of them live in Africa.[2,3,5] The Association for Children's Palliative Care and the Royal College of Paediatrics and Child Health have identified four categories of life-threatening and life-limiting conditions that can generate a need for PPC.[6] These four categories can be described as follows:[6]

1. 'Life-threatening conditions for which curative treatment may be feasible but can fail
2. Conditions where premature death is inevitable, this may involve long periods of intensive disease-directed treatment aiming at prolonging life and allowing participation in normal activities
3. Progressive conditions without curative treatment options, where treatment is exclusively palliative and may commonly extend for many years
4. Irreversible but non-progressive conditions causing severe disability leading susceptibility to health complications and very likely to premature death.'

Most children with the conditions listed above may experience, at an advanced stage of the disease, distressing

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symptoms such as pain, dyspnoea, nausea, anxiety, and depression.[7,8] All these symptoms can be managed adequately through PPC.[9] Nevertheless, there remain several barriers to the provision of an optimal PPC,[4,10] including the lack of educational programs on PPC, the low level of knowledge among health-care professionals, the lack of clear policies on PPC, the limited availability of PPC services, the lack of essential medications and the erroneous representations[1] attached to PPC.[3,10-15]

During a training programme about palliative and end of life care, at the level of the Higher Institute of Health Sciences (HIHS), we have noted that undergraduate nursing students' often confuse palliative care with gerontology and, geriatric medicine. Not only that but also some students think that children cannot receive palliative care, as they are too young for such care.

To overcome this confusion, we have, therefore, decided to focus on erroneous representations surrounding PPC among undergraduate nursing students at the HIHS.

Since the HIHS is already equipped with a simulation centre called 'ForSim,' a simulation activity was hypothetically arranged, to identify and overcome undergraduate nursing students' erroneous representations about PPC and reduce barriers affecting the delivery of this type of care and improve optimal access.[16]

MATERIALS AND METHODS

Study design

This quasi-experimental study was performed to evaluate whether simulation can be an effective strategy to overcome undergraduate nursing students' misperceptions about PPC. A total of 24 2nd year nursing students at the HIHS were recruited for the study. The participants were requested to complete a pre- and post-test about PPC before and after attending the simulation session.

Study setting and participants

This simulation experience was carried out on June 14, 2021, as a part of a training on palliative and end of life care which are integrated into the fourth-semester of the bachelor of science degree in nursing programme at HIHS, Hassan First University of Settat.

The 24 nursing students who were present in the simulation session were invited to participate in the study. After being informed that the participation was voluntary and that confidentiality of their information would be ensured, all students volunteered to participate. Hence, the response rate obtained was 100%.

The students' mean age was 19.75 (SD = 0.74) years, ranging from 19 to 21 years. The majority of them were females (87.5%) and only 12.5% were males.

Measures

The questionnaire used in this study was divided into two sections: (1) Socio-demographic characteristics and (2) pre-test-post-test questionnaire.

Socio-demographic characteristics

The questionnaire includes two questions about the participants' socio-demographic characteristics, namely, age and gender.

Pre-test-post-test questionnaire

Pre-test

A pre-test was conducted to assess the undergraduate nursing students' representations of PPC [Table 1]. The questionnaire had 14 items:

- Five items (1, 2, 3, 4, 5) concerning the philosophy and principles of PPC
- Three items (6, 7, 8) regarding diseases and the population requiring PPC
- One item (9) about PPC structures

Table 1: Pre- and Post-test questionnaire.

Item	True	False
1. Palliative care concerns only older people. (F)		
2. The goal of Paediatric Palliative Care is to cure the disease. (F)		
3. Paediatric Palliative Care concerns only pain management. (F)		
4. Paediatric Palliative Care should begin when a life-threatening illness is diagnosed. (T)		
5. Paediatric Palliative Care cannot be delivered concurrently with curative treatments. (F)		
6. Children's palliative care is only for children who have cancer. (F)		
7. Paediatric palliative care concerns all children with an advanced or terminal serious illness. (T)		
8. Only children with disabilities can benefit from Paediatric Palliative Care. (F)		
9. There are palliative care units for children. (F)		
10. The child also uses defense mechanisms in the face of his death. (T)		
11. A child's perception of death varies with developmental stages. (T)		
12. Children in palliative care should not be aware that they are dying. (F)		
13. Grief counselling is not part of Paediatric Palliative Care. (F)		
14. Bereavement support should be offered to families, caregivers and all those affected by the illness and death of a child. (T)		

1 According to Abric, 1994 as cited in Walmsley' research, a representation is the "product of processes of mental activity through which an individual or group reconstitutes the reality with which it is confronted and to which it attributes a specific meaning"

- Three items (10, 11, 12) related to death in PPC context
- And two items (13, 14) about grief and loss in PPC.

For each statement, students were asked to answer whether it is true or false. The pre-test took approximately 10 min to complete.

The questionnaire used in the current study was designed specifically by the authors and was inspired by the extant literature about PPC to suit the research requirements.

Post-test

After the simulation session, a post-test was conducted to evaluate whether there were any changes in the students' representations of PPC. The post-test used the same questions included in the pre-test. It also took about 10 min to complete. For each completed questionnaire, the pre- and post-test total scores were tallied. Incorrect answers were given a score of zero; whereas, correct ones were given a score of one.

Procedures

This study was conducted in three steps: A pre-test, a simulation experience, and finally a post-test.

Pre-test

Before attending the simulation session, students were requested to complete a pre-test about PPC.

Simulated clinical experience

One week before the scheduled simulation activity, the simulation staff had prepared the environment and the equipment required for the simulation experience, including the patient and the debriefing rooms, the recording equipment, the mannequin, the wheelchair, the pain scales, and the bag-valve-mask (BVM).

The simulation-based training was held on June 14, 2021, at the simulation centre (ForSim) of the HIHS of Settat. In this session, we have opted for using a hybrid simulation approach combining a low fidelity mannequin with human actors to enhance the realism of the simulation experience and make it more complex for the students.

During this simulation activity, students provided care for a 13-year-old boy affected by Duchenne Muscular Dystrophy (DMD). The child's medical history is included in [Table 2]. The patient was admitted to the paediatric unit following different problems. He was then referred, by his paediatrician, to a mobile PPC team to improve his quality of life. Three months later, he died of cardiac and respiratory complications. The entire simulation took approximately 3 h and 40 min.

All the participants in the activity had undergone classes on pain assessment and management, death and bereavement, breaking bad news, principles of palliative care, patient and family support, and different kinds of touch (procedural and nonprocedural). The students were familiarised with the simulation techniques but had no previous experience.

Table 2: The patient's medical history.

• The first symptoms of the disease (progressive muscle weakness, repeated falls, walking problems, global developmental delay, etc.) were observed at the age of 18 months • A confirmed diagnosis of DMD was established at the age of four by muscle biopsy • The child lost ambulation and become wheelchair-bound by the age of eight
Family history
Family history revealed that the child's mum is a carrier of DMD disease, but his sister is unaffected
Disease specific features
The child complains of • Muscle pain • Constipation • Gastroesophageal reflux • Cardiac and respiratory problems

The simulation experience progress is described in three steps: T*he briefing, the scenario session, and the debriefing.*

The briefing

Before the scenario session, a separate briefing was conducted for the students and the actors to orient and prepare them for the simulation activity.

During this phase, the students were briefly informed about the learning objectives, the simulation environment, and equipment, the patient's history, the scenario phases, their roles in the scenario, the method of assessment, and the type of simulation adopted.

Simultaneously, the actors were given clear insights into the progression of the scenario in which they will be involved, the learning objectives, the instructions to be followed, and the ill-defined problems to present to students.

At the end of the briefing, the facilitators reminded the participants of the significance of keeping confidentiality about the simulation activity, especially the scenario content and other participants' performance, the prohibition of the use of mobile phones during the simulation, and the importance of mutual respect. Subsequently, the students were divided into four groups of six per phase.

The briefing took 40 min.

The scenario session

The simulated scenario ran for approximately 40 min. It has included four phases. [Table 3] shows a general overview of the scenario phases, the instructions given to the learners, the patient, and his family's reactions, the actors involved in each phase, and the phases' duration.

Phase 1

During the first phase of the scenario, the six students were divided into three sub-groups. Each sub-group was asked, in

Table 3: A general overview of the scenario phases, the instructions given to the learners, the patient and his family's reactions, the actors involved in each phase and the phases' duration.

Phases	Instructions	Reactions	Actors	Timing
Phase 1: Family support after receiving bad news	Provide adequate support to the family after receiving bad news.	• Emotional pain • Crying/tears • Withdrawal	Patient (Mannequin) Mother Sister 6 students (nurses)	9 min
Phase 2: Ensuring the child's quality of life: • Sub-phase1 Assessing the child's pain using an appropriate pain scale • Sub-phase 2 Using the bag-valve-mask (BVM) technique to manually ventilate a child with breathing problems • Sub-phase 3 Using massage techniques to improve muscle function	• Sub-phase 1 Use the appropriate pain scale to assess the child's pain. • Sub-phase2 Ventilate the child using the bag-valve-mask (BVM) technique. • Sub-phase3 Improve the child's muscle function using massage technique	• Pain • Perturbation of respiratory rhythm • Tachycardia	Patient (Mannequin) 6 students: 2 students (sub-phase1) 2 students (sub-phase 2) 2 students (sub-phase3)	9 min
Phase 3: Talking to a child about his death	Explain to the child what death is	• Denial • Delirium • Bargaining • Isolation • Aggression	Patient (Mannequin) Mother Sister 6 students	9 min
Phase 4: Family support during the bereavement period	Provide adequate support to family members after the child's death	• Inner peace • Acceptance • Mourn	Mother Sister 6 students	9 min

turn, to provide adequate support to the family after receiving the bad news.

Phase 2

In the second phase, the next group of students was split up into three subgroups of two. The first subgroup was given different children's pain assessment scales (Faces Scale, Numerical Scale, Visual Analogue Scale, and the Echelle Douleur Enfant San Salvador) and then was asked to use the most appropriate pain scale to assess the child's pain. The second subgroup was asked to ventilate the child using the BVM technique. The third subgroup of students was instructed to improve the child's muscle function using the massage technique.

Phase 3

During the third phase, the other six students were organised into three subgroups of two. Every two students were asked, in turn, to explain to the child what death is.

Phase 4

Finally, in the fourth phase, the last group of participants has been arranged into three subgroups of two students, who have been asked, in turn, to provide adequate support to family members after the child's death.

While every two students were engaged in the given tasks during each phase; the remaining learners were observing their performance from the debriefing room.

A hidden volunteer student simulated the child's voice using a microphone in the first, second, and third phases because our simulation centre is not equipped with a high-fidelity paediatric patient simulator. In addition, the two volunteer actors, who portrayed the patient's relatives (child's mother and sister) in the first, third, and fourth phases of the scenario, were 3rd year Bachelor Nursing Students at the HIHS.

Due to the lack of finding pain measurement scales in the market, we got it made locally.

The debriefing

The debriefing phase occurred immediately after the scenario session. It was structured into three sub-phases: Description, analysis, and summary.

The first sub-phase 'Description,' was an opportunity for participants to express and describe their reactions and feelings during the scenario performance.

During the second sub-phase 'Analysis,' the facilitators focused on evaluating and analysing what happened during the scenario from the participants' perspective. All the participants were asked to discuss what, they thought, went well for them, what the difficulties that they faced were and what they could do differently next time.

The third sub-phase 'Summary' consisted of a summary of what was learned and what was not during the analysis sub-phase. Thereafter, the facilitators' scheduled other simulation sessions to refine and improve some practices and highlighted

the positive contributions the participants have made in the simulation activity.
The debriefing lasted for about 2 h.

Post-test

After the simulation session, a post-test was conducted to evaluate whether there were any changes in the students' representations of PPC.

Data analysis

Statistical analysis was performed with the statistical software SPSS. The paired-Samples *t*-test was used to compare mean pre- and post-test scores. The significance level was set to 0.05 ($\alpha = 5\%$).
Descriptive statistics were also used to summarise the participants' socio-demographic characteristics (gender and age) and to calculate the range (maximum and minimum), mean, median, and standard deviation of pre- and post-test scores [Table 4].

Ethical considerations

This study adheres to the principles outlined in the Declaration of Helsinki[17] and the simulation centre (ForSim) of the HIHS requirements. Verbal informed consent was obtained from all the students to participate in the study and for using the data. Ethical approval was obtained from the Moroccan Association for Research and Ethics**,** Research Ethics Committee (No.7/REC/21).

RESULTS

The results showed that the highest score accounted for was 13 in the pre-test and 14 in the post-test; while the lowest score was 10 in the pre-test and 12 in the post-test [Figures 1 and 2]. The students' mean score has improved by 1.83 points after attending the simulation experience, passing from 11.45 in the pre-test to 13.29 in the post-test.
A significant difference was observed between the pre- and post-test scores (t = 7.05; *P* = 0.00). These results suggest that the students' representations have changed after participating in the simulation experience.

DISCUSSION

The present study was undertaken to examine whether the simulation technique can be an effective strategy to correct undergraduate nursing students' erroneous representations toward PPC.
As anticipated, positive changes in the undergraduate nursing students' scores have been noted after receiving the simulation activity. This reflects that the simulation training was a valuable learning opportunity for undergraduate nursing students to address and clarify their misrepresentations about PPC. There is strong evidence in the literature that unresolved misconceptions about palliative care create barriers to the provision of this type of care.[15,18]

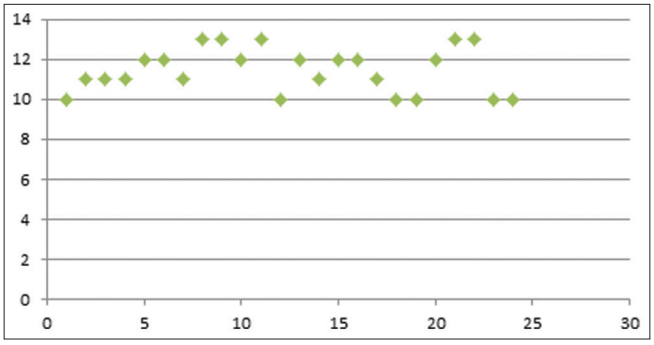

Figure 1: Students' pre-test scores.

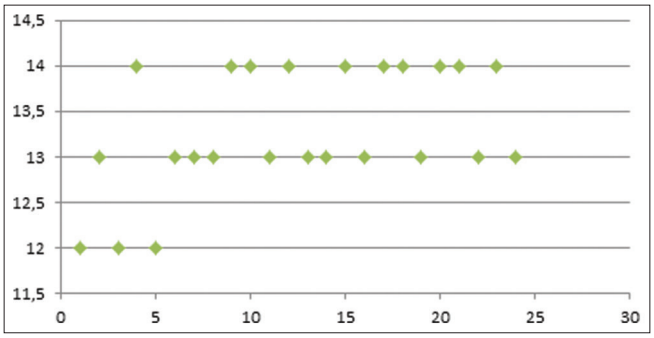

Figure 2: Students' post-test scores.

Table 4: Range, Mean, Median and Standard deviation of pre-test and post-test scores (*n*=24).

	Range of score	Mean	Median	SD
Pre-test	13–10	11.45	11,5	1.10
Post-test	14–12	13.29	13	0.69

Therefore, it is of crucial importance to discuss and deal with it for a good palliative care provision.[15]
Strategies addressing misperceptions surrounding PPC are needed to reduce barriers affecting the delivery of this type of care and improve its accessibility.[16] However, a few studies suggested strategies to overcome these erroneous representations. McIlfatrick has recently revealed a range of approaches to improve understanding of palliative care, including the traditional methods, namely, campaign information, posting leaflets, and media platforms such as newspapers, radio, television, and billboards.[16] Another study conducted in 2013 suggested the use of publicity campaigns, talks, posters, and open days to share the facts about palliative care and ensure wide dissemination of the right palliative culture.[19] Implementing and developing educational programs on palliative care was also recommended by various studies as an effective strategy to remove misperceptions surrounding PPC.[15] Evidence showed that the delivery of quality PPC services relies on the availability of healthcare providers with specific training and

experience in providing this type of care.[14] Existing literature on the topic did not reveal any previous research that has suggested the possibility of using the medical simulation technique as a strategy to overcome misperceptions attached to PPC. In addition, the various strategies recommended in the reviewed studies have emerged from the participants' responses and their effectiveness has not been validated on a specific population.

The effectiveness of clinical simulation, as an experiential teaching strategy to prepare nursing students for palliative care delivery, has been proven by several studies.[20] A study carried out by Hamdoune and Gantare has shown that simulation is a potentially excellent strategy to fill the lack of clinical placements in terms of palliative care among undergraduate nursing students, as it provides them with the opportunity to experience caring for patients in need of palliative care in a safe and controlled environment.[21] The simulation has also been proved to be a reliable tool for increasing students' knowledge, self-efficacy, self-confidence, communication skills, teamwork as well as reducing students' anxiety when confronting critical situations.[20,22-25] A further study conducted by Moreland argued that simulation is highly recommended when dealing with emotionally charged issues such as palliative care.[26] Gillan's study has also found that simulation allows nursing students to apply theoretical knowledge gained in classrooms to authentic clinical practices, without jeopardizing the patient's safety and well-being.[27] A meta-analysis conducted by Kim revealed that simulation helps nursing students, whether they are novice or experienced, to develop effective non-technical skills, confront rare situations, and practice critical care.[28] More than this, it allows facilitators to adjust the simulation's difficulty levels, receive the learners' immediate feedback regarding the simulation activity, and individualise learning.[28]

Limitations

The present study has certain limitations that should be addressed; in particular, the restricted number of subjects involved in the study. This can be explicated by the fact that the simulation activity was incorporated in a course about palliative and end-of-life care. Hence, there is a need for further research about this topic on a large group of students to confirm our findings.

Thus, the questionnaire used in this study was self-developed by the authors based on the literature review and its content was not subject to validation by experts. Hence, it appears to be necessary to address it to experts for validation to ensure its reliability.

Furthermore, various constraints were faced in terms of equipment such as voice assistance, paediatric mannequin, and pain measurement scales. We have also found it impossible to have experienced actors to make our simulation more authentic.

CONCLUSION

This study demonstrates the effectiveness of the medical simulation technique as a pedagogical strategy to overcome undergraduate nursing students' misperceptions about PPC. Effectively, the different phases of the simulation session with the different approached axes constituted an invaluable opportunity to develop some skills in paediatric palliative care. This finding is of paramount importance because this study is the first of its kind to deal with such a subject. In addition to that, few studies have suggested a few strategies to overcome misperceptions surrounding palliative care. Yet, the proposed strategies were based on the participants' recommendations and their effectiveness was not evaluated within a specific population. Hence, the need to conduct further research to suggest other strategies that seek to handle erroneous representations attached to PPC and assess the effectiveness of the existing strategies.

Implications and recommendations

This work has contributed to a deeper understanding of PPC philosophy among undergraduate nursing students at the HIHS, in addition to preparing future nurses to provide high-quality PPC services. Furthermore, the simulation method can be adopted by other Moroccan and international schools of nursing as an excellent strategy to correct undergraduate nursing students' misrepresentations about PPC. However, similar research should be conducted on a large group of nursing students to confirm our findings. A comparative study can be also performed in other countries or with a controlled group to examine whether this can bring about differences or similarities in the outcomes.

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Author contributions

Conception and design: All authors. Conducting the study: All authors. Data gathering: All authors. Interpreting and analysing data: All authors. Original drafting of the article: All authors. Review and final approval of the article: All authors.

Declaration of patient consent

Institutional Review Board (IRB) permission obtained for the study.

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Conflicts of interest

There are no conflicts of interest.

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