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Development of a training programme to improve health literacy and respectful compassionate care competencies among undergraduate student nurses: a quantitative study

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Abstract

Background Tanzania has embarked on health service developments advancing the quality of respectful and compassionate nursing care provision through training in health literacy and respectful and compassionate care. The undergraduate nursing program, while technically sound is inadequate in these areas. Through an EU + funded collaborative partnership between universities in Europe and Tanzania with associated training hospitals, modules in the topic areas were developed, implemented, and clinical learning environments assessed. The study aim was to ascertain the development of compassionate and respectful nursing care and health literacy competencies of undergraduate nursing students in Tanzania following completion of an education program. A secondary aim was to evaluate the suitability and capacity of the clinical learning environment to optimize the learning process for student nurses undertaking the program.

Methods A pragmatic approach was used, drawing on formative evaluation through the phased development and implementation of an education program for undergraduate student nurses using a pretest-posttest design. A questionnaire survey was undertaken with student nurses ($n = 151$) in three Tanzanian universities before and after the education program was delivered.

Results Nursing students' knowledge, skills and attitudes related to Health Literacy all showed statistically significant improvement two weeks after the education program. For Respectful and Compassionate Care, no statistically significant difference was found. In the referral hospitals clinical learning environments, nursing students rated the overall subcategory "Satisfaction" at 41,6% on Strongly Agree/Agree.

Conclusions The development and implementation of an education program for undergraduate nursing students in Tanzania resulted in improved health literacy competencies. However, it did not produce the same outcome in

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competency development for respectful and compassionate care. Active inclusion and integration of respectful and compassionate care into the hospital setting with development of the learning environment can facilitate nurse's competency development. Supportive clinical learning environment boost students in their learning process.

Keywords Competency based education, Health literacy, Nursing education, Respectful, Compassionate care

Background

In recent years, greater attention has been given to improving the quality of patient care in low- and middle-income countries with increasing interest in the development of respectful and compassionate care provision [1] which can positively influence care quality [2]. Care is respectful if it maintains an individuals' dignity, privacy, and confidentiality; ensures that interactions with individuals or carers enhance informed decision-making, without inducement or coercion; promotes continuous support (as appropriate); is compassionate and responsive to their preferences, needs, and values; and is free from stigma, discrimination, mistreatment, and harm [3]. Moreover, it does no harm, demonstrates respect for human rights, promotes positive client outcomes, and is culturally sensitive so that it is valued by both the individual and the community [4]. Compassionate care is about a profound sense of kindness and empathy towards patients, driven by a commitment to the ethical and professional responsibility of easing patients' pain and distress [5]. In a scoping review of compassion in healthcare communication was identified as the central interpersonal component of compassion [2]. Health literacy is defined as "the degree to which people are able to access, understand, appraise, and communicate information to engage with the demands of different health contexts in order to promote and maintain good health across the life course" [6]. Nutbeam's classification of health literacy identifies interactive health literacy, as the skill to extract health information, gain meaning from different forms of communication, and to apply this information to changing circumstances [7]. Therefore, the nexus of compassionate and respectful care and health literacy is communication.

A recent study using demographic and health survey data from 14 Sub-Saharan African countries found that two out of three individuals' aged 15–49 years had low health literacy [8]. People with limited health literacy experience worse health outcomes, have higher hospitalization rates, and use less preventive care [9]. An identified gap in the research literature has been found in the provision of training programs tailored to improve provision of compassionate care [2, 10]. The need to improve health professionals' health literacy skills has also been recognised [11]. In Tanzania, the Mid-Term Review of the Health Sector Strategic Plan IV in 2019 undertook an extensive field study in more than 200 health facilities in the country (from primary to tertiary level) and found that the nursing education program is technically sound but contains deficiencies in communication training and respectful and compassionate care [12].

To improve quality of care there is a need for a paradigm shift in education in the health sector, towards training concerning "soft skills" based on values and attitudes to improve nurse -patient relations. By communicating more effectively in a patient centered way in clinical consultations, nurses contribute to improved understanding, adherence to medical treatment, improved health, and prevention of health problems [13]. Improved respectful and compassionate care and health literacy competencies among nurses will lead to better communication between nurse and patient, which is associated with enhanced patient satisfaction with health outcomes, increased service use and the promotion of patient centered care [14]. However, while competency-focused training is now the standard in Tanzania, most health training institutions do not follow this approach and there remains a more technical, disease orientated, and teacher centered focus in the education system [15]. This is partly due to a lack of knowledge and skills on how to improve curricula [16]. Health literacy is currently not part of the undergraduate nursing curricula in Tanzania and while aspects of respectful and compassionate care do feature, there are identified gaps [12] and indications of a lack of implementation in practice [17].

The HEALCARe project aimed overall to improve respectful and compassionate care and health literacy competencies in Tanzanian nurses by developing and implementing an educational intervention for undergraduate nursing students [18]. To improve this part of Tanzanian nursing education, the current harmonized bachelor curriculum of three Tanzanian universities was adjusted to incorporate respectful and compassionate care and health literacy competency content. The aim of the study was to ascertain development of competencies for practice of undergraduate nursing students in three Tanzanian universities following an education program on compassionate and respectful care and health literacy. A secondary but convergent aim was to evaluate the suitability and capacity of the partner referral hospitals to provide a clinical learning environment to optimize the learning process for student nurses. The outcome to be the provision of compassionate and respectful nursing care based on the associated theory, skills and attitudes.

Methods

Study context

The study was conducted at three Tanzanian universities in schools/faculties of nursing and their respective referral hospitals located in Dar es Salaam, Kilimanjaro and Mwanza regions respectively. The three universities in the regions offer a four-year Bachelor of Science in Nursing (BScN) program. The three tertiary referral hospitals: Muhimbili National Hospital (MNH), Bugando Medical Centre (BMC) and Kilimanjaro Christian Medical Centre (KCMC) are large tertiary hospitals which train undergraduate nursing students. Universities and referral hospitals work closely together in the training of undergraduate nurses.

Study design

A pragmatic approach applied to this study relative to the local context and experience in development of quality driven nurse education interventions [19]. The design drew on formative evaluation as used through the phased development and implementation of new programs or interventions [20]. A goal of formative evaluation is the optimization of program outcomes which in this instance is student nurse learning achieved from the use of specifically developed materials by teachers trained in their implementation in both education and clinical settings. Formative assessment is used in education and can be considered a form of formative evaluation when used as an assessment *for* learning as opposed to an assessment *of* learning [21]. In the context of education it has been recognized that the evaluation methods used in formative evaluation should be appropriate to the stage of development of the intervention [22]. The development stages are presented to provide context for the choice of evaluation method: a pre post questionnaire survey.

The development of the educational intervention comprised five sequential phases and involved creation, integration and delivery of health literacy and respectful and compassionate care teaching to nursing students. A summary of the sequential phases is provided below.

Phase I

Co-production of training materials and activities by university lecturers (Tanzanian and European) with members of staff from clinical environments including clinical practice teachers/instructors, on respectful and compassionate care and health literacy to enhance competences in these content areas, among undergraduate student nurses in Tanzania. The need for a module on customer care emerged through this initial development phase and was therefore added but is not reported on here. These modules were developed as a package with content to be delivered over a period of one week.

Phase II

After development of training materials, a total of twelve (12) master trainers comprising two (2) from each institution were trained by respectful and compassionate care, health literacy experts in Groningen, the Netherlands, with practice on how to deliver these contents in Tanzania to lecturers and clinical instructors. Thereafter, master trainers trained lecturers and clinical instructors as trainer of trainees across the four institutions to facilitate respectful and compassionate care and health literacy and customer care among other clinical staff and undergraduate student nurses.

Phase III: baseline survey

The baseline survey was administered to undergraduate students in year two of their studies, (2021/2022) and they were asked to complete a self-administered questionnaire on respectful and compassionate care, health literacy and the clinical environment for baseline information before receiving education.

Phase IV: intervention (training of students)

The education undertaken across institutions employed similar approaches to ensure students acquired similar concepts and assimilated the intended competences. The undergraduate nursing students were educated on respectful and compassionate care, health literacy and customer care for a period of one week. The education included learning activities like; role-plays, case studies and tools for systematic reflection. By the time all modules and content was available students were in year 3 at the three different universities in Tanzania. Year three was identified as appropriate for delivery as the new content aligned with current content and students had more clinical placements to facilitate the transfer of learning into practice.

Phase V: evaluation of the effectiveness of the intervention

Within two weeks after the training students were asked to complete the same questionnaire as the baseline. The questionnaire was administered across the three institutions to the same group of student nurses who were involved in the baseline to ensure valid data were collected in the post-test survey.

Study participants, and sampling

The study involved a cohort of Bachelor of Science in Nursing (BScN) students who were in the second year of the undergraduate program in 2021/2022 by the time the baseline study was done. The reason for selection of this cross-university cohort is that they take almost the same courses in the respective BScN curricula and are engaged in the clinical setting for skills practice across the three institutions. A census sample was adopted since they

have similar education background specifically secondary education as pre-entry qualification for enrolment in the nursing program in Tanzania thus reveals homogeneity of the sample both male and female, and all students were invited to participate in the study if they were registered on the education program in the second year. All students who consented to participate in data collection were enrolled.

Inclusion criteria

All second year students enrolled in nursing education programs in the academic year 2021/2022 from the three participating Tanzanian universities, were eligible for inclusion in this study.

Exclusion criteria

Students on sick leave for the baseline survey, and those who could not undertake respectful and compassionate care or health literacy training for a period of one week for post-intervention survey, were excluded.

Data collection

The study underwent independent ethical review attaining an ethical clearance certificate and permission letter from the respective authorities to proceed. The researcher introduced the research to the Deans faculty of nursing across all three universities who allowed to access potential participants (2nd year student nurses' academic year 2021/2022) to invite them to take part. Voluntary participation was the key to be involved in this study. The researcher or trained researcher assistant explained to groups of eligible students the aim, purpose, risk and benefits of the research to participants. Informed written consent was obtained from all participants. Questionnaires were distributed to all participants and the researcher/trained research assistant helped participants when the need arose to clarify some areas then checked for completeness after the students filled the questionnaire to ensure quality data was collected.

Survey tools

The questionnaire which included some sociodemographic questions and comprised two main areas: health literacy and respectful and compassionate care with a subsection on the clinical environment. The health literacy section drew on a questionnaire previously developed for a health literacy education program devised for undergraduate medical students [23] and comprised 4 subdivisions: Section A: Background information comprising 10 questions, Section B: Knowledge about Health Literacy involving 6 questions using a 7 point Likert scale ranging from "strongly disagree" to "strongly agree", Section C: Skills on Health Literacy with 16 questions using a Likert scale with 7 options ranging from "never" to "every time". Section D: Attitude on Health Literacy communication comprising 4 questions using a 4-point Likert scale ranging from "extremely likely" to "extremely unlikely". The respectful and compassionate care section was developed by the project team drawing on previous work [17] and consisted of twenty questions using a 5-point Likert scale ranging from "strongly agree" to "strongly disagree". An adaptation of the Clinical Learning Environment Inventory (CLEI) was used to measure nursing students' perceptions of the clinical learning environment. CLEI consists of a total of 42 items organized into 6 subcategories [24–28], comprising 5-point Likert scale answers ranging from "strongly agree" to "strongly disagree". The adaptation-CLEI in this study was developed by using the 6-subcategories.

Experts in the area of health literacy and respectful and compassionate care assessed the entire questionnaire for content validity. Face validity was ensured by piloting the questionnaire with 10 participants of the second year BScN program in each of the respective universities. Feedback from the piloted questionnaires was used to improve the questionnaire before administration in the main study. The same questionnaire was used for data collection at baseline and within two weeks immediately after training.

Data analysis

Questionnaires were double-checked for completeness by researchers before being collected from the students to ensure no missing data. Additionally, data-cleaning procedures were conducted to identify missing items in the data set. Data were entered into Microsoft Excel, then transferred to Statistical Package for the Social Sciences (SPSS) program version 20. Descriptive statistics were used to summarize Sociodemographic characteristics, for continuous data measures of central tendency and their respective measures of dispersion, and for categorical data, frequencies and proportions were used. A paired t-test was used to report change before and after training, as well as to identify the mean difference of health literacy and respectful and compassionate care, including effectiveness of student-centered teaching in the clinical environment pre and post training. A p-value of less than 0.05 was considered statistically significant.

Results

Sample profile

Out of the 210 students in the second-year cohort of BScN across the 3 universities, 187 (89%) agreed to participate in the baseline assessment, 184 (87.6%) underwent the training on health literacy and respectful and compassionate care. In total 151 (71.9%) students participated in the baseline, training, and the post-test. The Sociodemographic characteristics of the participants

Table 1 Sociodemographic characteristics of participants *n* = 151

Variable	KCMUCo (*n* = 40)	CUHAS (*n* = 62)	MUHAS (*n* = 49)
	N (%)	N (%)	N (%)
Sex			
Male	25(62.5)	36(58.1)	8(16.3)
Female	15(37.5)	26(41.9)	41(83.6)
Education-Undergraduate	39(99)	62(100)	49(100)
Marital status			
Married	0(0)	1(1)	4(8.1)
Single	40 (100)	61(99)	44(89.7)
Divorced	0(0)	0(0)	1(2)
Religion *Muslim*	7(17.5)	6(9.7)	6(12.2)
Christian	33(82.5)	56(90.3)	43(87.8)
Age, median (IQR)	22(21-22.6)	22(21–23)	23(22–26)

Table 2 Mean scores of health literacy (HL) outcomes and respectful and compassionate care (RCC) outcome before and after training

Variables	Baseline Mean (SD)	After the training Mean (SD)	*p* value[1]
HL knowledge [2]	4.86 (0.86)	5.47 (0.91)	< 0.001*
HL skills total [3]	5.02 (1.04)	5.79 (0.84)	< 0.001*
Attitudes HL[4]	3.29 (1.18)	3.53 (0.91)	0.004*
RCC[5]	2.67 (1.38)	2.68 (1.66)	0.90

[1] *P* value calculated from Paired-Samples T test * statistically significant

[2] Rated on a 7 point scale from 1 = 'Strongly Disagree' to 7= 'Strongly Agree'

[3] Rated on a 7 point scale from 1 = 'Never to 7 = 'Every time'

[4] Rated on a 5 point scale from 1 to 7 with mixed response options depending on question

[5] Rated on a 5 point scale from 1 = 'Strongly agree' to 5 = 'Strongly Disagree'

participated in baseline, training and post-test are presented in Table 1.

Health literacy and respectful and compassionate care

The supplementary material provides the median scores per item for the health literacy and respectful and compassionate care outcome separately. When looking at the sum scores for health literacy knowledge, the mean before training was 4.86 while after training this was 5.47 and the difference was statistically significant (< 0.001). For the health literacy skills, the mean before training was 5.02 while after the training this was 5.79 and this change was statistically significant (< 0.001). The mean attitudes towards health literacy score was 3.29 before the training, while this was 3.53 thereafter and this was a statistically significant change (< 0.001). For respectful and compassionate care, the total mean score was 2.67 before the training and this was 2.68 after the training and this difference was not statistically significant (Table 2).

Clinical learning environment

Table 3 shows how the nursing students perceived the presence of the 6 CLEI-subcategories during their clinical placements. The students rated the 6 Subcategories to "strongly agree" and "agree" in a range from 56.4% ("Personalization") to 41.6% (Satisfaction) and 39.7% ("Individualization") and "disagree" and "strongly disagree" in a range from 39% ("Personalization") to 30.8% ("Task orientation"). The Subcategory "Individualization" is the category with lowest agreement-rating, the highest disagree-rating and the highest score on the neutral-rating. When "strongly agree" and "agree" are added, the Subcategory "Satisfaction" measuring the students' overall

Table 3 The views on clinical learning environment at baseline (*n* = 151)

Subcategories	Strongly agree *n* (%)	Agree *n* (%)	Neutral *n* (%)	Disagree *n* (%)	Strongly Disagree *n* (%)
Personalization Opportunity for students to interact with the clinical teacher/clinical instructor/clinician as well as concern for students' personal welfare	55(36.4)	30(19.9)	7 (4.6)	28 (18.5)	31(20.5)
Individualization Students are allowed to make decisions and are treated differentially according to ability or interest	26(17.2)	34(22.5)	31 (20.5)	36 (23.8)	24 (15.9)
Student involvement[1] Students participate actively and attentively in hospital ward activities.	33(21.9)	43(28.5)	18(11.9)	33(21.9)	23(15.2)
Task orientation Instructions for hospital activities are clear and well organized.	40(26.5)	41(27.2)	19 (12.6)	29 (19.2)	22 (14.6)
Innovation[1] Clinical teacher/clinical Instructor/clinician plans new, interesting, and productive learning experiences, teaching techniques, learning activities and client allocations	35(23.2)	40(26.5)	18(11.9)	34(22.5)	23(15.2)
Satisfaction[2] I am overall satisfied with the clinical learning environment in this ward	18(11.9)	44(29.1)	32(21.2)	30(19.9)	25(16.6)

1 1 missing

2 2 missing

satisfaction with their clinical studies was rated 41.6% and 36.9% rated "disagree" and "strongly disagree".

Discussion

This discussion will first consider implementation and integration of the programme and then the results in relation to the development of health literacy and respectful and compassionate care competencies for nursing students.

It is important to recognise that the developed programme was integrated into the undergraduate nursing curricula in the three universities at similar stages of the undergraduate nursing programme at a specific point in the curricula where students' experience both class based learning and clinical practice. Both university teaching staff and clinical practice teachers participated in training activities in the use of the materials and participated in content delivery. That the programme was integrated into the curricula and delivered with positive outcomes for the health literacy component, suggests that the implementation of the programme is feasible in Tanzanian universities, supported by their referral hospitals.

The health literacy competences improved after a week of training as the sum score for health literacy knowledge, changed from 4.86 to 5.47, the sum score for health literacy skills increased from 5.02 to 5.79 and the attitudes changed slightly from 3.29 to 3.53. The changes were statistically significant (<0.001). The effect of health literacy training for nursing students was similar to other studies, with positive directions to change in their practice [29]. This reveals the implementation of health literacy training increased students' competence [30, 31]. This in turn has the potential to be reflected in the clinical area in quality patient care and patient education. By trained nurses taking account of health literacy in their practice, patients understanding, and knowledge of disease and treatment can improve along with disease prevention and self-care among individuals and communities.

The most important scenario is that nursing students will be able to identify patients with limited health literacy in practice [32] and assist them accordingly. However, patients will be able to abide by preventive services and self-care upon acquisition of knowledge and skills on health literacy to improve their individual and population health, accelerating reduction of morbidity and mortality induced by both communicable and non-communicable diseases [33–35].

For respectful and compassionate care there was no mean difference before and after the training and the difference was not statistically significant, as this was 2.67 and 2.68 respectively. There is limited literature in the area of compassionate care in education, notably within an African setting. In itself the lack of change in regard to learning about compassionate care is important as some change would be anticipated and it was a fundamental element of the study. This lack of change could be culturally mediated which requires further exploration.

The concept of compassion is complex and in a qualitative study of nurses it was found that it is strongly influenced by culture [36]. In relation to the findings of this research, the change to their daily practice on handling patients in the clinical setting probably demands more efforts as both students and health care workers adopted their traditional practice and maintained the cultural practice within the hospital settings. For change to occur in the clinical setting on handling patients and their relatives in a respectful and compassionate way by students and health care workers, continuous professional development on 'soft skills' including communication skills and a collaborative approach to enhance care practice is imperative [37]. Respectful and compassionate care as a new approach demands attitude change of individuals and cultural change in health services to handle patients during health care seeking as well as on provision of health care services both for outpatients and inpatients [38].

The importance of the role of the health care environment in terms of the provision by nurses of respectful and compassionate care has been linked to gaps in the transfer of theory into practice which cannot be addressed by education alone but requires environmental culture change [38]. The need for integration of compassion into organizational infrastructure has also been identified in a realist review [39]. The role of the environment in education is considered in this research in relation to learning processes. According to the nursing students' perceptions of the CLEI-subcategories, we may conclude that there is the opportunity for further development of the clinical learning environment as it is defined in CLEI, to support student learning in the clinical wards in the three tertiary referral hospitals. The collaborative nature of the Healcare project [18] with university and clinical settings working together can support the further development of clinical areas as settings for student learning. The highest rated subcategories were Personalization and Task-orientation. These subcategories may be considered as important parts for necessary further improvement of the clinical learning environment in the referral hospitals for the purpose of optimizing the student learning process in general and for delivering high quality nursing care through consideration of health literacy for the delivery of compassionate and respectful nursing care.

A focus on the Clinical Learning Environment may also be one key to optimize this approach.

Strength and limitations

The results from this study provide valuable insights into the development of competences required for

undergraduates nursing students in the Region. Inclusion of considerations of the learning environment is important in relation to the results of respectful and compassionate training.

The inter-institutional collaboration between hospitals and universities in Tanzania and Europe, has provided opportunities for multidisciplinary collaboration with the different insights strengthening the development of the training as well as the study. The institutions across the consortium (People/staff) were part of the development and implementation of the training and contributed to the survey to ensure alignment.

Limitations of the study concern that a validated measurement instrument would have strengthened the study undertaken. In addition to limited sample size due to the number of students that enrolled for the program at the universities and, the number of students that only completed one survey is a limitation. Further follow up of students after the training would also be beneficial.

One explanation of this finding is regarding aspects of the research. It could be due to the direction of the statements in the questionnaire as these were formulated in such a way that the likelihood to disagree with the statement is lower and in addition the direction of the statements is similar. By the time of the development of the questionnaire we intentionally reviewed the instrument and considered the items to be correct. In addition, the instrument underwent pilot testing. Nevertheless, the composition of the questionnaire might contribute to the fact that no difference was detected. This finding may also be explained by the time frame for pre and post training to observe the effect of change brought by assimilation of the knowledge on respective and compassionate care among nursing students to implement change in the clinical area and detach from their traditional practice, was too short.

Conclusion

While health literacy competencies were found to improve as a result of the training, no improvement was found in competencies related to respectful and compassionate care. This may be due to the need for further learning environment development in the wards both as a place providing respectful and compassionate care and as a place of learning. While the implementation of this education program appears feasible which contributes to its sustainability, an additional unplanned impact of the program is that the referral hospitals have established employee induction training programs for all staff on respectful and compassionate care as well as in health literacy. This development illustrates that capacity in hospital services in health literacy and respectful and compassionate care has begun to develop and it represents the beginning of the integration of these domains into the hospital setting knowing that supportive clinical learning environment will boost students in their learning process. This will enhance the dissemination of knowledge and skills on health literacy among health care professionals contributing to organizational change. Capacity has grown in the universities and health system through the collaborative process of development and implementation of this education program used to further progress the provision of respectful and compassionate care in Tanzanian health services.

Abbreviations

BMC	Bugando Medical Centre
BScN	Bachelor of Science in Nursing
CLEI	Clinical Learning Environment Inventory
CRERC	College Research Ethics and Review Committee
KCMC	Kilimanjaro Christian Medical Centre
MNH	Muhimbili National Hospital
NIMR	National Institute for Medical Research
SPSS	Statistical Package for the Social Science

Supplementary Information

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Supplementary Material 1

Supplementary Material 2

Supplementary Material 3

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Author contributions

PLK– Conceptualization of the research project, Data collection, Data analysis, manuscript drafting, writing, review and coordination. ED– Data collection, Data analysis, Manuscript drafting, writing and review. MN– Data collection, Manuscript drafting, writing and review. JS– Conceptualization of research project, Manuscript drafting, writing, review and editing. ZM– Data collection, manuscript drafting, writing and review. KB– Conceptualization of research project, Data analysis, manuscript drafting, writing, review and guiding on clinical learning environment. SM– Conceptualization of research project, manuscript drafting, writing and review. JMS– Conceptualization of research project, guidance on respectful and compassionate care. JR– Conceptualization of research project, Data collection, manuscript drafting, writing and review, managing the research ethical review process. JDZ– Conceptualization of research project, performing data analysis, manuscript drafting, writing and review. Manuscript drafting, writing and reviewing completed and agreed by all authors. The manuscript approved by all authors before submission for publication.

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Data availability

The data set used is available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate

Permission to conduct the study was sought from the respective university management, after obtaining ethical clearance from the college research

ethics and review committee (CRERC) of one of the Universities No. 2529 on 29th October 2021, and National Institute for Medical Research (NIMR) NIMR/HQ/R.8a/Vol IX/0.4003 on 13th May 2023. Thereafter, course coordinators in BScN programs from the respective universities were informed of the study and asked about the appropriate time when the students were free to undertake data collection exercises. During free time students were approached and informed of the study and asked for their written informed consent to participate. Voluntary participation was key to this project; participants were free to withdraw from the study at any time while retaining their rights to any services needed. Participant confidentiality was assured, and information remained within the context of the study.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

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