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♦ ARTIGO ORIGINAL

Capacitating Asian' Nursing Students on Prevention and Control of Healthcare-associated Infections

Capacitar estudantes de enfermagem de Ásia sobre prevenção e controlo de infeções associadas a cuidados de saúde

Capacitar estudiantes de enfermería de Asia en la prevención y control de infecciones asociadas a atención sanitária

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Abstract:

Introduction: Healthcare-associated infections (HAIs) represent a major challenge for patient safety and care experience in Asian countries. However, current curricula in Asian Nursing Higher Education Institutions (HEIs) do not comprehensively address the prevention and control of HAIs. To overcome this situation, six international HEIs developed the Erasmus+ PrevInf Project. **Objective**: To improve Asian' nursing students' competences in preventing and controlling HAIs and Antimicrobial Stewardship (AMS).

Methods: The PrevInf Project will be developed in six main work packages, to produce the PrevInf Pedagogical Model through innovative teaching and learning tools and establish an international community for students, teachers, and nurses to share experiences and opportunities within this field. Quantitative and qualitative data will be collected through structured literature

reviews, questionnaires, focus groups and lab-based simulation scenarios. All ethical principles will be respected throughout the Project.

Results: With the PrevInf Model students are expected to change their behaviours and develop their competencies in preventing and controlling HAIs and AMS. Nursing teachers will also access to innovative pedagogical tools, adapted to local realities and can easily integrated into the current curricula. **Conclusion**: The implementation of the PrevInf Project's intellectual outputs in Asian nursing curricula will enhance students' critical thinking, innovative, and entrepreneurial competencies in the field of prevention and control of HAIs and AMS, preparing them to face the current challenges of clinical settings.

Keywords: students, nursing; healthcare-associated infections; models, educational

Resumo:

Introdução: As infeções associadas aos cuidados de saúde (IACS) constituem um grande desafio para a segurança dos pacientes e respetivos cuidados de saúde nos países asiáticos. No entanto, os atuais currículos das Instituições Asiáticas de Ensino Superior de Enfermagem não abordam de forma abrangente a prevenção e o controlo das IACS. Para ultrapassar esta situação, seis Instituições de Ensino Superior (IES) internacionais desenvolveram o Projeto Erasmus+ PrevInf.

Objetivo: Desenvolver as competências dos estudantes de enfermagem asiáticos para a prevenção e controlo das IACS e resistência aos Antimicrobianos (RAM).

Metodologia: O projeto PrevInf será desenvolvido em seis pacotes de trabalho principais, destinados à produção do Modelo Pedagógico PrevInf, através de ferramentas inovadoras de ensino e aprendizagem, e ao estabelecimento de uma comunidade internacional de estudantes, professores e enfermeiros direcionada para a partilha de experiências e oportunidades dentro desta área. Serão recolhidos dados quantitativos e qualitativos através de revisões de literatura estruturadas, questionários, grupos focais, e cenários de simulação em laboratório. Todos os pressupostos éticos serão respeitados ao longo de todo o Projeto.

Resultados: Através da implementação do Modelo PrevInf, espera-se que os estudantes alterem os seus comportamentos e desenvolvam as suas competências para a prevenção e controlo de IACS e RAM. Os professores de enfermagem também terão acesso a ferramentas pedagógicas inovadoras e adaptadas às realidades locais que poderão ser facilmente integradas nos currículos de enfermagem atuais.

Conclusão: A implementação dos resultados intelectuais do Projeto PrevInf nos currículos de enfermagem asiáticos irá desenvolver o pensamento crítico e as competências inovadoras e empresariais dos estudantes no campo da prevenção e controlo das IACS e RAM, capacitando-os para lidarem com os desafios atuais dos ambientes clínicos.

Palavras-chave: Estudantes de Enfermagem; infeções associadas a cuidados de saúde; modelos educacionais

Abstracto:

Introducción: Las infecciones asociadas a la atención sanitaria (IAAS) representan un gran reto para la seguridad del paciente y experiencia asistencial en los países asiáticos. Sin embargo, los planes de estudio actuales de las instituciones de educación superior de enfermería (IES) de Asia no abordan la prevención y el control de las IAAS con un enfoque integral. Para solucionar este asunto, seis IES internacionales desarrollaron el proyecto Erasmus+ PrevInf. **Objetivo**: Mejorar las competencias de los estudiantes de enfermería de Asia relacionadas con la prevención y el control de las IAAS, así como con la administración de antimicrobianos (AM). **Métodos**: El proyecto PrevInf se desarrollará en seis paquetes de trabajo principales, con la intención de producir un modelo pedagógico (modelo PrevInf), herramientas innovadoras de enseñanza y aprendizaje, y una comunidad internacional para que estudiantes, profesores y enfermeros compartan experiencias y oportunidades dentro de este campo. Los datos cuantitativos y cualitativos se obtendrán mediante revisiones estructuradas de la literatura, cuestionarios, grupos focales y escenarios de simulación en laboratorios. Se respetarán todos los supuestos éticos a lo largo del proyecto. **Resultados**: Con la implementación del modelo PrevInf se espera que los estudiantes adopten un cambio de comportamiento y potencien sus competencias relacionadas con la prevención y el control de las IAAS y la AM. Por su parte, los profesores de enfermería tendrán acceso a herramientas pedagógicas innovadoras, adaptadas a las realidades locales, que pueden integrarse fácilmente en los planes de estudio actuales. **Conclusión**: La aplicación de los resultados intelectuales del proyecto PrevInf en los planes de estudio de enfermería de Asia mejorará potencialmente el pensamiento crítico y las competencias innovadoras y emprendedoras de los estudiantes en el ámbito de la prevención y el control de las IAAS, así como la AM, y los preparará para afrontar los retos actuales en los entornos clínicos.

Palabras clave: estudiantes de enfermería; infecciones relacionadas con la atención sanitaria; modelo pedagógico

INTRODUCTION

Healthcare-associated infections (HAIs) are defined as “infections that patients acquire while receiving health care” (Haque et al., 2018). These occur at least 48 hours after hospitalization or within 30 days of receiving medical care (Escobar & Pegues, 2021). HAIs represent a major problem for patient safety. They can result in prolonged hospital stays, long-term disabilities, increased resistance of microorganisms to antimicrobial agents, added financial burden for health systems and excess deaths (WHO, 2011).

The patient environment has become a key focus for infection control interventions in health-care facilities. Weber et al. (2010) explain that although a large proportion of HAIs is attributed to patients’ endogenous microflora, up to 40% of nosocomial infections are cross-infections passed on via healthcare providers’ hands, and high-touch patient-care surfaces contamination. A more recent study also underlines that antimicrobial resistance is one of the Public Health´s greatest challenges and highlights the high impact HAIs have on the number of cases, attributable deaths, and disability-adjusted life-years (Serra-Burriel et al., 2020). In fact, of every 100 hospitalized patients at any given time, 7 in developed and 10 in developing countries will acquire at least one HAI. The endemic burden of HAIs is also significantly higher in low and middle-income countries than in high-income countries, particularly in patients admitted to intensive care units and in neonates (WHO, n.d.).

The European Centre for Disease Prevention and Control describes an average HAI prevalence of 7.1% in European countries (WHO, n.d.). However, in low and middle-income countries, the available data is limited and often of low quality. Nevertheless, the WHO found that HAIs are more frequent in resource-limited settings than in developed countries (WHO, n.d.).

HAIs and epidemics in Asia increase healthcare institutions’ expenditure and the patients’ morbidity and mortality rates (WHO, 2011). National surveillance is rare and is usually implemented only in Asian developed nations, such as Taiwan, Singapore, Japan and Korea (Ling, Apisarnthanarak, & Madriaga, 2015). (WHO, 2011). National surveillance is a rarity and is usually only addressed in developed nations, such as Taiwan, Singapore, Japan and Korea (Ling, Apisarnthanarak, & Madriaga, 2015).

In 2013, infectious diseases were responsible for 25.3% of hospitalizations and a high mortality rate (12.23%) in Vietnam (Ministry of Health, 2016). A study in Cambodia also observed an HAI incidence of 3.1% with a prevalence of respiratory tract infections of 52.9% (Hearn et al., 2017).

Today, the worldwide reduction of HAIs has become a regulatory, financial and quality imperative (Escobar & Pegues, 2021). In the Global Action Plan on Antimicrobial Resistance (2015), the WHO has highlighted the importance of the prevention and control of HAIs and Antimicrobial Stewardship (AMS) as key components of professional education, training, certification, continuing education and development, reinforcing academic institutions' role in generating such knowledge and translating it into clinical practice.

Local academic institutions, including universities and others with a mandate for health workforce education, have a key role in curriculum development, endorsement and in training provision. A country's capacity and expertise in Infection prevention and control depends on the level of implementation its education and training in preventing HAIs. According to WHO recommendations (2020), countries must have national infection prevention and control curricula and training programs, developed in collaboration with academic institutions and aligned with national guidelines.

This goal can be achieved through the PrevInf Project, a Capacity Building for Higher Education European-funded project. PrevInf focuses on education for a better quality of healthcare, by capacitating Higher Education Institutions (HEIs) and other involved stakeholders. Six HEIs from Portugal, Finland, Cambodia, and Vietnam form the consortium established to develop Asian Nursing HEIs' current curricula. This will be carried out, by assessing and updating their learning objectives, curricula contents, teaching and learning methodologies and tools through the introduction and implementation of the *Capacitating Asian' Nursing Students on Innovative and Sustainable Prevention and Control of Healthcare-Associated Infections* – PrevInf – Model in their course programs.

METHODOLOGYS

The sequential development of the PrevInf Model consists of three key phases: 1) elaboration of an initial version based on international recommendations and scientific studies, gathered through systematic literature review processes; 2) implementation of pilot studies (agile cycles and full pilot), to collect the necessary data to evaluate the applicability and feasibility of the PrevInf Project's outputs in Asian nursing curricula, specifically in two HEI from Cambodia and Vietnam each; and 3) extensive and transnational dissemination of the Project 's outputs through the collaborative network of the InovSafeCare Project.

The Project's activities are divided into Work Packages (WP), each presenting single methods and specific goals to achieve their proposed objectives and phases.

The first WP (WP1 – Preparation) is directed at a key outcome: the Quality Plan (outcome 1), specifying the proposed activities, deadlines, requirements for outcomes acceptances,

identification of each activity/task leader, conflict-resolution procedures and communication and collaboration strategies.

In the second WP (WP2 - Development), the Project will focus on designing the PrevInf Model to facilitate the competences acquisition in prevention and controlling HAIs and AMS in nursing education. Therefore, the main objectives of WP2 are to review the best quality practices and research and elaborate the first drafts of the PrevInf Model (outcome 2) and the PrevInf Simulation Scenarios (outcome 3).

The latter will trigger nursing students' reflexive analysis of the clinical realities' settings surrounding them and support their clinical practice by mobilizing the theoretical evidence embedded in the PrevInf Model.

The third WP (WP3 – Development) aims to pilot the designed PrevInf Model (outcome 4) and Simulation Scenarios (outcome 5) using an agile approach. e purpose of the agile approach is to enable easy reactions and responses and improve any deficiencies or inadequacies detected in both draft versions. In Asia, at this stage of the Project, a minimum of 35 nursing teachers are expected to be trained to implement the referred tools before the agile pilots, in which a minimum of 400 students will be involved.

Thus, the WP3 is divided into two main activities: 1) to implement planned learning and training activities in each HEI to train and integrate nursing teachers into their respective teams, and 2) to develop five trial cycles.

The first cycle will use a theoretical approach to the PrevInf Model in a classroom environment. The following cycles will include the implementation of the Simulation Scenarios in a laboratory setting. After each trial cycle, meeting will be held with the nursing students and teachers involved. The partners will examine their findings and experiences, thus resulting in the adaptation of both outputs.

The main activities in the fourth WP (WP4 – Quality Plan) aim to test the PrevInf Model (outcome 6) and Simulation Scenarios (outcome 7) in eight nursing course programs from Asian' HEIs. They will involve 60 teachers and a minimum of 600 students. At this stage of the Project, at least 80 clinical nurses from regional health institutions will also be involved to receive training in the PrevInf Model's theoretical framework.

The main purpose of WP4 is to collect data to assess the PrevInf Model's effectiveness and influence and guarantee positive impact of the Project's outcomes on the development of nursing curricula.

The fifth WP (WP5 – Dissemination & Exploitation) will raise awareness of the positive impact the PrevInf Model has in Asian' Nursing HEIs' curricula. This objective will be achieved by producing the PrevInf E-book (outcome 8), with the Asian partners organizing national training days, during which additional stakeholders will receive training in the PrevInf Model

The sixth and last WP (WP6 - Management) will ensure the Project's quality, accuracy, adherence to deadlines and objectives, and transnational work meetings' effectiveness. The existing course programs in Asian' HEIs will be enhanced by the adaptation and integration the PrevInf Model into their nursing curricula and adapting and validating the PrevInf Simulation Scenarios and E-book as innovative pedagogical tools for student learning.

RESULTS

The PrevInf Model is expected to facilitate nursing students' acquisition of the best practices of prevention and control of HAIs, raising their awareness and encouraging them to critically reflect on current maladaptive practices in clinical settings and develop innovative solutions for their resolution.

With the implementation of the PrevInf Model in nursing curricula, students are expected to change their behaviours and develop their competencies in the prevention and control of HAIs and AMS. On the other hand, nursing teachers will have at their disposal an innovative pedagogical model and useful method to integrate such competencies into their course programs.

Moreover, PrevInf Simulation Scenarios offer students, teachers, and educators a link between students' experiences and the real-world, constituting a recognized interactive pedagogical tool. Teachers can use these interactive scenarios in the classroom, exposing students to new learning experiences and actively involving them in their execution. Students can also use the Simulation Scenarios as a distance learning tool in their individual study sessions, for example, at home.

As future health professionals, graduated students will improve patient care quality and safety, being at the forefront of the prevention and control of HAIs. The PrevInf Model will improve students' preparation to take on an active role in an integrated and patient-centred care system focused on patients' safety and overall wellbeing and reduce risky practices in clinical settings that increase the incidence and prevalence of infections.

The PrevInf Model's final version can also be used in nurses' differentiated training by establishing a collaborative network between the partner HEIs and regional health institutions.

Hence, the PrevInf Project can emerge as a response that enables existing infrastructures, creates new links between key stakeholders, and develops lasting pedagogical tools.

DISCUSSION

The PrevInf approach can assist in finding solutions along the care continuum that are not included in official guidelines, thus narrowing the gap between intentions and actions. The development of this pedagogical model, that formally addresses the prevention and control, of HAIs and its dissemination, should improve nursing curricula quality in the different Asian settings and contribute to establishing safe and quality care.

In the long term (after the funded Project's completion), the PrevInf Project will help nursing students develop their competencies in the prevention and control, of HAIs and AMS by stimulating their critical thinking and decision-making and providing them with the necessary high-quality skills to plan, implement, and assess their nursing care delivery.

The PrevInf Project aims to expand nursing curricula regarding the prevention and control of HAIs by providing pedagogical materials and teaching strategies, such as the PrevInf Model and practice based PrevInf Simulation Scenarios, to teachers and nursing students.

By providing nursing students with clinical skills based on quality and safety practices, critical analysis and entrepreneurial spirit, the PrevInf Project allows future nurses to become agents of change and a pillar of support within multidisciplinary health teams.

CONCLUSION

The best practices established under the PrevInf Project constitute an approach to supporting nursing students' competencies in preventing and controlling HAIs and AMS.

To achieve its main objective, the PrevInf consortium will optimizes its Asian partner HEIs' nursing curricula on the prevention and control of HAIs by evaluating and updating their learning objectives, curricula content, pedagogical methods, educational institutions, and available tools, as well as involving the relevant stakeholders in the design of the PrevInf Model's development process.

This pedagogical model will be based on research studies, which the consortium will conduct, and developed within scientific frameworks, adapted to each participating country's reality, thus integrating the best practices for the prevention and control of HAIs with the presentation of practice-based simulation scenarios, directed at nursing students and teachers as innovative educational tools. The PrevInf Model and Simulation Scenarios will be compiled into

a digital book - the PrevInf E-book, with the guidelines for the best practices to develop nursing students' competencies in preventing and controlling HAIs and AMS.

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