

Research Article

Training Based on Simulation Pedagogy: Evaluation of Participants' Satisfaction with the First National Forum on Simulation in Nursing in Morocco

K. El-Mouhdi ¹, K. Et-tayyeb ¹, F. Dahmani,² F. Z. Milouk,³ and A. El Ouali Lalami ³

¹Ministry of Health and Social Protection, Higher Institute of Nursing Professions and Health Techniques, Annex-Meknes, Morocco

²Faculty of Sciences, Ibn Tofail University of Kenitra, Kenitra, Morocco

³Ministry of Health and Social Protection, Higher Institute of Nursing Professions and Health Techniques, Fez, Morocco

Correspondence should be addressed to K. El-Mouhdi; k.elmouhdi@ispitsmeknes.ac.ma and A. El Ouali Lalami; eloualilalami@yahoo.fr

Received 22 January 2023; Revised 18 April 2023; Accepted 19 April 2023; Published 26 May 2023

Academic Editor: Meigan Robb

Copyright © 2023 K. El-Mouhdi et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Simulation in nursing is considered an innovative pedagogy for the development of clinical skills of nursing staff. A National Forum was held for the first time in Morocco concerning the pedagogy of simulation in nursing to raise awareness among educators and practitioners on the educational value of such an initiative in the field of nursing. The goals of this study were to describe the development of the first National Forum in Morocco on Nursing Simulation and to assess the satisfaction of participants with the different activities of this national event. A self-administered questionnaire was used in this study. Descriptive statistics and correlation tests were used to assess the level of participant satisfaction with the simulation. This event gathered more than 250 participants from different Higher Institute of Nursing Professions and Health Techniques (HINPHT) of Morocco during the 3rd, 4th, and 5th of June 2022 held at the HINPHT institute of Fez. 163 participants agreed to take part in our satisfaction survey in which 39.3% were nursing teachers and 6.7% were directors of nursing and technical health professions training institutes and 41.7% were nursing students. The participants evaluated the different pillars of the first National Forum on Nursing Simulation in Morocco and reported a general satisfaction of 80.8%. Directors showed higher satisfaction with the organization with a score of 88.89% ($p = 0.001$), while teachers reported higher satisfaction with the Master Class workshop (65.27%; $p = 0.003$). Students' satisfaction scores were positively correlated (86.36%; $p = 0.004$) with the usefulness and applicability of the knowledge acquired during the event. Nevertheless, dissatisfaction was recorded with the mediation of the Forum (8.6%), the duration of the Master Class (13.5%), and the quality of the technical and logistical material used (7.4%). These aspects should be improved in future editions. The findings of this scientific event could be of great interest to the organizers of future forums on nursing simulation in the Maghreb region and Africa more generally, and could serve as a model.

1. Introduction

Simulation in the field of health sciences is an innovative pedagogy. It can help students to apply their knowledge in clinical settings, thus reducing the gap between “knowing” and “doing” [1, 2]. Simulation is widely used in the teaching of nursing students in developed countries [2, 3]. In Morocco, simulation is not yet integrated into the nursing training programs [4–6]. The nursing literature presents

simulation pedagogy as a teaching and learning method that facilitates the transfer of knowledge acquired in academic settings to the clinical settings and allows students to acquire technical and nontechnical skills that are essential to the nursing practice [4, 7]. Therefore, it is considered to be an active teaching strategy for the development and shaping of clinical reasoning among student nurses [7, 8].

Indeed, simulation-based learning can help nurses provide quality care with positive health outcomes and

increase patient satisfaction and confidence in health care services. Scientific evidence and randomized controlled trials in health sciences have proven the educational effectiveness of simulation-based training (Sim) compared to non-Sim in clinical case management [9]. Furthermore, simulation-based nursing education improves patient outcomes [2, 3, 10, 11].

Although human simulation methodology has its origins in medical education, nursing education has increased its use to improve education for nursing students [12]. Confronted with concrete professional situations, learners are faced with genuine clinical problems in usual working conditions. Learners are thus subjected to the performance of technical acts without any risk. Simulation allows student nurses to develop, synthesize, and apply their knowledge in a replica of real experience [2]. The essential components of a successful simulation include briefing, simulation, and debriefing exercises. The main elements are matching the simulation to the clinical reality and the relevant curriculum, providing academic support for briefing and debriefing, and managing the scenario in individual and team settings [2, 13]. As a result, this pedagogy helps to improve novice nurses' practice and avoid professional errors toward patients [14].

Thus, training workshops and interprofessional and multidisciplinary forums on simulation in the health sector constitute a scientific opportunity to share knowledge and understanding, and a reflection on care practices [1, 2, 15]. It is in this context that a National Forum on Nursing Simulation was held for the first time in Morocco to raise awareness among practitioners on the educational value of such an initiative in the field of nursing. In this study, we describe the unfolding (organization of the committees, workshops, and of the Sim Nurse-Maroc competition) of the first National Forum on Nursing Simulation in Morocco and we assess the overall satisfaction of the participants with the different aspects of this national event, namely organizational aspects, Master Class training workshop, duration of the event, usefulness, and applicability of the knowledge in the nursing profession. The findings of this scientific event could be of great interest to the organizers of future nursing simulation fora in the Maghreb region and Africa more generally, and serve as a model.

2. Materials and Methods

2.1. Design and Organization of the 1st National Forum on Simulation in Nursing and Health Techniques in Morocco. The training of nurses and health technicians is essentially provided by the Ministry of Health and Social Protection (MSPS) in the Higher Institute of Nursing Professions and Health Techniques (HINPHT). These institutes have 10 centers and 13 annexes (Figure 1). These institutes are also forum places for scientific events and continuing education for health professionals of all categories. In recent years, the Ministry has outlined a strategy for developing the skills of the healthcare workforce as a lever for the redesign of the

Moroccan national health system by ensuring the quality of training as a guarantee of the quality of care and patient safety.

Being part of a process of continuous quality improvement in their health systems implies a long-term commitment from managers. These later will require organizational reform and the development of the skills of health professionals through quality training. In response to these requirements, the Ministry introduced the so-called BMD (Bachelor-Master-PhD) training system in 2013 to meet the training needs of nurses. This new training system has paved the way for transforming the Institutes of Health Career Training (IHCT) into Higher Institute of Nursing Professions and Health Techniques (HINPHT) which are classified as higher education institutions that are not reporting to universities but whose calling is to advance knowledge and deepen research in terms of healthcare and quality of health services.

With this goal in mind, the organization of the first National Forum on Simulation in Nursing and health techniques at the HINPHT institute of Fez was carried out to promote the use of simulation-based pedagogy in the field of nursing and to innovate nursing training in Morocco. In fact, a strong collaboration between the Education Division of the Ministry of Health and Social Protection and the HINPHT institutes as well as with the stakeholders represented by the Moroccan Association of Medical Simulation were the key elements to make this scientific event successful on a national scale. Thus, four committees were established to carry out the organization of this national event on nursing simulation: (a) a pedagogical committee, (b) a communication committee, (c) a logistics committee, and (d) an internal steering committee made up of the management staff of the HINPHT institute of Fez.

2.2. Sampling and Data Collection Tool. At the end of the scientific event, all participants were invited to fill in a satisfaction questionnaire covering all the activities and pillars of the first national event on simulation in nursing.

The data collection tool was a self-administered questionnaire previously tested and validated with a representative sample of 12 participants with the same characteristics and excluded from the study population. Reliability and consistency between sections of the questionnaire were checked by calculating Cronbach's alpha coefficient, which was found to be in the order of $\alpha = 90.36\%$, indicating an excellent level of reliability. In fact, the questionnaire was composed of four sections to collect data regarding: (a) the characteristics of the participants; (b) the satisfaction with the organizational aspects of the first forum; (c) the satisfaction with the "Master Class" training workshop on simulation pedagogy and its implementation in the nursing profession; and (d) the strengths and areas for improvement in the future, as well as whether those persons in the sample would attend a similar event again and whether they would recommend it to their colleagues.



FIGURE 1: Geographical distribution of Higher Institute of Nursing Professions and Health Techniques under the Ministry of Health and Social Protection, Morocco. (Source: Ministry of Health website: <https://ispits.sante.gov.ma/Pages/default.aspx>).

2.3. *Measuring Participant Satisfaction.* The evaluation of the satisfaction of the participants in the first National Nursing and Health Sciences Simulation Forum was calculated based on four parameters:

- (a) The organization
- (b) The master class on simulation pedagogy in nursing
- (c) The duration of the event
- (d) The usefulness and applicability of the knowledge gained in the nursing profession

Each of these parameters was evaluated by means of five criteria according to the Likert scale (very unsatisfactory, unsatisfactory, neither satisfactory nor unsatisfactory, satisfactory, and very satisfactory). In fact, for all four parameters, subitems were developed. For the organization parameter, these criteria are the type of welcome provided to participants, coffee/dinner breaks, orientation/signposting, accommodation, room(s), and choice of training venue

(HINPHT). For the *training* parameter, the subitems concern: the rhythm and sequences of the theoretical course and the hands-on cases, the didactic tools, the technical and logistic material used, and the composition and size of the training team. The duration parameter concerns: compliance with the time schedule, the time allocated to learning, the duration of the “Master Class,” the duration of the competition, and the duration of the forum. Finally, concerning the parameter of *usefulness and applicability of the acquired knowledge* with regard to the profession, we used the following subitem: the ability of participants to transfer the acquired knowledge and to conduct training sessions by using simulation.

2.4. *Data Processing and Analysis.* All the information collected was entered and organized in an Excel file. To calculate the satisfaction scores of the participants, we based the calculation on the different items used in the questionnaire.

In addition, we coded the participants' answers based on the Likert scale from 0 to 4 for the different criteria, including "0" very unsatisfactory; "1" unsatisfactory, "2" neither satisfactory nor unsatisfactory, "3" satisfactory, and "4" very satisfactory. To facilitate the processing and analysis of the satisfaction data, we converted the Likert scale into three criteria: satisfactory, unsatisfactory, and neither satisfactory nor unsatisfactory. After processing the data, the neither satisfactory nor unsatisfactory criterion was found to be weakly represented (1/163) in the order of 0.61% of the overall percentage of participations. Therefore, we did not consider the neither agree nor disagree criterion when presenting the results. Descriptive and correlation statistics were carried out for the presentation of the results and we also calculated the Pearson correlation coefficient to determine the absence or presence of a significant linear relationship between variables. For the correlation coefficient to be significant, the value must be less than 0.05 (value <0.05). The calculations of the correlation coefficient and of the value are carried out using the R-Project software version 4.2.1.

2.5. Ethical Considerations. In the present study, all ethical and deontological rules were complied with. Indeed, confidentiality was preserved throughout the study process through the coding and anonymity of the information collected from the respondents. Also, oral consent was obtained from the participants before they completed the satisfaction survey. We limited ourselves to oral consent since this is an observational and noninterventional study. In addition, approval for this project was obtained from the internal steering committee composed of the management staff of the HINPHT institute of Fez.

3. Results

A total of 250 people participated in the first National Forum on Simulation in Nursing and Health Techniques in Morocco, which was held at the HINPHT institute of Fez (Figure 2). The institutes of origin of the participants were Tetouan, Rabat, Casablanca, Marrakech, Fez, Meknes, Oujda, Agadir, Laâyoune, Beni Mellal, Errachidia, and Settat (ISSS). All participants were invited to take part in our satisfaction survey, 163 of which responded favorably and agreed to complete the questionnaire. The response rate was 65.2%. The participants included directors of nursing and technical health education institutes 11 (6.7%), nursing teachers 64 (39.3%), nursing students 68 (41.7%), and health professional guests interested in the event 20 (12.3%) (Table 1).

Indeed, the participants greatly appreciated the forum and the organization of such a national initiative on nursing simulation. They stated that they would recommend and invite their colleagues to participate in this type of event, (163 of them, i.e. 100.0% of the total sample) and that they would like to participate again if such an event were organized in the future (148 of them, i.e., 90.8% of the total sample). On the other hand, when asked what was the main

strength of this National Forum on Nursing Simulation, the most frequent answer was the relevance of the content (75 of the participants, i.e., 46.0% of the total sample), followed by the team spirit among the members of the organizing committee (57 of the participants, i.e., 35.0% of the total sample), then the focus chosen for the forum (53 of the participants, i.e., 32.5% of the total sample). When asked about areas for improvement in the future, the most common response was the proposal to increase the number of trained teachers (62 of the participants, i.e., 38.0% of the total sample), to integrate simulation pedagogy into the nursing education programs (58 of the participants, i.e., 35.6% of the total sample), to expand simulation to all nursing options and specialties (56 of the participants, i.e., 34.4% of the total sample), to increase the time allocated to the "Master Class" training workshop (22 of the participants, i.e., 13.5% of the total sample), and to use more efficient logistical and technical equipment (12 of the participants, i.e., 7.4% of the total sample) (Table 1).

The analysis of the results of the participants' satisfaction survey showed that there was an overall satisfaction of about 130 persons (80.8% of the total sample) (Table 1). Per category, the highest satisfaction scores were recorded among the directors of the participating institutes 10 (90.9%), followed by the teachers 53 (82.8%), then the students 54 (79.4%), and finally the guests 15 (75.0%) (Table 1).

In addition, participants evaluated the event and reported higher satisfaction with the organizational aspects (132 of the participants, i.e., 81.12% of the total sample), the Master Class workshop on simulation pedagogy (142 of the participants, i.e., 87.60% of the total sample), the duration of the event (131 of the participants, i.e., 80.37% of the total sample), and the usefulness and applicability of the knowledge in the profession (125 of the participants, i.e., 76.68% of the total sample) (Table 2).

Further analysis of participants' responses revealed that participants' satisfaction was positively correlated with the category of directors ($p = 0.001$). Our results also revealed that there was a significantly positive correlation between teacher category and satisfaction with the Master Class training workshop ($p = 0.003$). Students reported high satisfaction with the usefulness and applicability of the knowledge ($p = 0.004$). Other participants reported higher satisfaction with the organization ($p < 0.001$). More detailed results on the satisfaction of participants according to the different pillars of the First National Forum on Nursing Simulation in Morocco are presented in Table 2.

4. Discussion

In an international and national context marked by demands for quality and good governance, Morocco has signed up to the 2030 Sustainable Development Goals, the third of which concerns health and stipulates that it must "ensure healthy lives and promote well-being for all at all ages." The quality of education of health professionals was the starting point towards quality nursing care. Furthermore, scientific forums and training workshops on simulation are essential and offer

Royaume du Maroc
Ministère de la Santé
et de la Protection Sociale

المملكة المغربية
وزارة الصحة والحماية الاجتماعية

LE MINISTÈRE DE LA SANTÉ ET DE LA PROTECTION SOCIALE
EN COLLABORATION AVEC LA SOCIÉTÉ MAROCAINE DE SIMULATION MÉDICALE

ORGANISE

**LA 1^{ÈRE}
RENCONTRE NATIONALE
SUR LA SIMULATION**

**EN SCIENCES INFIRMIÈRES
ET TECHNIQUES DE SANTÉ**

PROGRAMME

**CONFÉRENCES
MASTER CLASS
CONCOURS INTER-INSTITUTS**

ISPITS FÈS LES 3, 4 ET 5 JUIN 2022

Institut Supérieur
des Professions Infirmières
et Techniques de Santé
Fès

Morocco Sim
Société Marocaine de Simulation Médicale

DRH
مديرية الموارد البشرية

FIGURE 2: The First National Forum on Simulation in Nursing and Health Technics in Morocco.

nursing teachers and instructors a platform for professional development in teaching through simulation pedagogy, and an opportunity to exchange practical experiences through networking with peers and simulation experts in the field of health sciences. It is within this framework that a national forum on simulation in nursing was held for the first time with “Master Class” training workshops and competitions for the Moroccan “SimNurse” prize.

This study examined the satisfaction of participants working at the HINPHT institutes regarding simulation in terms of nursing and health techniques. These participants were nursing and health techniques instructors and teachers from the different HINPHT institutes of Morocco. Indeed, the evaluation of the satisfaction of participants concerning the first national forum on nursing simulation showed that

the level of general satisfaction was 81.6%. Satisfaction per category was 90.9% for HINPHT directors, 82.8% for nursing teachers, 79.4% for students, and 75.0% for guests.

Concretely, the first national forum lasted three days from June 3 to June 5, 2022, and was supported by the Moroccan Medical Simulation Association. The first day was dedicated to the “Master Class” training workshop on simulation pedagogy and its application in health and nursing. Multidisciplinary didactic conferences relevant to all participants covering theoretical and hands-on aspects and the sharing of experiences were scheduled in the evening with the signing of a partnership agreement between HINPHT and Morocco-Sim.

Simulation pedagogy for nursing educators is considered a vital teaching/learning strategy to promote quality nursing care. Currently, basic nursing education programs are

TABLE 1: Characteristics of the participants in the First National Forum on Nursing Simulation in Morocco.

Participant's data (N= 163)	
<i>Category, n (%)</i>	
Directors	11 (6.7)
Teachers	64 (39.3)
Students	68 (41.7)
Guests	20 (12.3)
<i>Recommendations to a colleague, n (%)</i>	
Yes	163 (100)
No	0 (0.0)
<i>Participate again, n (%)</i>	
Yes	148 (90.8)
No	15 (9.2)
<i>Highlights of the event, n (%)</i>	
Relevant content	75 (46.0)
Team spirit among the members of the organization	57 (35.0)
Choice of focus and activities of the forum	53 (32.5)
Quality of sharing and feedback of the SimNurse scenarios	36 (22.1)
The Master Class simulation pedagogy	33 (20.2)
Compliance with the program	9 (5.5)
<i>Areas for improvement, n (%)</i>	
Increase the number of trained teachers	62 (38.0)
Integrate simulation into nursing education programs	58 (35.6)
Generalize simulation among the nursing options	56 (34.4)
More time for the master class	22 (13.5)
More media coverage of the forum	14 (8.6)
More coordination between international experts	14 (8.6)
Improving the quality of technical and logistical materials	12 (7.4)
Satisfaction with the duration of the event, average (SD)	135.0 (8.54)
Satisfaction with the Master Class workshop, average (SD)	145.1 (6.99)
Satisfaction with the training materials, average (SD)	139.8 (7.32)
Satisfaction with the results, average (SD)	124.5 (13.43)
Satisfaction with the organization, average (SD)	132.2 (23.5)
Overall satisfaction, average (SD)	130 (80.8)

focusing more on the use of pedagogical methods to develop clinical skills in nursing students [2, 4]. Simulation provides real-time audio and video feedback on the quality of knowledge acquired and skills developed by students, and simulation training also offers suggestions for improving performance. This very favorable innovative teaching method improves quality and patient outcomes [10].

In this context, the analysis of the satisfaction scores of participants showed that the Master Class training workshop on simulation pedagogy received the highest satisfaction score (87.6%), followed by the organizational aspects of the forum (81.12%), then the duration of the event and its activities (80.37%), and finally the usefulness of the forum about the profession and the applicability of the knowledge acquired (76.68%). These results indicate that the event did improve teachers' knowledge and students' practice, and also improved participants' satisfaction. Indeed, the benefits of simulation-based learning in nursing are well recognized [16]. Nursing educators in developed countries have proven the relevance of this pedagogy in the professional development of novice nurses in academic and clinical settings. In developing countries, where health needs are enormous, health educators must be more involved in simulation-based

teaching for quality training, optimization of skills, and valorization of the health personnel.

Although the lack of nursing simulation laboratories is an obstacle to student nurses receiving simulation-based learning, the lack of expertise and practitioners who are qualified in terms of nursing simulation [in Morocco in particular and Africa as a whole is the main factor limiting the development of nurses' skills during their basic training. With this in mind, the organization of this First National Forum on Nursing Simulation in Morocco in particular and Africa as a whole was an opportunity to promote the integration of simulation as an innovative pedagogical method in the basic training curriculum for nurses and to strengthen the partnership with national and international experts to improve the process of developing nurses' skills.

On the other hand, this national forum was also marked by the organization of a national competition between nursing students for the Moroccan "SimNurse" prize. This competition was spread over the second and third days. The competition took place between teams from the 12 institutes of the kingdom and each team was made up of three students. "SimNurse" simulation sessions included hands-on cases of emergencies, chronic diseases, and obstetrics.

TABLE 2: Results of the participants' satisfaction stratified by the different pillars of the First National Forum on Nursing Simulation in Morocco.

Focus	Category					Total N = 163
	Director (n = 11)	Teacher (n = 64)	Student (n = 68)	Guest (n = 20)		
Organization of the event	% of satisfaction	88.89	85.89	71.32	79.44	132 (81.12%)
	Average (SD)	9.78 ± 1.3	54.1 ± 9.1	52.2 ± 9.2	15.89 ± 2.98	130 ± 23
	p value	0.001	0.003	0.086	<0.001	
Master Class training	% of satisfaction	40.91	65.27	43.71	41.13	142 (87.60%)
	Average (SD)	8.4 ± 1.9	52.36 ± 14.2	59.45 ± 3.5	16.45 ± 1.13	140 ± 7
	p value	0.005	0.003	0.305	0.093	
Duration of the event	% of satisfaction	90.9	82.03	76.8	65	131 (80.37%)
	Average (SD)	10 ± 1.1	52.5 ± 3.5	55.5 ± 0.7	13 ± 2.8	125 ± 7.07
	p value	0.085	0.054	0.001	0.059	
Usefulness and applicability of knowledge	% of satisfaction	81.62	85.94	86.36	57.5	125 (76.68%)
	Average, (SD)	9.5 ± 0.7	55 ± 1.4	48.5 ± 10.6	11.5 ± 0.7	115 ± 13.1
	p value	0.361	0.007	0.004	0.233	
Overall satisfaction	n (%)	10 (90.9)	53 (82.8)	54 (79.4)	15 (75)	133 (81.6%)
	Average (SD)	10.4 ± 0.24	51.1 ± 21.6	53.3 ± 22.09	14.9 ± 10.1	130.8 ± 80.8

Clinical scenarios were designed and developed by expert practitioners and experienced members of the medical school. Live video recordings and real-time feedback of all simulated clinical situations were projected and shared directly with audiences and juries. As a result, the first prize of “SimNurse” was awarded to the team of students from the HINPHT institute of Meknes, the second prize was awarded to the team from the HINPHT of Marrakech, and the third prize was won by the HINPHT of Fez.

Of the 163 participants who evaluated the Forum, 12.3% were nursing and health techniques students. These students evaluated all aspects of the event and gave an overall satisfaction score of 79.4%. In-depth analysis showed that student satisfaction was significantly correlated with the usefulness and applicability of the knowledge ($p = 0.004$) and with the duration of the forum and of its activities ($p = 0.001$). Indeed, the simulation does not allow for the inclusion of all variables associated with patient emergencies in real clinical settings [10]. However, simulation presents a controlled genuine environment that can be handled by a teacher or instructor who can stop and restart the learning process if necessary. In actual clinical situations, this option does not exist and each decision can directly influence patient outcomes [10]. In clinical settings, the management of a patient is multidisciplinary, and teamwork in simulation allows students to acquire and develop group practice which would be a more accurate representation of working in clinical settings [10]. In order to better promote evidence-based learning and decision-making skills, simulation training should be customized and replicate a real situation so that students have an accurate picture of a clinical situation [7, 10].

Concerning the perception and viewpoint of the participants towards the different activities of the forum, our results showed that 46.0% of the participants considered the relevance of the content as one of the strong points of the national forum, while 32.5% appreciated the choice of the focus areas and activities proposed during the three days of the event. However, 38.0% of the participants expressed the wish to increase the number of trained teachers, 35.6% suggested integrating simulation pedagogy into nursing education programs, and 34.4% recommended extending simulation to all nursing options and specialties. In addition, 13.5% of the participants expressed the wish to increase the time allocated to the “Master Class” training workshop. In this regard, studies have shown that simulation has the power to change the landscape of nursing practice and has many uses in nursing care [17, 18]. New applications include basic and continuing education, nursing leadership, advanced practice, interprofessional education, and professional development [17–19]. Simulation has become an increasingly accepted practice in educational programs in clinical settings [18]. In addition, clinician education focuses on teamwork, crisis resource management, and error prevention [20]. Simulation-based training is not

just for students but has become an approach of many international health science organizations in evidence-based training to help clinicians practice further their education and to help hospitals achieve quality and patient safety goals [16].

Nurses and managers could develop strategies that better support caregivers in identifying and providing quality nursing care that reflects responsibility, caring, intentionality, empathy, respect, and advocacy [21]. Nurse educators and teachers could modify curricula to model and teach students the intrinsic qualities identified in quality nursing care [21].

On balance, this study, which focused for the first time in Morocco on nursing and health techniques simulation, was well received by Moroccan nursing educators. The satisfaction scores of participants in the first national forum on simulation in nursing, as well as in the Master Class training workshop and the competition for the best “SimNurse” in Morocco, were very encouraging for the organization of similar events in the Maghreb region in particular and Africa as a whole. The study suggested the integration of simulation education in nursing education to actively contribute to the promotion of quality and safety of care. The study also recommended the adoption of simulation pedagogy as a teaching strategy for nurse educators in Morocco, who are not used to using it in their teaching sessions. This pedagogical approach should be encouraged to stimulate the learning process of students. In addition, studies in health sciences as well as the application by medical staff have enhanced the use of simulation pedagogy among other categories of health professionals, which is another favorable aspect of this study. Therefore, improving nursing knowledge and practice through continuing education programs and workshops is essential to develop and advance the knowledge of health professionals [22, 23].

Thus, nursing educators, HINPHT managers, and in collaboration with leaders in simulation-based education should translate this national success to a continental scale. It is important to set up local and regional simulation laboratories and to develop the skills of nursing students in Morocco in particular and in Africa as a whole.

5. Conclusion

The main results of this study revealed that there was an overall satisfaction of 80.8%. Significant differences were found in participants’ satisfaction with organizational aspects (81.12%), the Master Class workshop and the duration of the event (80.37%), and the usefulness and applicability of the knowledge in the profession (76.68%). However, only a few participants were satisfied with the mediation of the Forum (8.6%), the quality of the technical and logistical material used (7.4%), and the duration of the Master Class (13.5%). These shortcomings must be taken into account in upcoming editions. The data from this scientific event may therefore serve as a model to encourage and improve the

organization of similar fora on nursing and health techniques simulation.

Abbreviations

BMD:	Bachelor-Master-PhD
MHSP:	Ministry of Health and Social Protection
HIHS:	Higher Institute of Health Sciences
HINPHT:	Higher Institute of Nursing Professions and Health Techniques
IHCT:	Institutes of Health Career Training.

Data Availability

The data used to support the findings of this study are included within the article.

Conflicts of Interest

The authors declare that there are no conflicts of interest.

Acknowledgments

The authors would like to express their sincere thanks to the people and institutions that provided organizational and scientific support throughout this academic project. In fact, the authors warmly thank the Directorate of Human Resources of the Ministry of Health and Health Protection for their support and assistance in the organization of the First National Forum on Nursing and health technology Simulation at Higher Institute of Nursing Professions and Health Techniques Fez. Similarly, the authors would like to thank all the members of the Moroccan Society of Medical Simulation for their collaboration, assistance, information, and exemplary help. In addition, the authors would like to thank the members of the four organizing committees, namely, the pedagogical committee, the communication committee, the logistics committee, and the internal steering committee, who devoted their time and invaluable effort to the organization of this First National Forum on Nursing Simulation in Morocco.

References

- [1] M. C. O'Shea, C. Palermo, G. D. Rogers, E. Cardell, and L. T. Williams, "It is time to link theory to practice in simulation-based learning: lessons from learning theories," *Journal of the Academy of Nutrition and Dietetics*, vol. 122, no. 3, pp. 508–518, 2022.
- [2] S. Oh and J. Park, "A literature review of simulation-based nursing education in Korea," *Nursing Reports*, vol. 13, no. 1, pp. 506–517, 2023.
- [3] Y. H. Kim, K. H. Hwang, and O. H. Cho, "Simulation education with problem-based learning: effect on nursing students' communication apprehension," *Social Behavior and Personality: An International Journal*, vol. 46, no. 1, pp. 151–160, 2018.
- [4] O. Changuiti, A. Ouassim, A. Marfak, E. Saad, A. Hilali, and I. Youlyouz-Marfak, "Simulation pedagogical program design for midwifery education using logic model," *The Journal for Nurse Practitioners*, vol. 18, no. 6, pp. 640–644, 2022.
- [5] O. Changuiti, S. Chergaoui, A. Marfak, A. Gantare, E. Saad, and A. Hilali, "Teaching prenatal care via hybrid simulation: a descriptive study at Hassan First University in Morocco," *Review*, 2020.
- [6] O. Changuiti, N. Moustarhfir, A. Marfak, E. Saad, A. Hilali, and I. Youlyouz-Marfak, "Simulation based-learning from simple to complicated clinical situations for midwifery students," *Advances in Medical Education and Practice*, vol. 12, pp. 881–886, 2021.
- [7] K. El-Mouhdi, S. Boussaa, J. Bouzid, and H. A. T. Lahsen, "The development of reasoning and reflective thinking among nursing students in Morocco: a quantitative pilot study," *Rev Sci Infirm Tech Santé*, vol. 1, no. 2, pp. 1–13, 2022.
- [8] P. Andersen, S. Baron, J. Bassett et al., "Snapshots of simulation: innovative strategies used by international educators to enhance simulation learning experiences for health care students," *Clinical Simulation in Nursing*, vol. 16, pp. 8–14, 2018.
- [9] K. Ando, A. Ando, A. Tanaka, S. Koba, and H. Sagara, "Educational effects of simulation and non-simulation training in airway management according to levels of the Kirkpatrick model: a systematic review and network meta-analysis," *Journal of Clinical Medicine*, vol. 11, no. 19, p. 5614, 2022.
- [10] K. Hughes, "Simulation in nursing education," *AJN, American Journal of Nursing*, vol. 118, no. 7, p. 13, 2018.
- [11] M. Sedgwick, S. Yanicki, N. Harder, and D. Scott, "A scoping review of the integration of ethics education in undergraduate nursing high-fidelity human simulation-based learning," *Journal of Clinical Nursing*, vol. 30, no. 5–6, pp. 605–614, 2021.
- [12] C. Nicholas and J. S. Sanko, "Human simulation in nursing education," *Annual Review of Nursing Research*, vol. 39, no. 1, pp. 53–79, 2020.
- [13] A. Ghazali, A. Boureau-Voultoury, M. Scépi, O. Mimos, and D. Oriot, "La simulation: du Task-Trainer au Crisis Resource Management, un défi pédagogique pour la médecine d'urgence," *Annales françaises de médecine d'urgence*, vol. 2, no. 6, pp. 384–392, 2012.
- [14] F. J. Plaza del Pino, O. Arrogante, A. J. Simonelli-Muñoz, J. I. Gallego-Gómez, and D. Jiménez-Rodríguez, "Use of high-fidelity clinical simulation for the development of cultural competence of nursing students," *Nurse Education Today*, vol. 116, Article ID 105465, 2022.
- [15] S. Goldsworthy, K. Sears, M. Luctkar-Flude, N. Harder, and B. Wilson-Keates, "Gaining momentum through collaboration: results of a Canadian nursing simulation research think tank," *Clinical Simulation in Nursing*, vol. 15, pp. 61–64, 2018.
- [16] D. Sofer, "The value of simulation in nursing education," *AJN, American Journal of Nursing*, vol. 118, no. 4, pp. 17–18, 2018.
- [17] P. C. Spigelmyer and M. C. Loughran, "Simulation: an active learning pedagogy for an undergraduate nursing leadership course," *Nursing Forum*, vol. 57, no. 5, pp. 765–772, 2022.
- [18] C. Morse, M. Fey, S. Kardong-Edgren, A. Mullen, M. Barlow, and S. Barwick, "The changing landscape of simulation-based education," *AJN, American Journal of Nursing*, vol. 119, no. 8, pp. 42–48, 2019.
- [19] T. A. Haukedal, I. A. Reiersen, H. Hedeman, and I. T. Bjørk, "The impact of a new pedagogical intervention on nursing students' knowledge acquisition in simulation-based learning: a quasi-experimental study," *Nursing Research and Practice*, vol. 2018, Article ID 7437386, 10 pages, 2018.
- [20] J. Vaughn, R. Cunningham, L. H. Schroeder et al., "An innovative interprofessional education simulation for athletic training and prelicensure nursing students: development,

- implementation, and student perspectives,” *Nursing Forum*, vol. 57, no. 6, pp. 1373–1380, 2022.
- [21] L. M. Burhans and M. R. Alligood, “Quality nursing care in the words of nurses,” *Journal of Advanced Nursing*, vol. 66, no. 8, pp. 1689–1697, 2010.
- [22] K. El-Mouhdi, M. Fekhaoui, F. Elhamdaoui, H. Guessioui, and A. Chahlaoui, “Knowledge and experiences of health professionals in the peripheral management of leishmaniasis in Morocco (ELHajeb),” *Journal of Parasitology Research*, vol. 2020, Article ID 8819704, 9 pages, 2020.
- [23] A. Merabti, A. Elachqar, T. S. Houssaini, and F. Kaddari, “Study of teaching/learning by simulation applied in nursing training: case of the higher institute of nursing professions and health techniques in Fez,” *Review of International Geographical Education Online*, vol. 11, no. 5, pp. 2739–2754, 2021.