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EFFECTIVENESS OF THE DIGICARE EDUCATIONAL INTERVENTION IN IMPROVING NURSING AND MEDICAL STUDENTS' CLINICAL COACHING SKILLS IN VIETNAM AND BANGLADESH: AN EXPLORATORY PRE-POST STUDY
EFETIVIDADE DA INTERVENÇÃO EDUCACIONAL DIGICARE NA MELHORIA DAS HABILIDADES DE COACHING CLÍNICO DE ESTUDANTES DE ENFERMAGEM E MEDICINA NO VIETNAME E BANGLADESH: UM PRÉ- E PÓS-ESTUDO EXPLORATÓRIO

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ABSTRACT

Coaching has become an important approach to support self-management of patients with non-communicable diseases (NCDs) in healthcare education. Studies conducted in European countries have emphasized the significance of formal coaching training in enhancing the competencies of healthcare students. However, in Southeast Asia, where NCDs pose a serious public health concern, there is a lack of such training opportunities. To address this issue, an exploratory pre and post study was conducted to evaluate the effectiveness of the DigiCare educational intervention in improving clinical coaching skills. Nursing and medical students from six universities in Vietnam and Bangladesh were invited to participate. The intervention included both theoretical and practical classes with interactive methods and home assignments, with a total duration of over 10 contact hours. Pre- and post-intervention assessments were conducted using the Self-Efficacy and Performance in Self-management Support instrument, which was translated and culturally adapted to both countries. Statistical analysis showed a significant improvement in students' overall competence scores from before

($M = 2.6$, $SD = .67$) to after the intervention ($M = 3.05$, $SD = .55$), with a medium effect size ($p < .001$; $d = .73$). The DigiCare educational intervention appears to be a low-cost and meaningful addition to the curriculum of both nursing and medical universities across countries, with potential benefits in the development of students' clinical coaching competencies.

Keywords: Clinical Coaching; Self-Management Support; Nursing Students; Medical Students.

RESUMO

O coaching tornou-se uma abordagem importante para apoiar a autogestão de pacientes com doenças não transmissíveis (DNTs) na educação em saúde. Estudos realizados em países europeus têm enfatizado a importância do treinamento formal em coaching para aprimorar as competências dos estudantes de saúde. No entanto, no Sudeste Asiático, onde as DNTs representam uma séria preocupação de saúde pública, há uma falta de oportunidades de treinamento nesse sentido. Para abordar essa questão, foi conduzido um pré- e pós-estudo exploratório para avaliar a eficácia da intervenção educacional DigiCare na melhoria das habilidades de coaching clínico. Estudantes de enfermagem e medicina de seis universidades no Vietname e em Bangladesh foram convidados a participar. A intervenção incluiu aulas teóricas e práticas com métodos interativos e tarefas domiciliares, totalizando mais de 10 horas de contato. Avaliações pré e pós-intervenção foram conduzidas utilizando o instrumento de Autoeficácia e Desempenho no Suporte à Autogestão, que foi traduzido e adaptado culturalmente para ambos os países. Análises estatísticas mostraram uma melhoria significativa nas pontuações gerais de competência dos estudantes, de antes ($M = 2,6$, $DP = 0,67$) para depois da intervenção ($M = 3,05$, $DP = 0,55$), com um efeito médio ($p < 0,001$; $d = 0,73$). A intervenção educacional DigiCare parece ser uma adição de baixo custo e significativa para o currículo de universidades de enfermagem e medicina em diferentes países, com benefícios potenciais no desenvolvimento das competências clínicas de coaching dos estudantes.

Palavras-Chave: Coaching Clínico; Suporte à Autogestão; Estudantes de Enfermagem; Estudantes de Medicina.

1. INTRODUCTION

The prevalence of NCDs has been steadily increasing in Asian countries due to various factors, such as aging populations, unhealthy lifestyles, and urbanization. According to the World Health Organization, NCDs account for 9 million deaths in the Southeast Asia region alone, almost half of them premature, in people's prime productive years [1,2]. In addition to the health consequences, NCDs also impose a significant economic burden on Asian countries. The cost of healthcare, lost productivity, and premature deaths due to NCDs is estimated to reach trillions of dollars in the coming decades [2,3].

To address the growing burden of NCDs in Southeast Asian countries, various initiatives have been implemented, including policies to promote healthy lifestyles, public health campaigns, and restructuring of existing healthcare systems to prioritize early detection and management of NCDs [2].

Despite these efforts, there are still challenges to addressing NCDs in Southeast Asian countries, including limited resources and inadequate healthcare infrastructure. However, one of the most referenced challenges concerns cultural attitudes towards health and the self-management of existing conditions. Self-management involves taking responsibility for one's health and wellbeing, including making lifestyle changes, adhering to treatment plans, and making informed decisions about one's health [4,5]. While self-management is critical for improving health outcomes and reducing healthcare costs, many patients struggle to manage their health effectively.

Coaching is a relatively new concept that has its roots in sports, psychology, and business [6,7]. The role of a coach is to assist clients in leveraging their own resources and overcoming obstacles to achieve mutually agreed-upon goals. Recently, coaching has gained popularity in the healthcare sector in the

form of clinical coaching. Numerous studies have shown that clinical coaching can be effective in helping patients adopt healthy behaviors that can prevent and manage lifelong NCDs, such as arterial hypertension, diabetes, hyperlipidemia, or asthma [8,9].

However, managing NCDs can be challenging for most individuals, as they often lack an understanding of disease progression and self-management techniques. Clinical coaching is distinct from other forms of lifestyle improvement services. Counselling provided by healthcare professionals is often fast-paced and focuses on providing clinical advice and guidance [5]. This approach can be rigid and may not consider the patient's personal goals, available resources, and capacity for change [10]. While these professionals are skilled in discussing complex treatment and care issues with patients, time constraints often limit the counseling that can be provided. Thus, clinical coaching provided by trained healthcare professionals is a collaborative approach to enhance patients' self-management of their NCDs [11,12]. The health coach acts as a partner in the change process, actively listening and empowering the patient in a non-judgmental manner based on their concerns [13]. The health coach's role is to ensure that patients are educated about their health and guided towards setting realistic health goals, improving patient health literacy through patient-centered communication, educational materials, and reinforcement [6,7]. It is essential for healthcare professionals to practice both roles concurrently to ensure optimal outcomes for patients [14].

While clinical coaching has garnered significant attention from educators in nursing and medicine [6,7,9,11,13,15], there is a dearth of evidence on how to effectively introduce clinical coaching skills into their training curricula, particularly in low-resource countries. Therefore, our study aimed to evaluate the efficacy of an educational intervention developed to enhance the clinical coaching skills of nursing and medical students in Vietnam and Bangladesh.

2. MATERIALS AND METHODS

2.1. DESIGN AND SETTING

An exploratory study with a pre- and post-intervention design was carried out simultaneously in higher education institutions from Vietnam and Bangladesh. From Vietnam, data collection was undertaken at Hanoi Medical University (HMU), Hanoi Medical College (HMC), and Nam Dinh University of Nursing (NDUN). In Bangladesh, the educational intervention was conducted in City Medical College and Hospital (CMCH), Khulna City Medical College (KCMC), and Universal Medical College (UMC). The educational intervention was developed by the DigiCare Project consortium, as part of its activities funded by the Erasmus+ Agency, through its Strategic Partnerships for Higher Education Programme (grant number 598267-EPP-1-2018-1-FI-EPPKA2-CBHE-JP). The study was carried out between July and December 2022, with a baseline (T0) and post-intervention assessment (T1).

2.2. SAMPLE AND RECRUITMENT

Recruitment was conducted simultaneously at all sites between June and July 2022. The target population for the study included undergraduate nursing and medical students who voluntarily wanted to participate in the ongoing study and were affiliated with one of the partner universities. The inclusion criteria were an ability to understand Vietnamese or Bangla, age over 18 years, no formal training in clinical coaching, and provision of signed informed consent. Undergraduate students who were affiliated with the participating universities under a short-term mobility action were excluded from this study. First-year students and those who had participated in previous activities conducted under the DigiCare project were excluded from the study. However, they were provided access to all existing guiding materials and exercises after T1 was completed.

2.3. INTERVENTION

The educational intervention was simultaneously conducted across all partner universities between July and December 2022. The intervention focused on developing clinical coaching skills among nursing and medical students, using a structured pedagogical

approach developed by the project consortium partners (Table 1).

Table 1 – Summary of the DigiCare project’s educational intervention

Modality and duration	Topics	Objectives	Method	Home assignment for students
<i>Orientat ion classes (45 minutes)</i>	<ul style="list-style-type: none"> ▪ NCDs emergenc e and global impact; ▪ The DigiCare Model. 	<ul style="list-style-type: none"> ▪ Students know the elements of the DigiCare Model. 	<ul style="list-style-type: none"> ▪ Interacti ve lecture. 	<ul style="list-style-type: none"> ▪ Compl ete the DigiC are projec t readin g materi als (i.e., guidin g articl es and video tutoria ls).
<i>Theory Classes (240 minutes)</i>	<ul style="list-style-type: none"> ▪ Concepts of Self- managem ent; ▪ Positive Health; ▪ Professio nal Communi cation; ▪ Life change motivation ; ▪ Coaching and coaching framewor ks (5 A’s and GROW models); ▪ Digital tools in 	<ul style="list-style-type: none"> ▪ Know general principles of professional communicatio n; ▪ Know general principles of how to motivate patients for life change; ▪ Understand the concepts of Positive Health and Salutogenesi s; ▪ Know general principles of the concept of the self- management; 	<ul style="list-style-type: none"> ▪ Interacti ve lecture; ▪ World café; ▪ Flipped learning using online software (e.g., Flinga). 	<ul style="list-style-type: none"> ▪ Revis e and watch the two educa tional videos on coachi ng and model s; ▪ Write a short startin g point story acting as a

	<i>clinical coaching.</i>	<ul style="list-style-type: none"> Know general principles of coaching and different coaching models. 		<i>coach ee.</i>
<i>Practice classes (360 minutes)</i>	<ul style="list-style-type: none"> Role-play exercise in groups; Reflection and discussion. 	<ul style="list-style-type: none"> Perform professional communication/apply professional communication skills; Apply GROW coaching model and 5 A's coaching model in coaching practice. 	<ul style="list-style-type: none"> Low fidelity simulation. 	<i>n/a</i>
	<ul style="list-style-type: none"> Patient coaching and professional interaction skills in real working life. 	<ul style="list-style-type: none"> Practice coaching in real working life. 	<ul style="list-style-type: none"> Three coaching sessions with relatives on a specific topic; Learning diary. Feedback form. 	<i>n/a</i>

This approach was built upon existing literature reviewed by the research team and included modules and guiding materials that had been previously piloted for their significance and meaningfulness by both teachers and students. One senior professor from each partner team conducted the educational intervention outside of regular degree modules.

The participating professors had previously taken part in piloting rounds of the educational intervention and guiding materials for an entire year. This experience enabled them to become well-acquainted with the intervention's dynamics and discuss potential methods and strategies to be employed.

2.4. STUDY VARIABLES AND INSTRUMENTS

Data were collected at T0 (baseline, pre-educational intervention) and T1 (last class, immediately after completing group discussion). Students completed the encoded instruments on paper and submitted them by placing them in a sealed box upon completion. Data were collected using two questionnaires: i) a demographic questionnaire (e.g., age, sex, country and university, degree background, and satisfaction with the course); and ii) the Self-Efficacy and Performance in Self-management Support (SEPSS) instrument.

Duprez and colleagues [3] developed the SEPSS instrument based on the Five A's framework for professional behavior in self-

management support [4]. The instrument consists of six subscales, namely Assessment, Advise, Agree, Assist, Arrange, and Overall Competency, with six items in each subscale. Students rate their perceptions of self-efficacy and performance in each subscale on a five-point Likert scale, ranging from 0 (lowest) to 4 (highest) score. The six subscales allow for the measurement of outcomes on a subscale level, enabling a focus on specific aspects of the self-management process, while the total score provides an overall view of how support is provided. The scores range from 0 to 4 for the subscales and 0 to 24 at the total scale level, with higher scores indicating higher levels of self-efficacy or performance in self-management support.

The original instrument demonstrated high internal consistency with a Cronbach’s alpha of .96 [3]. The SEPSS instrument has been translated and adapted for use with Vietnamese and Bangladeshi nursing and medical students, with validation studies currently under review for publication elsewhere. Table 2 presents the internal consistency of the SEPSS scale in this study.

Table 2 – Internal consistency of the SEPSS scale adapted for Vietnam and Bangladesh

SEPSS subscales	SEPSS—Vietnamese version			SEPSS—Bangla version		
	Mean	SD	α	Mean	SD	α
Assess	2.50	.399	.68	3.00	.68	.83
Advise	2.66	.451	.74	3.01	.65	.78
Agree	2.57	.420	.75	3.00	.69	.82
Assist	2.59	.427	.75	3.00	.64	.81
Arrange	2.57	.424	.76	2.97	.72	.85
Overall competency	2.59	.379	.76	3.04	.67	.83

* SD = Standard deviation; α = Cronbach’s Alpha

2.5. ETHICS

The Ethics Committee of the Health Sciences Research Unit: Nursing (UICISA: E) at the Nursing School of Coimbra granted approval for the research proposal under the identification code P781-5/2021. Prior to participation, informed consent was obtained from all students to ensure their voluntary participation in the study. The students received comprehensive information regarding the study’s objectives, educational methods, and their rights as participants. They were also informed of their right to withdraw from the study at any point without academic repercussions. To prevent any potential identification of individual students, all data collection instruments were coded.

2.6. STATISTICAL ANALYSIS

All statistical analyses were performed using SPSS 26.0 for Windows (SPSS Inc., Chicago, IL, USA). Descriptive statistics including mean, percentage, the standard deviation was used to describe the variables of the study. The Kolmogorov Smirnov test showed that the data followed a normal distribution. To verify the effectiveness of the intervention, we measured students’ coaching skills from baseline (T0) to the end of educational intervention (T1) using Student’s *t*-test for related samples [16]. Effect sizes were estimated using Cohen’s *d* [17]. The significance level was set at ≤ .05.

3. RESULTS

Globally, 424 students enrolled in this study, with the following distribution: 52 from HMU (Vietnam), 35 from HMC (Vietnam), 93 from NDUN (Vietnam), 98 from CMCH

(Bangladesh), 82 from KCMC (Bangladesh), and 64 from UMC (Bangladesh). Overall, 352 students were female (83%), with an average age of 22.4 ± 3.8 years. Most students were enrolled in a nursing course ($n = 336, 79.2\%$) and attended their course as full-time students ($n = 349, 82.3\%$).

At T1, 336 of the 424 (79.2%) students attended the final class and completed the final assessment. Nonetheless, no statistical difference was found between pre- and post-intervention groups concerning their gender

($X^2_{(1)} = 3.676; p = 0.16$) or their average age ($Z = .445; p = .505$). Concerning their academic characteristics, both groups were similar when focusing on their degree background ($X^2_{(1)} = 5.163; p = 0.08$) and type of enrollment ($X^2_{(1)} = 1.748; p = 0.114$).

Between T0 and T1, statistical analysis revealed significant differences across the SEPSS instrument subscale scores in the global study sample (Table 3). The effect size, as measured by Cohen's d, indicated a medium effect for all differences found.

Table 3 – Pre- and post-intervention differences found in students' coaching skills (global)

SEPSS subscales	Assessment	n	Mean	SD	Sig.	Cohen's d	Effect-size r
Assess	After	336	3.01	.57	.000	0.65	0.31
	Before	424	2.60	.69			
Advise	After	336	3.04	.52	.000	0.62	0.30
	Before	424	2.67	.66			
Agree	After	336	3.05	.54	.000	0.78	0.36
	Before	424	2.57	.68			
Assist	After	336	3.04	.53	.000	0.62	0.30
	Before	424	2.67	.66			
Arrange	After	336	3.03	.55	.000	0.76	0.35
	Before	424	2.54	.73			
Overall competence	After	336	3.05	.55	.000	0.73	0.34
	Before	424	2.6	0.67			

* SD = Standard deviation; Sig. = statistical significance ($p \leq .05$)

A separate analysis was performed for each country, and for the Bangladeshi partner universities, independent samples t-tests were conducted to examine differences in SEPSS instrument subscale scores (Table 4). The results indicated significant differences, with

large effect sizes (Cohen's $d > 0.8$) found for the Agree and Arrange subscales, as well as for students' Overall Competence.

Table 4 – Pre- and post-intervention differences found in Bangladeshi students

SEPSS subscales	Assessment	n	Mean	SD	Sig.	Cohen's d	Effect-size r
Assess	After	242	3.17	.54	.000	0.73	0.34
	Before	244	2.66	.82			
Advise	After	242	3.15	.49	.000	0.72	0.34
	Before	244	2.69	.76			
Agree	After	242	3.20	.49	.000	0.91	0.42
	Before	244	2.61	.77			
Assist	After	242	3.16	.51	.000	0.68	0.32
	Before	244	2.73	.74			
Arrange	After	242	3.17	.53	.000	0.90	0.41
	Before	244	2.53	.85			
	After	242	3.21	.53	.000	0.83	0.38

Overall

competence Before 244 2.66 .77
e

* SD = Standard deviation; Sig. = statistical significance ($p \leq .05$)

In Vietnam’s partner universities, statistically significant differences were found between T0 and T1, with an increase in students’ average scores for all SEPSS subscales (Table 5). The

effect size, as measured by Cohen’s *d*, indicated a small effect for all differences found.

Table 5 – Pre- and post-intervention differences found in Vietnamese nursing students

SEPSS subscales	Assessment	n	Mean	SD	Sig.	Cohen’s <i>d</i>	Effect-size <i>r</i>
Assess	After	94	2.61	.43	.000	0.20	0.10
	Before	180	2.52	.45			
Advise	After	94	2.75	.46	.000	0.23	0.11
	Before	180	2.64	.51			
Agree	After	94	2.67	.44	.000	0.31	0.15
	Before	180	2.52	.53			
Assist	After	94	2.72	.48	.000	0.24	0.12
	Before	180	2.60	.52			
Arrange	After	94	2.65	.42	.000	0.22	0.11
	Before	180	2.54	.55			
Overall competence	After	94	2.64	.37	.000	0.18	0.09
	Before	180	2.56	.52			

* SD = Standard deviation; Sig. = statistical significance ($p \leq .05$)

At T0 and T1, students were requested to indicate their current satisfaction with their nursing or medical course. Following the educational intervention, a significant increase in overall students’ satisfaction was observed ($Z = 18.47$; $p = .017$). This result was further confirmed when examining data specifically for nursing ($Z = 8.015$; $p < .01$) and medical students ($Z = .131$; $p = .001$).

4. DISCUSSION

To our knowledge, this is the first study conducted in both countries on this topic. Our educational intervention shares some similarities with a study conducted by Maini et al. in England [18] and Wuyts et al. [19] in Belgium. In the study by Maini et al. [18], 48 third-year medical students participated in four

half-day campus-based small group sessions on coaching over four consecutive weeks. While some initial teaching and learning methods were similar, such as interactive learning, group discussions, and role-playing between students, the authors encouraged students to use their coaching skills during primary care clinical placements with patients. On the other hand, the INTENSS training intervention proposed by Wuyts et al. [19] consisted of a basic training module and a video-interaction guidance module. The DigiCare project intervention combines two approaches by incorporating group discussions and instructional materials (in both text and video formats). However, unlike in Maini et al. [16], the practical assignments

were conducted by the students with their relatives to create a “safe” training environment for their initial attempts as health coaches. This approach enables students to build confidence and competence in their skills before implementing them in real-world clinical settings.

Statistically significant differences were found at T1, with students evidencing higher average scores across the different subscales of the SEPSS instrument. In both countries, the students’ scores on the different subscales of the SEPSS were above the average score of 2.0, indicating a positive perception of their self-efficacy and performance competencies in patient self-management support before the intervention.

Interestingly, despite the differences in scores and effect sizes observed between nursing and medical students in Vietnam and Bangladesh, the SEPSS subscale with the highest development was similar. This subscale pertained to the collaborative goal setting (Agree), where nursing and medical students work with patients to achieve a consensus on the goals to aim for. To do so, students must help the patient identify earlier positive experiences with achieving past health goals and develop a joint plan of action [12,20]. The patient’s priorities must be considered, with support from healthcare professionals in making decisions about treatment options. The established goals and agreements must then be documented in the patient’s record to ensure care continuity [12,20].

Previous studies have suggested that clinical coaching training in nursing and medical education is a disruptive approach to self-management support compared to traditional training [6,8,9]. In the study by Maini et al. [18], medical students perceived clinical coaching training as a positive addition to their traditional training, describing it as a meaningful contribution to patient care. They reported changes in their mindset to a non-judgmental and solution-oriented approach, and the development of skills such as self-reflection, active listening, and person-centered communication [18]. Although these educational approaches are well-perceived by

students, there are contextual tension factors that affect their implementation during clinical placements, including lack of time, traditional learning and teaching experiences conducted by tutors [21], and patients’ expectations when they approach healthcare professionals about their NCDs.

Our findings indicate that it is crucial to focus on developing nursing and medical students’ competencies in collaborative goal setting, shared decision making, and organizing follow-up care. We observed that Bangladeshi students had lower self-assessed efficacy and performance in the Assist subscale, whereas Vietnamese students scored lowest in the Assess subscale. The Assess phase requires students to explore patients’ beliefs and motivation about living with chronic conditions and personalize the support provided [20,22]. In the Assist phase, students need competencies to help patients adapt their daily activities, monitor their health and progress, and encourage them to seek professional help when necessary [20,22]. Interestingly, these results differ somewhat from those of previous studies with nursing students and nurses from Europe, which found that the most room for improvement was associated with competencies explored in the Agree and Arrange subscales [23,24].

Nonetheless, the implemented educational intervention has the potential to enhance students’ competencies in clinical coaching and enable them to provide patient-centered self-management support to patients with NCDs. The low-cost approach to both theoretical and practical classes make this intervention a potentially valuable addition to the current nursing and medical curriculum in both Bangladesh and Vietnam.

Nevertheless, our findings must be analyzed considering the study’s limitations. Although the sample size was adequate for an exploratory study, the recruitment did not consider potential variations in students’ perceived competence as they progressed through the course. Therefore, future studies should stratify the sample according to degree background and course year to better explore the intervention’s potential benefits based on

the students' development phase. Such experimental studies must ensure true randomization and the existence of a passive control group. Another potential limitation is the heterogeneity of teaching and learning opportunities and environments across the six partner universities in Vietnam and Bangladesh. Although the medical and nursing curriculum in both countries follows national regulations in terms of structure and content, active learning environments transcend the curriculum, and other non-controlled variables may have influenced students' perceptions of their self-efficacy and performance in this field. Likewise, although the involved teaching staff had the opportunity to immerse themselves in the DigiCare educational intervention during a full year of piloting and iterations, potential variations in teaching style may have influenced study outcomes locally. Finally, although our findings showed positive results in terms of self-management support competence and course satisfaction, future studies should explore how the developed educational intervention can impact students' perceptions of their leadership skills, role independence, and career perspectives [21].

5. CONCLUSIONS

The results suggest that a structured educational intervention can enhance the competence of nursing and medical students in clinical coaching. The post-intervention scores showed a significant increase across various domains of self-management support, as perceived by the students in terms of both self-efficacy and performance. However, future studies with control groups and longer follow-up periods are necessary to determine the effectiveness of this low-cost educational intervention.

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