UNIVERSITAT DE BARCELONA

Implementación y evaluación del modelo de aprendizaje clínico *"Dedicated Education Units"* en Europa

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UNIVERSITAT DE BARCELONA

IMPLEMENTACIÓN Y EVALUACIÓN DEL MODELO DE APRENDIZAJE CLÍNICO "*DEDICATED EDUCATION UNITS*" EN EUROPA

MEMORIA DE TESIS DOCTORAL
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DECLARA:

Que la tesis titulada "Implementación y evaluación del modelo de aprendizaje clínico "*Dedicated Education Units*" en Europa" que presenta Sara Pedregosa Fauste para la obtención del título de doctor, ha sido realizada bajo mi dirección y cumple los requerimientos necesarios para su presentación y defensa pública.

Firmado:

Adelaida Zabalegui

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GLOSSARIO DE ABREVIATURAS

CFIR	*The Consolidated Framework for Implementation Research*
CM	*Clinical mentor*
CP	*Clinical placement*
DEU	*Dedicated Education Units*
EAC	Entorno de aprendizaje clínico
EANS	*European Academy of Nursing Sciences*
ECTS	*European Credit Transfer and Accumulation System*
HEI	*Higher Education Institution*
HN	*Head nurse*
LT	*Link teacher*
PC	Prácticas clínicas

ARTÍCULOS QUE CONFORMAN LA TESIS

Tesis en formato de compendio de artículos. La tesis consta de 4 objetivos específicos y 4 artículos. En el momento de la redacción de esta memoria, dos artículos están publicados y dos artículos se encuentran en proceso de revisión.

Objetivo número 1:

Examinar la eficacia de los modelos colaborativos académico-práctica de aprendizaje clínico que incluyen los roles de la enfermera docente clínica y de la enfermera mentora clínica, en mejorar el aprendizaje clínico de los estudiantes de enfermería/matrona en comparación con el modelo tradicional.

Artículo número 1:

Pedregosa S, Fabrellas N, Risco E, Pereira M, Dmoch-Gajzlerska E, Şenuzun F, et al. Effective academic-practice partnership models in nursing students' clinical placement: A systematic literature review. Nurse Educ Today [Internet]. 2020;95:104582. Disponible en: http://dx.doi.org/10.1016/j.nedt.2020.104582
Revista: Nurse Education Today. Factor de impacto: 1.4 SCImago Journal Rank. Cuartil: 1. Área conocimiento: Nursing

Objetivo número 2:

Implementar el modelo de aprendizaje clínico "*Dedicated Education Units"* en 6 organizaciones sanitarias europeas de Bélgica, España, Portugal, Polonia y Turquía y describir y comparar las barreras y facilitadores en la implementación del modelo mediante la utilización del *"Consolidated Framework for Implementation Research"*.

Artículo número 2:

Pedregosa S, Fabrellas N, Risco E, Pereira M, Stefaniak M, Şenuzun F, et al. Implementing dedicated education units in 6 European undergraduate nursing and midwifery students clinical placements. BMC Nurs [Internet]. 2021;20(1). Disponible en: http://dx.doi.org/10.1186/s12912-021-00576-5

Revista: BMC Nursing. Factor de impacto 0.910 SCImago Journal Rank. Cuartil: 1. Área conocimiento: Nursing

Objetivo número 3:

Conocer la percepción de los estudiantes de Enfermería y Matrona del modelo de aprendizaje clínico "*Dedicated Education Units"* en 6 organizaciones sanitarias de Bélgica, España, Portugal, Polonia y Turquía.

Artículo número 3:

Sara Pedregosa, Núria Fabrellas, Ester Risco, Mariana Pereira, Ewa Dmoch-Gajzlerska, Fisun Şenuzun, Sandra Martin, Adelaida Zabalegui. Evaluation of the clinical learning environment of Dedicated Education Units in 5 European countries. (Artículo en revision).

Revista: Nurse Education in Practice. Factor de impacto: 0.92 SCImago Journal Rank. Cuartil: 1. Área conocimiento: Nursing.

Objetivo número 4.

Conocer la percepción de los estudiantes de Enfermería y Matrona, enfermeras y matronas respecto a la implementación y los resultados del modelo de aprendizaje clínico *"Dedicated Education Units"* en 6 organizaciones de Bélgica, España, Portugal, Polonia y Turquía.

Artículo número 4:

Sara Pedregosa, Núria Fabrellas, Ester Risco, Mariana Pereira, Ewa Dmoch-Gajzlerska, Fisun Şenuzun, Sandra Martin, Adelaida Zabalegui. Nurses, midwives, and students' reports of effective Dedicated Education Units in five European countries: a qualitative study. (Artículo en revisión).

Revista: Nurse Education in Practice. Factor de impacto: 0.92 SCImago Journal Rank. Cuartil: 1. Área conocimiento: Nursing

RESUMEN

Introducción: Las experiencias de prácticas clínicas son fundamentales para que los estudiantes de Enfermería/Matrona integren la teoría en la práctica, adquieran conocimientos clínicos, herramientas, habilidades, autoconfianza y autonomía para afrontar con éxito el trabajo real de la enfermera, y se considera el componente clave de la formación en enfermería. El entorno de aprendizaje clínico está compuesto por todo lo que rodea a los estudiantes, incluidos los entornos clínicos, el equipo de salud, el personal de apoyo, los pacientes, la enfermera docente clínica y la tutora clínica, entre otros. Han sido descritos entornos poco favorables para los estudiantes debido a deficiencias organizativas, una relación deficiente entre estudiantes y formadores, y actitudes y comportamientos negativos por parte de éstos últimos. Ha sido publicada la una falta de conocimientos y dificultades de las enfermeras/matronas ante su rol formativo, dificultades para equilibrar este rol con sus otras responsabilidades, así como dificultades en los estudiantes para adquirir las competencias necesarias para la práctica. El modelo de aprendizaje clínico "*Dedicated Education Units"* se ha establecido como una alternativa para proporcionar un ambiente de aprendizaje de calidad con beneficios para los estudiantes, para las enfermeras/matronas y para la calidad de los cuidados y el bienestar del paciente y familia. **Objetivos:** El objetivo general de este estudio fue analizar la implementación y los resultados del modelo de aprendizaje clínico "*Dedicated Education Units"* en cinco países Europeos. Como objetivos específicos: (1) analizar la eficacia de los modelos colaborativos académico-práctico de aprendizaje clínico que incluyen los roles de la enfermera docente clínica y de la

enfermera mentora clínica en mejorar el aprendizaje clínico de los estudiantes de enfermería en comparación con el modelo tradicional; (2) implementar el modelo y describir y comparar los factores estructurales, culturales y personales que influyen en la implementación y en los resultados del modelo en seis organizaciones sanitarias de Europa; (3) conocer la percepción de los estudiantes respecto al modelo; (4) conocer las experiencias de estudiantes y enfermeras/matronas respecto al modelo y sobre los elementos consideran esenciales para un entorno óptimo. **Metodos:** Se realizó una revisión sistemática de la literatura sobre estudios que compararan modelos de aprendizaje clínico con colaboración académico-práctica y que incluyeran los roles de las enfermeras mentora y docente clínicas versus modelos tradicionales. Se implementó el modelo *"Dedicated Education Units"* en nueve unidades de práctica clínica utilizando el marco de implementación *"Consolidated Framework for Implementation Research".* Se llevó a cabo un estudio cualitativo multicéntrico que evaluó la experiencia de los responsables de la implementación del modelo en cada organización y se identificaron y compararon las barreras y facilitadores de la implementación. Se llevó a cabo un estudio exploratorio mediante el *"Clinical Learning Environment, Supervision and Nurse Teacher Scale"* para evaluar la percepción de los estudiantes de Enfermería/Matrona sobre el modelo. Se realizó un estudio cualitativo de enfoque fenomenológico y a través de entrevistas de grupos focales, se investigó sobre las experiencias dentro del modelo de los estudiantes, enfermeras/matronas mentoras y docentes clínicas y coordinadoras de las unidades. **Resultados:** Los modelos de aprendizaje clínico colaborativos que incorporan los roles de la enfermera docente clínica y la enfermera mentora clínica como el modelo "*Dedicated Education Units"* mejoran

el aprendizaje clínico de los estudiantes. Aunque hubo una implementación heterogénea del modelo por parte de los países participantes, no se percibieron grandes barreras de implementación. Los resultados del primer estudio cualitativo demostraron que la colaboración entre los recursos educativos y sanitarios, el enfoque en objetivos comunes, la comunicación y trabajo en red entre las instituciones, la satisfacción de los profesionales académicos y asistenciales y establecimiento de un espacio seguro para el debate y para la retroalimentación entre todos los profesionales se consideraban facilitadores. Los resultados del estudio exploratorio reflejan que los estudiantes percibieron el modelo como satisfactorio. Los resultados del estudio cualitativo sobre la percepción del modelo de estudiantes y enfermeras/matronas reflejan una experiencia positiva de los profesionales en el modelo. Además, estos resultados nos muestran que una estrecha colaboración entre los recursos educativos y sanitarios, una planificación realista de las prácticas clínicas, poner el foco en el proceso de aprendizaje de los estudiantes y la inversión en la educación y el desarrollo de los profesionales son los elementos que establecen un ambiente de aprendizaje clínico óptimo. **Conclusiones:** El modelo "*Dedicated Education Units",* ha resultado ser una buena opción para optimizar el entorno de aprendizaje clínico que incide en la satisfacción del alumno y de la enfermera/matrona con el proceso de enseñanza-aprendizaje. Para lograr la optimización del entorno de aprendizaje es imprescindible una estrecha colaboración entre las organizaciones educativas y sanitarias y suficientes recursos educativos, estructurales, organizacionales y humanos para un mejor equilibrio entre los diferentes roles de los profesionales. Así como, el

compromiso de los gerentes y profesionales y debe ser apoyada por políticas, programas de formación e incentivos.

RESUM

Introducció: Les experiències de pràctiques clíniques són fonamentals perquè els estudiants d'Infermeria/Matrona integrin la teoria a la pràctica, adquireixin coneixements clínics, eines, habilitats, autoconfiança i autonomia per afrontar amb èxit el treball real de la infermera, i es considera el component clau de la formació en infermeria. L'entorn d'aprenentatge clínic l'integra tot el que envolta als estudiants d'Infermeria/Matrona, inclosos els entorns clínics, l'equip de salut, el personal de suport, els pacients, i les infermeres docent i mentora clínica, entre altres. Són descrits entorns poc favorables per als estudiants a causa de deficiències organitzatives, una relació deficient entre estudiants i formadors, i actituds i comportaments negatius per part d'aquests últims. Existeix una falta de coneixements i dificultats de les infermeres/matrones davant el seu rol formatiu, dificultats per a equilibrar aquest rol amb altres responsabilitats, així com dificultats en els estudiants per a adquirir les competències necessàries per a la pràctica. La satisfacció dels estudiants amb les experiències i la supervisió durant les pràctiques clíniques són factors que impacten en el benestar de l'estudiant, en el seu aprenentatge i en com es desenvoluparà en el seu rol autònom. El model d'aprenentatge clínic *"Dedicated Education Units"* s'ha establert com una alternativa per a proporcionar un entorn d'aprenentatge de qualitat amb beneficis per estudiants, infermeres/matrones i per la qualitat de les cures i el benestar del pacient i família. **Objectius:** L'objectiu general d'aquest estudi va ser analitzar la implementació i els resultats del model d'aprenentatge clínic *"Dedicated Education Units"* en cinc països Europeus. Els objectius específics van ser: (1) analitzar l'eficàcia dels models col·laboratius acadèmic-

pràctic d'aprenentatge clínic que inclouen els rols de les infermeres docent i mentora per millorar l'aprenentatge clínic dels estudiants d'Infermeria en comparació amb el model tradicional; (2) implementar el model i descriure i comparar els factors estructurals, culturals i personals que influeixen en la implementació i en els resultats d'un nou model d'entorn d'aprenentatge en sis organitzacions sanitàries d'Europa; (3) conèixer la percepció dels estudiants respecte el model; (4) conèixer les experiències dels estudiants i les infermeres/matrones en el model i la percepció sobre els elements essencials per a un entorn d'aprenentatge òptim. **Mètodes:** Es va realitzar una revisió sistemàtica de la literatura sobre estudis que comparessin models d'aprenentatge clínic de col·laboració i que incloguessin els rols de les infermeres mentora i docent clíniques versus els models tradicionals. Es va implementar el model "*Dedicated Education Units*" en nou unitats de pràctica clínica en base al marc d'implementació *"Consolidated Framework for Implementation Research"*. Es va realitzar un estudi qualitatiu multicèntric que va avaluar la experiència dels responsables de la implementació del model en cada organització i es van identificar i comparar les barreres i facilitadors de la implementació a cada context. Es va realitzar un estudi exploratori per avaluar la percepció que els estudiants tenien de l'entorn d'aprenentatge dins del model mitjançant el "*Clinical Learning Environment, Supervision and Nurse Teacher Scale"*. Es va realitzar un estudi qualitatiu d'enfocament fenomenològic, i a través d'entrevistes de grups focals, es va investigar sobre les experiències dels estudiants, infermeres/matrones mentores i docents clíniques i coordinadores de les unitats dins del model. **Resultats:** Els models d'aprenentatge clínic que incorporen una estreta col·laboració entre la universitat i els centres de salut i que compten amb

els rols de la infermera docent i mentora clínica com el model "*Dedicated Education Units"* milloren l'aprenentatge clínic dels estudiants. Encara que va haver-hi una implementació heterogènia del model per part dels països participants, no es van percebre grans barreres d'implementació. Els resultats del primer estudi qualitatiu van demostrar que la col·laboració entre els recursos educatius i sanitaris, l'enfocament en objectius comuns, la comunicació i treball en xarxa entre les institucions, la satisfacció dels professionals acadèmics i assistencials i establiment d'un espai segur per el debat i la retroalimentació es consideraven facilitadors. Els resultats de l'estudi exploratori reflecteixen que els estudiants van percebre el model com a satisfactori. El model "*Dedicated Education Units*" va proporcionar un ambient clínic d'aprenentatge òptim que afectà positivament la satisfacció dels estudiants amb la seva formació, la supervisió individualitzada, l'ambient pedagògic de la unitat, la filosofia de la unitat i la implicació de tot l'equip de salut en el seu procés d'aprenentatge. Els resultats de l'estudi qualitatiu sobre les experiències dels estudiants i infermeres/matrones van reflectir un experiència positiva dels professionals en el model. Aquests resultats ens mostren que una estreta col·laboració entre els recursos educatius i sanitaris, una planificació realista de les pràctiques clíniques dels alumnes, posar el focus en el procés d'aprenentatge dels estudiants i la inversió en l'educació i el desenvolupament dels professionals són els elements que estableixen un entorn d'aprenentatge clínic òptim. **Conclusions:** El model d'aprenentatge clínic "*Dedicated Education Units*", resulta ser una bona opció per a optimitzar l'entorn d'aprenentatge clínic que incideix en la satisfacció de l'alumne i de la infermera/matrona amb el procés d'ensenyament-aprenentatge. Per a aconseguir l'optimització de l'entorn d'aprenentatge és imprescindible una

estreta col·laboració entre les organitzacions educatives i sanitàries i suficients recursos educatius, estructurals, organitzacionals i humans per a un millor equilibri entre els diferents rols dels professionals. Així com, el compromís dels gerents i professionals, i ha de ser secundada per polítiques, programes de formació i incentius.

ABSTRACT

Introduction: Clinical practice experiences are essential for nursing/midwifery students to integrate theory into practice, gain clinical knowledge, tools, skills, self-confidence, and autonomy to successfully deal with actual nursing work, and are considered the key component of nursing training. The clinical learning environment consists of everything that surrounds the nursing/midwifery student, including the clinical environment, the health team, support staff, patients, the clinical nurse teacher, and the clinical nurse mentor, among others. Unfavourable environments for students have been described due to organizational weaknesses, a poor relationship between students and trainers/supervisors, and negative attitudes and behaviours from these professionals. There are a lack of knowledge and difficulties of nurses/midwives to perform their training role, and in balancing it with other responsibilities, as well as difficulties in students acquiring the necessary skills for practice have been published. The students' satisfaction with the experiences and supervision during clinical practices are factors that impact on student's well-being, their learning, and how they will perform in their autonomous role. The clinical learning model "Dedicated Education Units" has been established as an alternative to the traditional supervisory model to provide a quality clinical learning environment with benefits for the students, nurses/midwives, and improvements in the quality of care and patient and family well-being. **Objectives:** The main objective was to analyse the implementation and the results of the clinical learning model "Dedicated Education Units" in five European countries. Specific objectives were: (1) to analyse the effectiveness of collaborative academic-practical clinical learning

models that include the roles of the clinical nurse teacher and mentor in improving the clinical learning of nursing students compared to the traditional model; (2) to implement the model and identify, describe, and compare the structural, cultural, and personal factors that influence the implementation and the results of a new clinical learning model in six healthcare organizations in Europe; (3) to describe the perception of the students regarding the model and the fourth and last objective was to describe the students and nurses/midwives' perceptions withing the model and suggestions about optimal learning environment' elements. **Methods:** A systematic literature review was carried out to examine the effectiveness of academic-practice partnership models which included the roles of clinical nurse mentors and teachers compared with traditional models. Second, the "Consolidated Framework for Implementation Research" was employed to implement the "Dedicated Education Units" in nine students' clinical placements. A multicentre qualitative study was carried out to identified and compared barriers and facilitators influencing the implementation and to describe the experience of nursing/midwifery coordinators involved in the model' implementation in each context. An exploratory study was carried out to examine nursing/midwifery students clinical learning environment' perceptions through the "Clinical Learning Environment, Supervision and Nurse Teacher Scale". A qualitative study with a phenomenological approach was performed to investigate the experiences of students, clinical nurses/midwives mentors and teachers and units coordinators within the model. **Results:** Clinical learning models that incorporate close collaboration between the university and health care institutions and include the roles of the clinical nurse teacher and mentor as the Dedicated Education Units model enhance clinical learning for students. The results of the qualitative study

showed that the collaboration between educational and health resources, the focus on common goals, communication and networking between institutions, the satisfaction of academic and healthcare professionals and the establishment of a safe space for debate and feedback were considered facilitators. The results of the exploratory study reflect that the students rated the model as satisfactory. The results show that the model provides an optimal clinical learning environment that positively affects student satisfaction with their training, individualized supervision, the unit' pedagogical environment and philosophy and the involvement of the health team in their learning process. The results of the qualitative study reflect a positive experience of professionals in the "Dedicated Education Units" model. In addition, these results show that a close collaboration between educational and health care resources, a realistic student' clinical practice planning, focusing on the student learning process and the investment in professionals' education and development are the elements that establish an optimal clinical learning environment. **Conclusions:** The clinical learning model "Dedicated Education Units" was a good option to optimize the clinical learning environment that affects student and nurse/midwife satisfaction with the teaching-learning process. To achieve the learning environment' optimization, a close collaboration between educational and healthcare organizations is recommended. Also, sufficient educational, structural, organizational, and human resources are essential for a better balance between professionals roles. As well as, the managers' commitment that must be supported by policies, training programs and incentives. It is recommendable and urgent to improve the nurses/midwives' work conditions and the learning environments of students as

the only strategy to alleviate the global shortage of nurses and respond to the increasingly demanding population' health care needs.

1. INTRODUCCIÓN

1.1. LAS PRÁCTICAS CLÍNICAS EN EUROPA

En el actual contexto europeo y siguiendo las directrices de la Declaración de Bolonia y la Directiva Europea, el proceso de aprendizaje de los estudiantes de Enfermería/Matrona integra en sus planes de estudio la teoría, la práctica simulada y la práctica clínica. El cómputo total de horas para obtener la titulación se sitúa alrededor de las 6.200 horas lectivas, 240 *European Credit Transfer and Accumulation System* (*ECTS*). Estas horas se dividen entre clases teóricas, seminarios, prácticas de laboratorio, trabajo personal del estudiante y aproximadamente2.300 horas de prácticas clínicas. En definitiva, los estudiantes dedican, en la mayoría de los países de Europa, un porcentaje elevado de horas de su periodo de aprendizaje a integrar los conocimientos teóricos y obtener las habilidades clínicas para la atención al paciente en diferentes organizaciones sanitarias [1, 2, 3]. El periodo de prácticas clínicas de los estudiantes de Enfermería es una parte vital en los programas de formación de las enfermeras para prepararlas para la práctica competente, pero representa un reto para las instituciones educativas y sanitarias. Todo y el esfuerzo por unificar y harmonizar los programas educativos, aún existe una variabilidad en la duración de los estudios, en la naturaleza de las instituciones y en las experiencias clínicas de los estudiantes y profesionales [4, 5]. Aun así, esta experiencia se convierte en la oportunidad del estudiante para integrar la teoría aprendida en clase en la práctica real, mejorar sus habilidades de razonamiento y juicio clínico, desarrollar la confianza en sí mismo y aprender a desenvolverse en el rol de la enfermera/matrona, proporcionando unos cuidados de calidad al paciente [6]. Salvando algunas diferencias, durante el periodo de prácticas clínicas, los estudiantes están instruidos, guiados y supervisados por una enfermera/matrona

[7]. El debate sobre la calidad de las experiencias clínicas de los estudiantes se ha intensificado debido al actual contexto de una falta global de enfermeras [8]. En este mismo estudio, subrayan cuales son los retos impulsores del cambio ("*Drivers for change*") a los que se nos enfrentamos los responsables de la provisión de la formación práctica de los estudiantes [8] (figura 1).

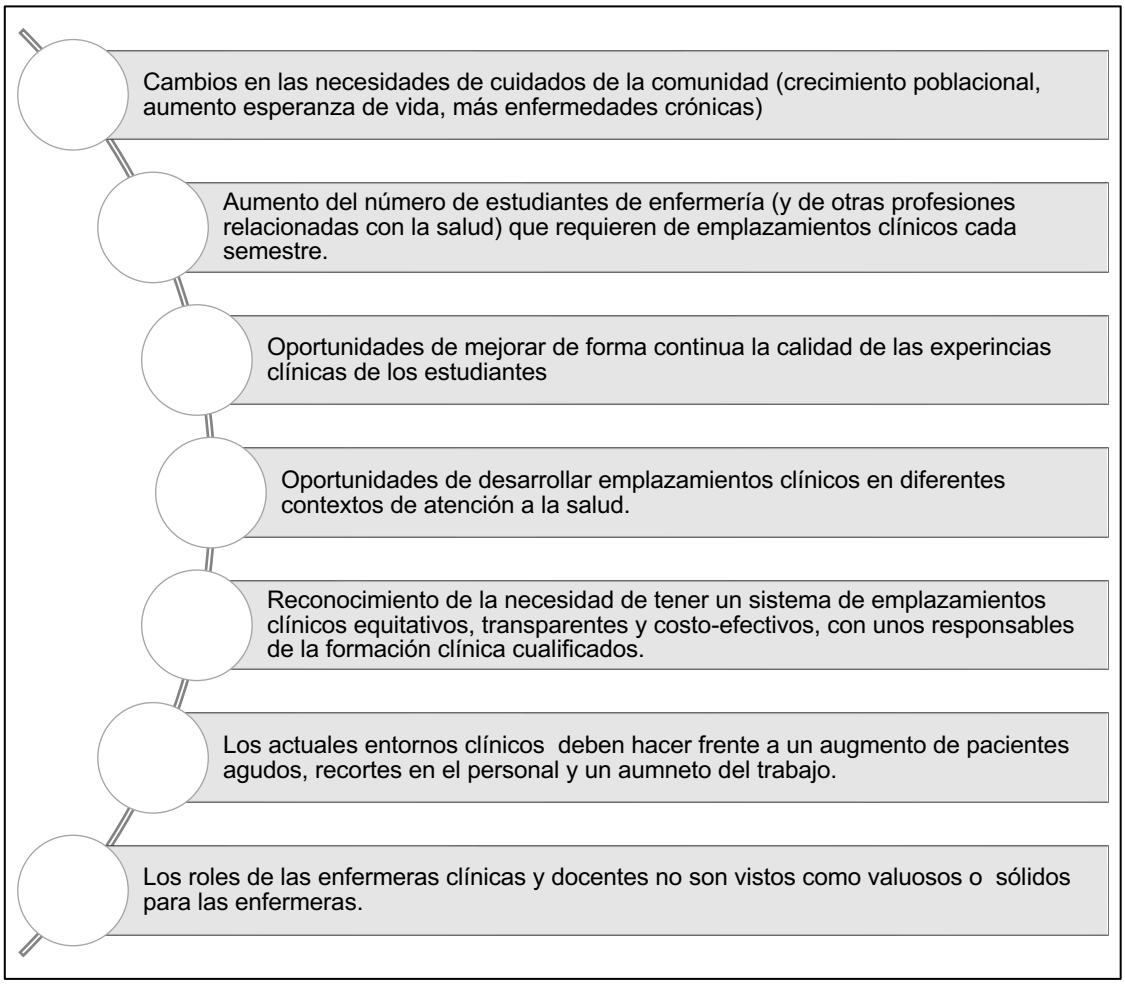

Figura 1 "Impulsores del cambio" de Challenges to the provision of clinical education in nursing [8]. Autorizados el uso y la traducción por Dr. Neville.

1.2. ENTORNO DE APRENDIZAJE CLÍNICO

El entorno clínico es el contexto el que se desarrollan las actividades y procesos orientados al cuidado, protección y restitución de la salud. Al mismo tiempo, en

el entorno clínico se llevan a cabo prácticas educativas orientadas a la preparación de los estudiantes de Enfermería/Matrona para la práctica real, convirtiéndose en un entorno de aprendizaje clínico (EAC). Este EAC está formado tanto por elementos físicos como psicológicos y sociales. Los elementos del EAC son aquellos que rodean e interactúan con el estudiante como el ambiente o cultura de la unidad, el equipo de salud, los pacientes, la enfermera/matrona mentora o preceptora y la enfermera/matrona docente. Los atributos del EAC incentivan al estudiante a alcanzar los objetivos de aprendizaje, así como la construcción de autoconfianza y satisfacción profesional [9, 10, 11]. En los últimos 20 años, el EAC en el que los estudiantes de Enfermería/Matrona experimentan el mundo real de la profesión y desarrollan relaciones interpersonales con otros profesionales y pacientes ha captado la atención de los responsables de la formación de las enfermeras/matronas debido a la estrecha relación existente entre el aprendizaje clínico de los estudiantes y las cualidades del entorno en el cual aprenden [9] El departamento de salud australiano, en su guía de mejores prácticas para entornos clínicos enumera una serie de factores que habilitan la calidad de un EAC [4 pág. 34].

- Una cultura de la calidad que desarrolla relaciones positivas, que apoya activamente el aprendizaje y premia las mejores prácticas.
- Una instrucción eficaz con una buena relación con el supervisor facilitada por las características de éste, su desarrollo, su reconocimiento y la recompensa de su buena actitud.

- Unas oportunidades de aprendizaje diversas y apropiadas a las competencias del estudiante, además del acompañamiento y apoyo del instructor en situaciones de atención directa al paciente.

- Una comunicación y colaboración efectivas entre estudiantes, organizaciones académicas y sanitarias en un esfuerzo por prepararse adecuadamente a la experiencia clínica.

- Unos recursos e instalaciones necesarios para realizar las prácticas clínicas.

Además, en esta misma línea, estudios recientes ponen de manifiesto que, según la perspectiva de los estudiantes y profesionales, entre las cualidades de un EAC eficaz estarían: una atmósfera de aprendizaje basada en el trabajo en equipo, una buena motivación y comunicación entre los miembros del equipo de salud, una gestión con liderazgo democrático, una buena relación con las enfermeras docentes y clínicas, cuidados de alta calidad y medidas que brinden oportunidades para el desarrollo profesional, entre otros [12, 7, 13].

Aun así, durante años han sido evidenciadas diferencias en los EAC. Existen diferencias en los roles docentes de las enfermeras, en los emplazamientos clínicos, en la organización, o en la estrategia educativa, y no todos los EAC son percibidos como un entorno de aprendizaje óptimo para los estudiantes. La distancia entre las instituciones educativas y las sanitarias, la falta de supervisión y retroalimentación al estudiante, la falta de oportunidades de aprendizaje clínico, la falta del sentido de pertenencia del estudiante, la brecha entre la teoría

y la práctica clínica, o situaciones que producen una falta de confianza del estudiante para expresar sus dudas, han sido descritos como factores limitantes para un entorno de aprendizaje óptimo [5, 12, 14, 15, 16]. Por otro lado, es reconocido que el objetivo principal de las enfermeras/matronas es brindar un cuidado de calidad orientado al paciente y familia, y que, en determinadas organizaciones, tienen que llevar a cabo este objetivo en medio de una falta de profesionales de Enfermería, una alta carga de trabajo, una gran cantidad de tiempo asignado a tareas administrativas y obligaciones relacionadas con la evaluación de la calidad del cuidado que proporcionan. Al mismo tiempo, estas mismas enfermeras/matronas tienen la responsabilidad de instruir y supervisar a los estudiantes de enfermería y asegurar que los estudiantes tengan el conocimiento, las habilidades y las competencias necesarias para el trabajo autónomo [17, 18, 19].

Debido a las razones expuestas anteriormente, los EAC siguen siendo un desafío global e importante en la formación de las enfermeras. Es necesaria una mejora del proceso de aprendizaje de las enfermeras/matronas y más oportunidades para que las enfermeras/matronas aprendan a guiar, instruir y supervisar a los estudiantes. Es una prioridad encontrar métodos novedosos para aumentar la calidad del entorno clínico de aprendizaje, en el cual los estudiantes de Enfermería/Matrona y enfermeras/matronas están aprendiendo, formando y cuidando, con el objetivo de beneficiar la experiencia clínica y la calidad de los cuidados al paciente [20, 21]. Así mismo, resulta ser un desafío en la formación de las enfermeras/matronas la utilización de los mejores resultados en la investigación clínica y pedagógica con el objetivo de lograr la

mayor calidad en el proceso de aprendizaje y en los cuidados ofrecidos al paciente y familia.

1.3. MODELOS DE APRENDIZAJE CLÍNICO

Los modelos de aprendizaje clínico incluyen estrategias y protocolos diseñados para ayudar a que el alumno adquiera, mediante el contacto directo con los profesionales y los pacientes, los conocimientos y las competencias necesarias para la práctica autónoma [21, 22]. Estos modelos presentan variaciones significativas en los roles y responsabilidades de los docentes, las enfermeras clínicas o los estudiantes en relación con la supervisión, la instrucción, el aprendizaje y la evaluación del estudiante. Así mismo, son percibidas diferencias en la naturaleza de las relaciones entre las organizaciones académicas y de atención a la salud y entre los principales actores, que sugieren beneficios y limitaciones en el proceso de enseñanza-aprendizaje [21]. El modelo de EAC considerado “tradicional” es en el cual un profesional supervisa un grupo de seis a ocho estudiantes en el entorno clínico. En la tabla 1, podemos observar las características de los modelos de aprendizaje clínico actualmente utilizados por los estudiantes de ciencias de las salud [23]:

MODELO DE APRENDIZAJE	DESCRIPCIÓN BREVE
Modelos de bloques	Modelos que integran prácticas clínicas a tiempo completo por períodos de semanas dentro de los períodos de clases teóricas o vacaciones. Los estudiantes tienen que lograr objetivos específicos que estén alineados con el emplazamiento clínico.
Modelos colaborativos	Modelos que enfatizan la asignación de dos o más estudiantes a un preceptor/mentor clínico en ratios de 1:1; 2:1; 3:1.
Modelos combinados	Modelos que resultan de combinar diferentes modelos y que se implementan para mejorar unos resultados específicos.
Modelos "Dedicated Education Units"	Modelo que designa unidades específicas enfocadas al aprendizaje clínico de los estudiantes dentro de un hospital.
Modelos innovadores	Modelos definidos por los autores como no convencionales: academias clínicas, emplazamientos alternativos semanales, instalaciones para el desarrollo de capacidades y los enfoques "sándwich".
Rotaciones longitudinales integradas	Modelos en los que los estudiantes participan en la atención integral del paciente durante períodos prolongados de hasta un año. Mediante el trabajo con médicos y con el objetivo de adquirir las competencias clínicas de las disciplinas de manera simultánea.
Modelos basados en prácticas o proyectos	Modelos que abarcan enfoques de prácticas basadas en la comunidad donde los estudiantes colaboran con la comunidad en el análisis, planificación, implementación y evaluación de proyectos de prácticas comunitarias participativas.
Modelos de roles emergentes	Modelos que tienen lugar en entornos no convencionales sin un profesional de la salud específico, con supervisión ofrecida por empleados en el emplazamiento y apoyo a distancia del profesional de la salud. Un ejemplo es ubicar a los estudiantes de terapia ocupacional en entornos donde los terapeutas ocupacionales normalmente no trabajan, y los estudiantes reciben apoyo a distancia por parte de terapeutas ocupacionales de su universidad.
Modelos de centro y radios	Modelos en los que los estudiantes se asignan a un centro para una práctica específica y luego se asignan a los radios. Estos "radios" son emplazamientos asociados a la especialidad del centro con la idea de mejorar la comprensión de la transición del paciente a través del entorno de atención médica.
Modelos dirigidos por estudiantes	Los estudiantes lideran la prestación de cuidados dentro de su entorno bajo la guía de sus supervisores clínicos

Tabla 1. Descripción de los actuales modelos de aprendizaje clínico utilizados [23]. Autorizados el uso y la traducción por Dr. Nyony

1.4. MODELO DE APRENDIZAJE "*DEDICATED EDUCATION UNITS"*

Un de los modelos de aprendizaje clínico más utilizado en los últimos años son las "*Dedicated Education Units"* (DEU). Estas unidades fueron implementadas por primera vez en la Universidad de Flandes en Australia en 1997 como una innovadora medida formativa para hacer frente a la falta de disponibilidad de enfermeras, ofreciendo más y mejores emplazamientos clínicos y mayores oportunidades de aprendizaje a los estudiantes [24, 25]. En los últimos 20 años, el modelo DEU ha ganado en popularidad y se ha ido expandiendo hasta ser utilizado en países de los 5 continentes [26]. El objetivo principal del modelo DEU es la de crear una estrecha unión entre las organizaciones educativa y de atención a la salud que proporcione un entorno de aprendizaje clínico de calidad para los estudiantes y beneficios para los profesionales y los pacientes. El modelo DEU facilita la interacción entre ambas organizaciones reestructurando el entorno de aprendizaje de la unidad, creando nuevos roles con nuevas funciones y responsabilidades, formando a las enfermeras/matronas para desempeñar su rol docente e involucrando a todo el equipo de salud en el proceso de enseñanza-aprendizaje, entre otras iniciativas [26, 27]. Los principales elementos que componen el modelo DEU son:

- Una estrecha colaboración y compromiso entre las organizaciones académicas y de atención a la salud.

- Un periodo de prácticas clínicas para los estudiantes más largo, de entre 6 a 12 semanas.

- Establecimiento del rol de la enfermera/matrona mentora clínica. Llevado a cabo por la enfermera/matrona que trabaja habitualmente en la unidad asistencial, que ha sido formada y que actúa como un guía e instructor, formando y supervisando a los estudiantes durante las prácticas clínicas.

- Establecimiento del rol de la enfermera/matrona clínica docente. Llevado a cabo por una enfermera/matrona procedente del entorno académico y que actúa como enlace entre las organizaciones académicas y de atención a la salud. Es la profesional responsable de la coordinación y supervisión del binomio alumno-mentor, de guiar y apoyar al mentor y evaluar el proceso de enseñanza-aprendizaje. Además, ayuda a los alumnos a utilizar el pensamiento crítico y las habilidades de razonamiento clínico para resolver problemas de la práctica real.

- La coordinadora/supervisora de la unidad asistencial participa activamente en el proceso de enseñanza-aprendizaje e instaura las condiciones necesarias para crear una “cultura de aprendizaje” en la unidad.

- Cursos de formación a mentores y docentes mediante clases teórico-práctica que incluyen educación pedagógica, conocimientos, habilidades y apoyo necesarios para sostener el aprendizaje de los estudiantes.

- Establecimiento de reuniones periódicas entre mentoras, docentes, coordinadoras de las unidades y estudiantes, con el fin de promocionar la retroalimentación, la comunicación, evaluar las necesidades de aprendizaje

de los estudiantes y establecer concordancias sobre el proceso de enseñanza / aprendizaje.

En la figura 2 podemos observar un ejemplo conceptual del modelo DEU en una unidad de agudos desarrollado por la Universidad de Portland [28]:

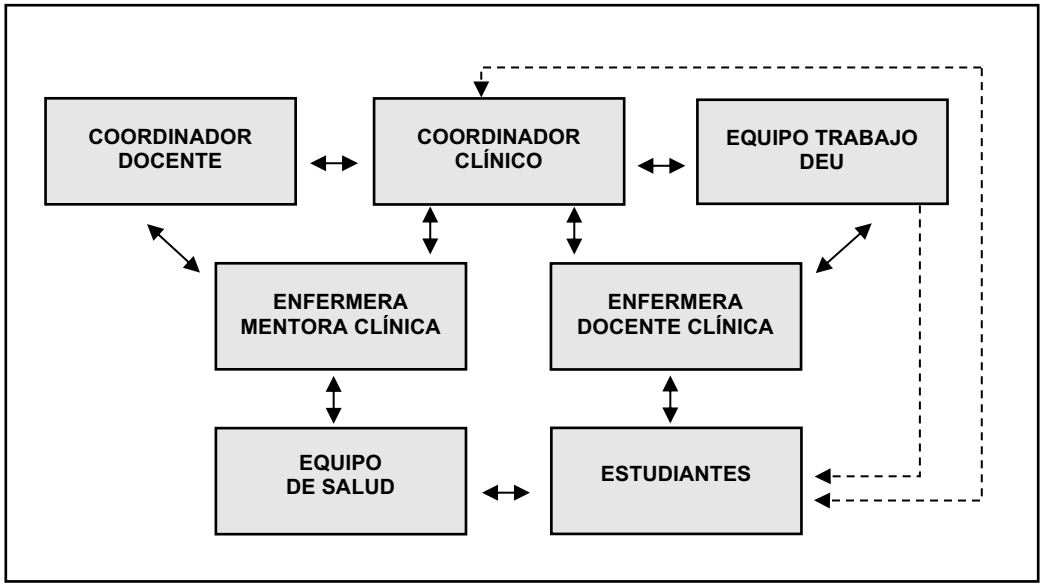

Figura 2. Ejemplo conceptual del modelo "*Dedicated Education Units"* en unidad de agudos [28]. Autorizados el uso y traducción por Dra. L. Limjuco

Experiencias de los estudiantes en el modelo

En una reciente revisión de los estudios (la mayoría cualitativos o cuantitativos con muestra por conveniencia) sobre el efecto del modelo DEU en la experiencia clínica de los estudiantes, sintetiza que el modelo DEU mejora la autoeficacia clínica y la confianza del estudiante, el desarrollo de habilidades de trabajo en equipo y de colaboración, mejora el conocimiento y la competencia, y produce una mayor satisfacción del estudiante con su experiencia clínica [29]. Así mismo, los estudiantes dentro del modelo DEU perciben que rápidamente se convierten en parte del equipo de salud, interactuando con el equipo interdisciplinario y

teniendo como modelo de conducta o de rol a la enfermera instructora [30]. Además, los estudiantes reportan que la enfermera mentora clínica les proporciona apoyo directo e indirecto y organiza experiencias de aprendizaje. Los estudiantes del modelo DEU muestran más confianza por parte de las enfermeras mentoras en sus capacidades y habilidades, una más eficiente adaptación al entorno, un crecimiento de sus responsabilidades en el cuidado del paciente y una mayor estimulación por parte de las enfermeras para que combinen la teoría, la práctica y el pensamiento crítico y resolver problemas de forma independiente [21, 22, 30, 31].

Experiencias de los profesionales en el modelo DEU:

Las enfermeras clínicas que participaron en los estudios de evaluación del modelo DEU ponen de manifiesto altos niveles de satisfacción, el esfuerzo y el apoyo del resto del equipo, así como la mejora del conocimiento y las oportunidades profesionales [32, 33]. Estas enfermeras también refieren que el modelo DEU les proporciona conocimientos y herramientas que mejoran sus habilidades docentes [26, 32, 33]. Por otra parte, se destaca la capacidad de las enfermeras docentes clínicas para proporcionar apoyo a las enfermeras mentoras en la mejora de sus capacidades de aprendizaje e instrucción y la mejora en la relación entre las organizaciones. En la misma línea, las enfermeras docentes refieren que sus relaciones con las enfermeras clínicas son más sólidas y muestran su satisfacción al coordinar, instruir y apoyar el desarrollo de éstas [30, 34, 35].

Experiencias de los pacientes en el modelo DEU:

A pesar de que la relación entre el aprendizaje en el modelo DEU y su repercusión en el cuidado del paciente no se ha estudiado en profundidad, los pacientes refieren sentirse envueltos en la formación de los estudiantes y desean ser partícipes tanto del aprendizaje del alumno como del de su propio proceso de salud [36]. En estudios recientes queda reflejado que el modelo DEU crea un entorno beneficioso tanto para el estudiante, los profesionales y para el entorno clínico en sí mismo, incluyendo a los propios pacientes [30]. Además de una percepción por parte de los pacientes del papel necesario de la supervisión del estudiante y la organización de la unidad para proporcionar a los pacientes una sensación de seguridad y para asegurar el cuidado correcto del paciente en los casos de un conocimiento insuficiente de los estudiantes [36, 37]. Además, en los estudios en los que ha sido evaluada la relación entre los estudiantes del modelo DEU y los pacientes, éstos han manifestado unas interacciones positivas con los estudiantes [38]. En esta misma línea, los resultados del estudio de Eskilsson et al., [30] nos muestran que los pacientes atendidos en las unidades DEU experimentaron un cuidado genuino por parte de los estudiantes de enfermería y lo caracterizaban por la cercanía, la rigurosidad, la accesibilidad, el reconocimiento y sensibilidad por parte de los estudiantes. Así mismo, en estudios en los que se ha evaluado el cuidado no proporcionado de enfermería como indicador de la calidad de los cuidados dentro del modelo DEU, los resultados demuestran que este cuidado no proporcionado no solo se mantiene, sino que, en ocasiones disminuye [33].

1.5. IMPLEMENTACIÓN DE LA INVESTIGACIÓN

Uno de los objetivos principales de la implementación de la investigación es sustentar y promover el éxito en la aplicación a la práctica de las intervenciones que han demostrado ser eficaces. El proceso de desarrollo-evaluación-implementación de una intervención puede ser un proceso largo, más cuando las intervenciones, simples o complejas, contienen diferentes componentes que interactúan entre sí y que pueden producir una gran variabilidad de efectos [39]. Además, el considerar que una intervención es compleja dependerá de las propiedades de dicha intervención, como son: el número de elementos involucrados en la intervención, el número y dificultad de comportamientos requeridos a las personas que ofrecen la intervención y a los que la reciben, las experiencias y habilidades de los responsables y los beneficiarios de la implementación, el número de grupos, entornos y niveles a los que se dirige la intervención, o el nivel de flexibilidad de la intervención o de sus componentes [40]. Las intervenciones enfermeras son predominantemente de naturaleza compleja, ya que incluyen varios componentes que dependen e interactúan entre sí y con su contexto. Además, estos componentes tienden a interactuar con las actitudes y circunstancias de los responsables de la implementación, dando forma a la intervención [41]. Por otro lado, la mejor manera de llevar a cabo un proceso de implementación y evaluación de la investigación consistiría en sistematizar el desarrollo de las intervenciones, utilizar la mejor evidencia y la teoría apropiada, probar las intervenciones usando un enfoque escalonado desde un pilotaje a una evaluación definitiva y difundir los resultados de la manera más amplia y persuasiva posible [39]. En esta misma línea, se recomiendan una profunda investigación y monitorización del proceso de

implementación, dando una gran importancia a conocer toda la variedad de efectos y cómo éstos varían entre emplazamientos [39]. En la figura 3 se describen las fases de la implementación de intervenciones complejas en un ejemplo con términos del desarrollo de nuevos fármacos [39].

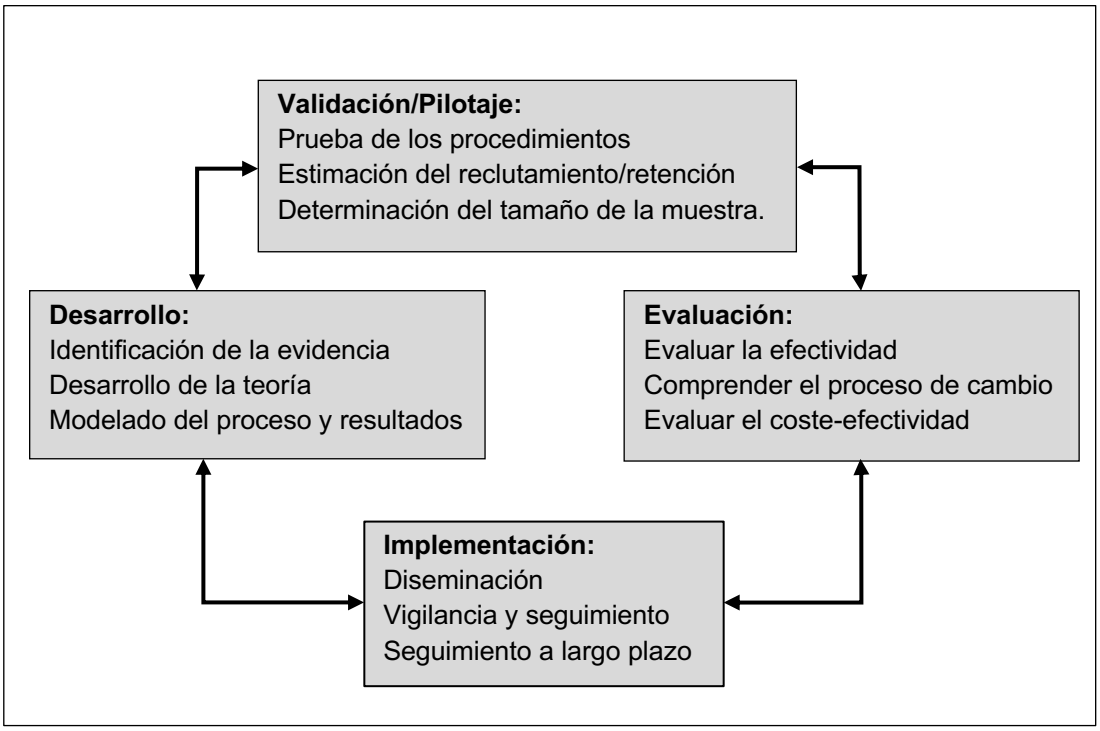

Figura 3. Fases de la implementación de intervenciones complejas [39]**.** Autorizados el uso y traducción por UK Medical Research Council.

En base a Craig et al. (2008) [39], las claves para la implementación exitosa de las intervenciones complejas serían las siguientes :

- Comprender cómo la intervención provoca el cambio en la teoría, con la finalidad de identificar y fortalecer los elementos más débiles de la cadena causal.

- Tener en cuenta que la falta de efecto de la intervención puede reflejar una grieta en la implementación (o problemas en el inicio de ésta) más que la ineficacia de la intervención. Por esta razón es necesaria una evaluación exhaustiva del proceso de implementación con el objetivo de la identificación de problemas.

- La existencia de una variabilidad en los resultados a nivel individual puede ser debida a errores en los procesos de nivel superior; puede ser necesaria una muestra más grande para tener en cuenta la posible variabilidad, así como considerar otro tipo de muestreo como los diseños aleatorios de conglomerados.

- Un primer y único resultado podría no ser un aprovechamiento óptimo de los datos. Son necesarios un mayor rango de medidas y recoger las consecuencias no deseadas siempre que sea posible.

- Asegurar una estandarización estricta puede ser inapropiado. La intervención puede funcionar mejor si se permite un grado específico de adaptación a los contextos en el protocolo de implementación.

A pesar de la evidencia existente sobre el modelo DEU como una excelente alternativa al método tradicional para mejorar el aprendizaje y las experiencias clínicas de los estudiantes y profesionales, existen pocos ejemplos en la literatura de cuál es la manera más eficaz de implementar y evaluar el modelo en los diferentes contextos. Para alcanzar el éxito en la implementación y evaluación del modelo DEU en los diferentes entornos clínicos de Bélgica,

España, Polonia, Portugal y Turquía se han seguido las directrices de Craig et al. (2008) [39] para el desarrollo de intervenciones complejas. En primer lugar, se ha realizado una revisión sistemática de la literatura para ubicar este proyecto bajo los mejores resultados en investigación clínica y educativa con el fin de lograr la calidad en el proceso y en la evaluación de resultados. Seguidamente, se ha implementado la intervención siguiendo el marco de referencia para la implementación de la investigación "*Consolidated Framework for Inplementation Research"* [42]. Durante la implementación y evaluación del modelo DEU se han tenido en cuenta las singularidades y necesidades de cada uno de los entornos y se ha procurado adaptar el modelo a los diferentes contextos. Se han evaluado y comparado todos los componentes que interactúan en el proceso de enseñanza-aprendizaje y que podrían ser causa de la variabilidad en los resultados de la implementación. Seguidamente se ha explorado la percepción que los estudiantes, coordinadores, gestores, y enfermeras/matronas han tenido sobre la implementación y resultados del modelo DEU, registrando y analizando sus experiencias, opiniones y sugerencias durante todo el proceso. Finalmente se ha realizado una difusión y diseminación de los resultados tanto del proceso de implementación como de los derivados del modelo.

1.6. MARCO TEÓRICO

Para evaluar la implementación y los resultados del modelo DEU en las unidades clínicas hemos seguido el modelo conceptual de educación continua *"Partering, Learning and Progress"* de Henderson et al. [43]. El concepto de "*Partnering"* (Colaboración) hace referencia al requisito esencial para el estudiante de Enfermería/Matrona del establecimiento de una relación basada en la aceptación

del equipo y de las enfermeras mentora y docente clínicas. En esta investigación, se evaluará el entorno de aprendizaje de cada unidad, la relación enfermera docente-enfermera mentora-alumno y el liderazgo de la coordinadora de la unidad asistencial en las que los estudiantes realizan sus prácticas clínicas. "*Learning"* (Aprendizaje) un concepto sugerido por los roles de la enfermera mentora clínica y la enfermera docente clínica, ya que la orientación estructurada, la transferencia de conocimientos y la retroalimentación constructiva que estas profesionales ofrecen al estudiante posibilitan el avance del aprendizaje. Todo ello será evaluado mediante la percepción que los estudiantes y enfermeras/matronas poseen del entorno clínico de aprendizaje. Finalmente, "Progress" (Progreso) concepto definido como el resultado que se desprende en el momento que los estudiantes de enfermería/matrona son capaces de construir sobre sus experiencias en el contexto clínico, reflejado en la evaluación y las experiencias de las prácticas clínicas de los estudiantes. En este modelo cíclico la colaboración, el aprendizaje y el progreso están interrelacionados en el desarrollo de la organización y son elementos esenciales para establecer un entorno de aprendizaje clínico óptimo [43].

1.7. JUSTIFICACIÓN DEL ESTUDIO

Esta investigación se centra en la implementación y evaluación del modelo de aprendizaje clínico DEU en los emplazamientos de práctica clínica de 5 países Europeos. Como queda reflejado, durante el periodo de práctica clínica de los estudiantes, aun hoy, son descritas diferencias en los roles docentes de las enfermeras, en los emplazamientos clínicos, en la organización, o en la estrategia educativa, y no todos los entornos son percibidos como un entorno de

aprendizaje óptimo para los estudiantes y profesionales. Así mismo, es reconocido que las experiencias de los estudiantes en un entorno de aprendizaje constructivo, centrado en las necesidades de aprendizaje de los estudiantes, en la profesionalización y el desarrollo de los profesionales y la atención al paciente, aseguran que el estudiante pueda manejar con éxito la transición a la práctica profesional. Mediante la implementación del modelo DEU en nuestro entorno, se espera mejorar las experiencias de aprendizaje clínico de los estudiantes y harmonizar los entornos de aprendizaje Europeos, alcanzando a impulsar unos cuidados enfermeros transfronterizos. También, mediante la formación y mejora del entorno de aprendizaje, se espera poder ayudar a nuestras enfermeras/matronas a equilibrar sus roles y aumentar su conocimiento, habillidades y motivación para formar a los estudiantes. Además, mediante la evaluación de la implementación piloto y los resultados del modelo en cada uno e los países participantes, se espera identificar los factores estructurales, culturales y personales determinantes para la implementación de un nuevo modelo de aprendizaje y evaluar qué elementos se consideran esenciales para lograr la satisfacción de estudiantes y profesionales que facilite su réplica exitosa en otros contextos asistenciales. Esta investigación también pretende convertirse en una herramienta útil para gerentes, formadores, investigadores y educadores, involucrados en el aprendizaje práctico de los estudiantes, a la hora de implementar un ambiente clínico de aprendizaje óptimo.

2. HIPÓTESIS

2.1. HIPÓTESIS DEL ESTUDIO

El modelo de aprendizaje clínico “Dedicated Education Units” proporciona un entorno de aprendizaje clínico óptimo para estudiantes, matronas y enfermeras durante las prácticas clínicas de los estudiantes.

3. OBJETIVOS

3.1. OBJETIVOS DEL ESTUDIO

3.1.1. Objetivo general del estudio

Analizar la implementación y los resultados del modelo de aprendizaje clínico "*Dedicated Education Units*" en el contexto europeo.

3.1.2. Objetivos específicos del estudio

1. Examinar la eficacia de los modelos colaborativos académico-práctica de aprendizaje clínico que incluyen los roles de la enfermera docente clínica y de la enfermera mentora clínica, en mejorar el aprendizaje clínico de los estudiantes de enfermería/matrona en comparación con el modelo tradicional.

2. Implementar el modelo de aprendizaje clínico "*Dedicated Education Units"* en 6 organizaciones sanitarias europeas de Bélgica, España, Portugal, Polonia y Turquía y describir y comparar las barreras y facilitadores en la implementación del modelo mediante la utilización del *"Consolidated Framework for Implementation Research"*.

3. Conocer la percepción de los estudiantes de Enfermería y Matrona del modelo de aprendizaje clínico "*Dedicated Education Units"* en 6 organizaciones sanitarias de Bélgica, España, Portugal, Polonia y Turquía.

4. Conocer la percepción de los estudiantes de Enfermería y Matrona, enfermeras y matronas respecto a la implementación y los resultados del modelo

de aprendizaje clínico *“Dedicated Education Units”* en 6 organizaciones de Bélgica, España, Portugal, Polonia y Turquía.

4. MATERIALES, MÉTODOS Y RESULTADOS

4.1. OBJETIVO Y ARTÍCULO NÚMERO 1

Objetivo:

Examinar la eficacia de los modelos colaborativos académico-práctica de aprendizaje clínico que incluyen los roles de la enfermera docente clínica y de la enfermera mentora clínica, en mejorar el aprendizaje clínico de los estudiantes de enfermería/matrona en comparación con el modelo tradicional.

Artículo:

Pedregosa S, Fabrellas N, Risco E, Pereira M, Dmoch-Gajzlerska E, Şenuzun F, et al. Effective academic-practice partnership models in nursing students' clinical placement: A systematic literature review. Nurse Educ Today [Internet]. 2020;95:104582. Disponible en: http://dx.doi.org/10.1016/j.nedt.2020.104582

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Resumen:

Introducción: Durante los últimos 20 años, el entorno de aprendizaje clínico donde los estudiantes de enfermería experimentan el mundo real de la enfermería y desarrollan relaciones interpersonales con otros, ha captado la atención de los educadores debido a la estrecha relación entre la educación clínica de los estudiantes y las características del entorno de aprendizaje clínico.

Objetivo: Esta revisión sistemática examina la efectividad de los modelos de asociación académico-práctica que incluyen los roles de la enfermera docente clínica y la enfermera mentora clínica para mejorar el aprendizaje clínico de los estudiantes de enfermería en comparación con los modelos tradicionales.

Métodos de revisión: se realizaron búsquedas en PubMed, CINAHL, PsycINFO y Cochrane Library para localizar ensayos clínicos aleatorios y estudios cuasiexperimentales publicados entre 1999 y 2020. Se utilizaron las herramientas de evaluación crítica del Instituto Joanna Briggs para garantizar la calidad metodológica.

Resultados: Catorce estudios fueron incluidos en la revisión. Los modelos *"The Collborative Teaching model"* y el modelo de "*Dedicated Education Units"* se evaluaron en ensayos clínicos aleatorios. El modelo "*Dedicated Education Units"*, "*Dedicated Education Centre*", "*Clinical Education Units*", "*Education Partnership model*", "*Collaborative educational-practice model"* and "*Collaborative clinical practicum model"* se evaluaron en cuatro estudios experimentales y diez estudios cuasi-experimentales. Los estudios no incluyeron la participación de los pacientes, y los profesionales clínicos y docentes tuvieron presencia anecdótica.
Conclusión: Existe una evidencia limitada sobre la efectividad de los modelos de colaboración académico-práctica. Sin embargo, los roles complementarios de la enfermera docente clínica y la enfermera mentora clínica, además del compromiso de los gerentes de las instituciones educativas y de atención a la salud, podrían facilitar con éxito el aprendizaje clínico de los estudiantes.

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Review

Effective academic-practice partnership models in nursing students' clinical placement: A systematic literature review

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ABSTRACT

Objectives: This systematic review examines the effectiveness of academic-practice partnership models which include clinical faculty and clinical mentor roles in improving nursing students' clinical learning when compared with traditional models.

Review methods: PubMed, CINAHL, PsycINFO and Cochrane Library were searched to locate Randomized Control Trials and quasi-experimental studies published from 1999 to 2020. The Joanna Briggs Institute critical appraisal tools were used to ensure methodological quality.

Results: Fourteen studies were included in the review. The Collaborative Teaching Model and the Dedicated Education Unit model were tested in randomized controlled trials. Dedicated Education Unit, Dedicated Education Centre, Clinical Education Units, Education Partnership model, Collaborative educational-practice model and Collaborative clinical practicum model were evaluated in four experimental studies and ten quasi-experimental studies. Studies did not include patient participation, and staff and faculty had anecdotal presence.

Conclusion: There is limited evidence on the effectiveness of academic-practice partnership models. However, the complementary roles of clinical faculty and clinical mentor, in addition to education and health institutions managers commitment could successfully facilitate students' clinical learning.

1. Introduction

Nursing students' learning process integrates theory, simulated practice and clinical practice into study programmes. In the European Union, clinical practice comprises at least 50% of the Nursing degree, and in the United States this percentage can vary by State (the Council of the European Union, 2005). This clinical learning period is considered fundamental in improving students' capacity and readiness to exercise nursing care once they graduate, and offers the students an opportunity to enhance their reasoning skills and clinical judgement, develop their self-confidence and learn how to cope in the nursing role (American Association of Colleges of Nursing, 2003). Consequently, over the last 20 years, the clinical learning environment where nursing students experience the real world of nursing and develop interpersonal relationships with others has caught nursing educators' attention due to the close relationship between students' clinical education and the characteristics of the clinical learning environment (Saarikoski et al., 2007; Henderson et al., 2006). The clinical learning environment is composed of the elements that surrounded the student in clinical site and influences student and staff experiences and the development of the teaching-learning process.

Clinical learning environment characteristics depend on the features of the clinical placement, the degree to which learning goals and student learning opportunities are matched in the clinical site, as well as the relationships between students, health professionals and university faculty, among others (Chan, 2001; Saarikoski et al., 2007). Nursing students' experiences in a supportive and constructive learning environment, focused on students' learning needs and patient care, ensure that students will be able to handle the transition to professional practice successfully (Croxon and Maginnis, 2009; Henderson et al.,

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2006). Nurse educators are pursuing innovative clinical placement models which allow students to develop the knowledge, skills and attitudes that enable them to manage patient care safely and effectively.

The extended traditional clinical learning model implemented in clinical facilities usually involves a group of 8 to 10 students working with different nurses throughout their clinical practice while supervised by a university clinical instructor. A recent literature review Budgen and Gamroth (2008) described ten current clinical learning models: the traditional faculty-supervised practicum, preceptorship, education unit, joint appointment, secondment, affiliate position, internship, co-operative education, work–study, and undergraduate nurse employment. These clinical education models have been tried and tested internationally with varied outcomes and have demonstrated intrinsic benefits, although not all are established according to best elements identified in the literature: (1) an academic-service partnership, (2) the clinical faculty and (3) the clinical mentor (AACN, 2003; Edgecombe et al., 1999; Jayasekara et al., 2018; Nehls et al., 1997).

1.1. Academic-practice partnership

Academic-service partnerships are defined as strategic associations between educational and clinical facilities that are established to advance their mutual interests in nursing practice, education and research (Beal, 2012). The academic-practice partnership has become increasingly important in nursing education (Beal, 2012; Pearson et al., 2015). Effective academic-practice partnerships intended to conduct educational work and meet students' clinical goals may reduce the theory-practice gap, increasing students' opportunities to build skills, confidence, critical thinking and decision-making. Additionally, they provide staff nurses with benefits such as advancing their education, being well-informed about students' academic programmes, and involvement in evidence-based practice activities (Bvumbwe, 2016; Pearson et al., 2015). Likewise, several studies confirm that collaboration between academic and practice facilities is a fundamental factor in achieving educational goals (Croxon and Maginnis, 2009; Moscato et al., 2013).

1.2. Clinical faculty

There are various terms to describe the role of the nurse hired by academic services who is responsible for supervising the development of nursing students' clinical skills and contributing theoretical knowledge during clinical practices, including: clinical teacher, lecturer practitioner, practice educator, link lecturer, clinical facilitator, link teacher and link tutor (Saarikoski et al., 2009). During clinical placements this role is extremely useful as clinical faculty provides support and motivates students to reflect on and discuss learning outcomes, link theory to practice and think critically (Saarikoski et al., 2009; Kristofferzon et al., 2013). Clinical faculty also supports staff nurses in their teaching role and student-staff communication by acting as a learning catalyst, and interacting with clinical facilitators to narrow the theory-practice gap (Gustafsson et al., 2015).

1.3. Clinical mentor

There are countries, such as the United Kingdom, where the terms preceptor and mentor are analogous and interchangeable in defining the registered nurse who supervises a student in a clinical setting in what is frequently a one-to-one relationship (Myrick et al., 2011). Mentoring in undergraduate nursing education has become a broadly accepted practice and the most favourable method for managing student learning in clinical practice (Myall et al., 2008). Peer mentoring is a model used to support nurses and students' growth and learning, and enhances nursing practice quality (Canadian Nurses' Association, 2004). This personalised, one-to-one supervision allows students to focus on their learning in the nursing environment, improve their self-confidence and encourages the autonomy which leads to clinical competence (Sharif and Masoumi, 2005; Saarikoski, 2007; Warne et al., 2010). The establishment of preceptorship training programmes for nurses is also crucial in the creation of a positive learning environment and positive attitudes toward nursing students and new workers (Henderson & Eaton, 2013; Saarikoski, 2007).

Clinical education units model was first implemented in Flinders University, Australia in 1999 to address a nursing shortage and to improve students' clinical learning and professionals' well-being (Edgecombe et al., 1999). The current learning models, which include the academic-practice partnership, clinical faculty and clinical mentor roles, such as the collaborative model, Dedicated Education Units, or the cluster model (Bourgeois et al., 2011; Callaghan et al., 2009; Edgecombe et al., 1999; Moscato et al., 2007) are considered to benefit collaboration between educational and practical services, and the clinical faculty and clinical mentor, to enable students' learning in clinical practice (Henderson et al., 2006, Jayasekara et al., 2018). An adequate assessment of these types of collaborative learning model utilizing methodical research is needed to determine potential clinical learning outcomes.

2. Methods

2.1. Research aim

The aim of this systematic literature review was to examine the effectiveness of academic-practice partnership models which include clinical faculty and clinical mentor in improving nursing students' clinical learning, compared with traditional models implemented in clinical facilities.

The question for this review was developed using the Population, Intervention, Comparison, Outcomes and Specific exclusion criteria (PICOS): Are academic-practice partnership models which include clinical faculty and clinical mentor roles effective for clinical learning in nursing compared with traditional models implemented in clinical placements? Table 1.

Table 1
PICOS comprehensive review.

Categories	Criteria
Population	Studies focus on pre-registration undergraduate nursing students undergoing clinical practice.
Intervention and phenomena of interest	academic-service partnership models of clinical practice for basic professional nursing education which include clinical faculty and clinical mentor roles.
Comparator	Traditional academic-service partnership models of clinical practice for basic professional nursing education model.
Outcome and context	Clinical learning evaluation, skill competency assessment, learning environment perception, …
Specific exclusion criteria	• reviews papers, opinion articles and conference abstracts. • qualitative studies. • descriptive and correlational studies. • no-English language publications

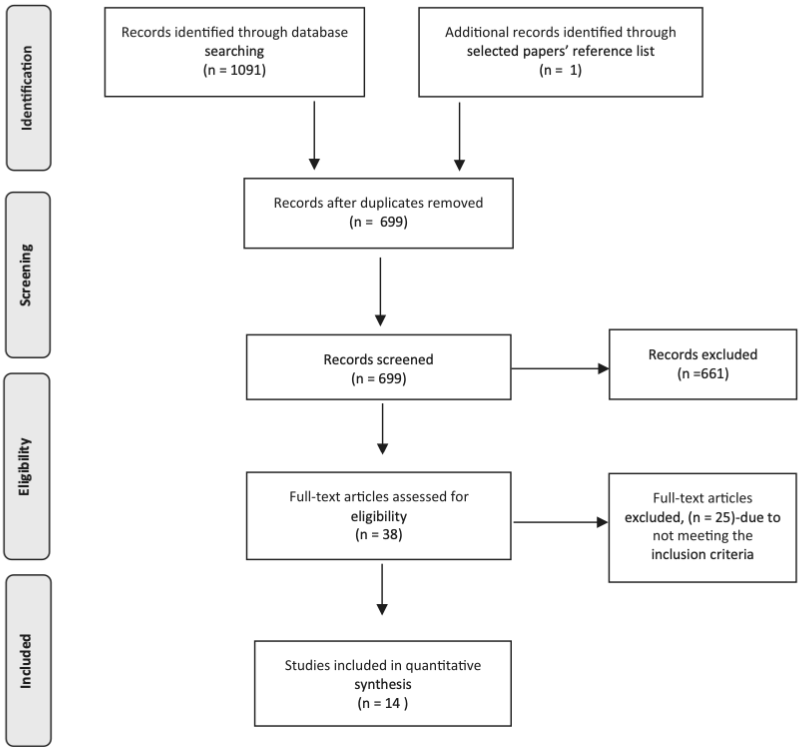

Fig. 1. PRISMA 2009 flow diagram.

2.2. Search strategy

To collect all evidence meeting predefined eligibility criteria, addressing specific research questions and minimizing bias, the systematic review was designed according to relevant criteria from the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) checklist. The electronic databases PubMed, CINAHL, PsycINFO and Cochrane Library were systematically searched. The following words and terms combinations were used: 'nursing education model'; 'clinical education model'; 'teaching model'; 'collabor*'; 'partnership'; 'student nursing'; 'nurse student'; 'undergraduate'; 'assess*'; 'evaluat*'; 'compar*'; 'outcome*'; 'measur*'; 'mentor*'; 'precept*'; 'clinical instructor'; 'clinical educator'; 'clinical faculty'; 'facilitator*'; 'nurse teacher'; 'supervis*'; 'clinical practice'; 'clinical practicum'; 'clinical placement'; 'nursing units'; 'clinical site'. Additionally, each selected paper's reference list was checked for other relevant references. Fig. 1 shows a PRISMA diagram summarizing search and assessment of the records found. Table 2 shows a search example of the CINAHL database.

Table 2
Search example CINAHL database.

Search	Results
(nursing education model OR clinical education model OR teaching model) AND (collabor* OR partnership) AND (student nursing OR nurse student OR undergraduate) (nursing education model OR clinical education model OR teaching model) AND (clinical practice OR clinical practicum OR clinical placement OR nursing units OR clinical site) AND (student nursing OR nurse student OR undergraduate) (nursing education model OR clinical education model OR teaching model) AND (clinical practice OR clinical practicum OR clinical placement OR nursing units OR clinical site) AND (assess* OR evaluat* OR compar* OR outcome* OR measur*) (mentor* OR precept* OR clinical instructor OR clinical educator) AND (clinical faculty OR facilitator* OR nurse teacher OR supervis*) AND (nursing education model OR clinical education model OR teaching model)	458

2.3. Inclusion and exclusion criteria

The inclusion criteria were (1) Randomized Control Trials (RCTs) published from 1999 (clinical education unit first implementation) to January 2020. When too few RCTs (evidence level 1) studies were found, non-randomized or quasi-experimental (evidence level 2) studies were considered (Table 3); (2) English language publication; (3) research compared collaborative academic-practice models which include clinical faculty and clinical mentor roles versus traditional models in clinical sites were considered. Exclusion criteria were (1) reviews, opinion articles, conference abstracts (2) qualitative studies (3) descriptive and correlational studies (4) non-English language publications.

Table 3
Levels of evidence for effectiveness Joanna Briggs Institute (2014).

Level 1 Experimental designs	Level 1.a – Systematic review of Randomized Controlled Trials (RCTs)
	Level 1.b – Systematic review of RCTs and other study designs
	Level 1.c – RCT
	Level 1.d – Pseudo-RCTs
Level 2 Quasi-experimental designs	Level 2.a – Systematic review of quasi-experimental studies
	Level 2.b – Systematic review of quasi-experimental and other lower study designs
	Level 2.c – Quasi-experimental prospectively controlled study
	Level 2.d – Pre-test–post-test or historic/retrospective control group study
Level 3 Observational – analytic designs	Level 3.a – Systematic review of comparable cohort studies
	Level 3.b – Systematic review of comparable cohort and other lower study designs
	Level 3.c – Cohort study with control group
	Level 3.d – Case – controlled study
	Level 3.e – Observational study without a control group
Level 4 Observational – descriptive studies	Level 4.a – Systematic review of descriptive studies
	Level 4.b – Cross-sectional study
	Level 4.c – Case series
	Level 4.d – Case study
Level 5 Expert opinion and bench research	Level 5.a – Systematic review of expert opinion
	Level 5.b – Expert consensus
	Level 5.c – Bench research/single expert opinion

Table 4
JBI Checklist for Randomized Controlled Trials.

	Rahnavard et al., 2013	Mulready-Shick et al., 2013	Parchebafieh et al., 2014	Sharpnak et al., 2014
1. Was true randomization used for assignment of participants to treatment groups?	Yes	Yes	Yes	Yes
2. Was allocation to treatment groups concealed?	Yes	Unclear	No	Unclear
3. Were treatment groups similar at the baseline?	Yes	Yes	yes	Yes
4. Were participants blind to treatment assignment?	No	Unclear	No	Unclear
5. Were those delivering treatment blind to treatment assignment?	No	Unclear	No	No
6. Were outcomes assessors blind to treatment assignment?	Unclear	No	Unclear	Unclear
7. Were treatment groups treated identically other than the intervention of interest?	Yes	Yes	Yes	Yes
8. Was follow up complete and if not, were differences between groups in terms of their follow up adequately described and analysed?	Yes	Yes	Yes	Yes
9. Were participants analysed in the groups to which they were randomized?	Yes	Yes	Yes	Yes
10. Were outcomes measured in the same way for treatment groups?	Yes	Yes	Yes	Yes
11. Were outcomes measured in a reliable way?	Yes	Yes	Yes	Yes
12. Was appropriate statistical analysis used?	Yes	Yes	Yes	Yes
13. Was the trial design appropriate, and any deviations from the standard RCT design (individual randomization, parallel groups) accounted for in the conduct and analysis of the trial?	Yes	Yes	Yes	Yes

2.4. Study selection and quality assessment

Two independent researchers screened the titles and abstracts and independently evaluated articles for methodological analysis and to determine whether they met the inclusion criteria. The Joanna Briggs Institute Checklist for Randomized Controlled Trials and the Checklist for Quasi-Experimental Studies (non-randomized experimental studies) critical appraisal tools (Joanna Briggs Institute, 2014) were used by the independent authors to assess the methodological quality of the included studies to avoid incorrect or misleading conclusions. Papers were included in the review if both reviewers agreed. Both researchers individually analysed each selected paper answering Yes, No, Unclear or Not Applicable to the critical appraisal questions. In case of divergent opinion regarding which studies should be included in the review, authors reached an agreement by consensus.

2.5. Data extraction and analysis

Data from included studies was extracted with regard to research design, population/sample, intervention, instruments, outcomes and conclusions. In mixed-methods research only quantitative data was analysed. Meta-analysis was not possible due to different interventions, control group characteristics and outcome measurements identified. Subsequently, systematic review results are presented as a narrative summary.

3. Results

3.1. Search results

The search produced 1092 studies. Once duplicates were removed, 699 potentially relevant studies were identified. All titles and abstracts were reviewed and 38 articles were considered relevant for full-text retrieval. Upon full-paper review, 25 papers were removed as they did not meet inclusion criteria (no comparative or descriptive studies) or lacked information. Fourteen papers met the criteria of this systematic review. The process used to reduce and evaluate the records is illustrated in Fig. 1. Two reviewers independently assessed the 14 studies with the use of the JBI appraisal method. There were no significant disagreements between them.

3.2. Description of included studies

This systematic review found four experimental studies and ten quasi-experimental studies that assessed and compared students' clinical outcomes in the academic-practice partnership model with clinical mentor and clinical teacher supervision versus students in the traditional model. The methodological quality of the relevant articles is described in Tables 4 and 5. Study characteristics are presented in Tables 6 and 7. Studies were carried out in a range of countries: United States (n = 8), Australia (n = 2), Iran (n = 2), Belgium (n = 1) and

Table 5
JBI Checklist for Quasi-Experimental Studies (non-randomized experimental studies).

	Henderson et al., 2006	Lovecchio et al., 2012	Newton et al., 2012	Kim et al., 2013	Smyer et al. 2015	Claeys et al., 2015	Galuska, 2015	Hendricks et al., 2016	George et al., 2017	Plemmons et al., 2017
1. Is it clear in the study what is the 'cause' and what is the 'effect' (i.e. there is no confusion about which variable comes first)?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2. Were the participants included in any comparisons similar?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
3. Were the participants included in any comparisons receiving similar treatment/care, other than the exposure or intervention of interest?	No	No	No	No	No	No	No	No	No	No
4. Was there a control group?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5. Were there multiple measurements of the outcome both pre- and post the intervention/exposure?	Yes	No	No	Yes	Yes	Yes	Yes	No	Yes	Yes
6. Was follow up complete and if not, were differences between groups in terms of their follow up adequately described and analysed?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7. Were the outcomes of participants included in any comparisons measured in the same way?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8. Were outcomes measured in a reliable way?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9. Was appropriate statistical analysis used?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

South Korea (n = 1), probably due to the English language bias of the databases searched. Four randomized controlled trials were found. One used a pre-test post-test design (Parchebafieh et al., 2014) while three used only post-test control group design (Mulready-Shick et al., 2013; Sharpnak et al., 2014; Rahnavard et al., 2013) Ten quasi-experimental studies were identified. Two studies used quantitative and qualitative data (Galuska, 2015; Newton et al., 2012). Seven of the ten studies used a pre-test post-test control group design (Claeys et al., 2015; Henderson et al., 2006; Galuska, 2015; George et al., 2017; Kim et al., 2013; Plemmons et al., 2018; Smyer et al., 2015), and three used a post-test only control group design (Hendricks et al., 2016; Lovecchio et al., 2012; Newton et al., 2012).

3.3. Type of participants

1990 nursing students from various educational backgrounds were described. A total of 1954 students were from first to final year undergraduate courses and 36 were from second-degree accelerated programmes. In total, 18 clinical faculty and 13 clinical mentors participated in the studies.

3.4. Outcomes assessed

Students' perception of clinical learning was the most common clinical outcome found in the review and was identified in six articles. The instruments used for clinical learning perception evaluation were the Clinical Learning Environment Inventory (Chan, 2003), the Clinical Learning Environment, Supervision and Nurse Teacher (Saarikoski et al., 2009), the Student Evaluation of Clinical Education Environment (Sand-Jecklin, 2009) and surveys developed ad hoc by the authors. Students' clinical knowledge was the second most common outcome; evaluated and compared in five studies. Clinical skills, and quality and safety competences were found to be the third most common and each was assessed in three studies. (Table 8).

3.5. Review of comparison of clinical learning models

Two experimental studies and seven quasi-experimental studies compared the Dedicated Education Unit (DEU), Dedicated Education Centre (DEC), and Clinical Education Unit (CEU) models with the traditional model employed in clinical facilities. Additionally, one quasi-experimental study in which a modified DEU model was compared with a hybrid and traditional supervision model was found. Two experimental studies assessed and compared the collaborative teaching model (CTA). One pre-test post-test study contrasted a traditional clinical model with a university-hospital partnership (MASH). One post-test only quasi-experimental study compared a collaborative clinical practicum with a traditional clinical model.

3.6. Education units and hybrids models

In the Mulready-Shick et al. (2013) (*Evaluating dedicated education units for clinical education quality*) experimental study, DEU and traditional supervision model (one faculty taught eight students) clinical experiences were evaluated. Students in a DEU learning environment reported more positive clinical learning experiences, greater advances in clinical learning and development of knowledge, skills, and ethical and professional behaviours than was the case for students in traditional models. Similarly, DEU model students described more opportunities in developing teamwork, collaboration, IT skills, quality improvement and safety competences, along with a more positive perception of their clinical learning experiences. They also reported more coaching time with staff nurses during patient care and less time spent on “other tasks” than traditional supervision model students.

Sharpnack et al. (2014) (*Using a dedicated education unit clinical education model with second-degree accelerated nursing program students*)

Table 6
Experimental studies.

Reference	Population/sample	Intervention	(1) Outcomes (2) Instruments (3) Research design	Results	Conclusions
Rahnavard et al., 2013	-104 third year nursing students: Intervention group (n = 56) Control group (n = 48) -Faculty members (n = 6) -Staff nurses (n = 6)	Clinical Teaching Associate Model	(1) - Students clinical skills mean scores. - Staff and faculty satisfaction with the method applied, and with achievement of clinical education goals. - Student satisfaction with achievement of clinical educational goals. (2) - Eight researcher-made check-lists for student clinical skills. - Three researcher-made questionnaires for participants' satisfaction. (3) - Post-test randomized control study	Significant differences between CTA and traditional students' clinical skills mean scores after intervention were found (p < 0.01). A significant difference between CTA and traditional faculties' satisfaction with method applied was observed (p = 0.004). No significant differences between faculty groups in relation to educators' satisfaction with achieving the educational goals was showed (p = 0.019). No significant differences between students' groups in relation to students' satisfaction with achieving educational goals was indicated (p = 0.058).	In Iranian context, CTA model can be viable and successful strategy for enhancing clinical training results. Faculty-service cooperation model like CTA is advisable for Iran or similar educational systems.
Mulready-Shick et al., 2013	-165 junior-level nursing students: Intervention group (n = 111) Control group (n = 54)	Dedicated Education Units	(1) - Students clinical education quality. (2) - Student Evaluation of Clinical Education Environment. - Growth in Clinical Learning Scale. - Quality and Safety Competence Development Scale. (3) - Post-test randomized, controlled, multiyear, multisite study.	DEU students reported more positive learning experiences than traditional students for Instructor Quality (p = 0.001) and Unit Learning opportunities (p = 0.001). DEU students perceived greater growth in clinical learning and in developing nursing knowledge, clinical skills, and ethical and professional behaviours than traditional students did (p = 0.01). DEU students perceived more opportunities in developing four of six quality and Safety Education for Nurses competencies: teamwork and collaboration, informatics, quality improvement, and safety. Student perceptions of their clinical learning experiences in DEUs were more positive compared with students in the traditional clinical education model. Students in DEU reported significantly more time spent in instructional coaching with their CIs during patient care than students in traditional units (p = 0.001). DEU students showed a decrease in the time spent in "other tasks" versus traditional students (p = 0.038)	Results evidence that DEU delivers a higher-quality clinical training than traditional model. Significant learning progress was showed by junior students, and a DEU model impact in essential outcomes by seniors. DEU model suggests to students a balanced clinical environment through adjusting a simple care unit and mentor.
Parchebafieh et al., 2014	-60 third year nursing students: Intervention group (n = 28) Control group (n = 32)	Clinical Teaching Associate Model	(1) - Students clinical knowledge and clinical skills. - Student satisfaction with clinical learning experience. (2) - Written knowledge test. - Check-list with summative assessment. - Likert-type questionnaire. (3) - Pre-test post-test randomized control study.	No between-group difference in knowledge at post-test (P = 0.299). No statistically significant between-group difference in clinical skills (P = 0.24). No statistically significant difference in student satisfaction with clinical experience (P = 0.92). CTA group were more satisfied with aspects of clinical learning related to patient communication (P = 0 0.00) and skill achievement (P = 0.08). Students in the control group were more satisfied with integration of theory to practice (P = 0.09) and general introduction to the ward and patients at the beginning of the clinical placement (P = 0.02)	CTA model was quite successful than traditional in enhance clinical learning and nursing students satisfaction. As previous results, findings empathized CTA model's capacity to support students' learning.
Sharpnak et al., 2014	-36 s degree accelerated nursing program students: First cohort	Dedicated Education Units	(1) - Students simulation assessment scores. - Students theory-learning outcomes. - Student perception of leadership, quality and safety, transition-to practice competences, and sense	Students assigned to the DEU had statistically significant higher final scores in the medical-surgical, leadership, mental health and research courses versus students in traditional method. Total simulation scores were significantly higher for	DEU model helped students to be competent and socialize to a professional work. It should be valued staff nurse proper impact in learning. Service partners commented easiness of new workers' orientation and engagement.

(*continued on next page*)

Table 6 (*continued*)

Reference	Population/sample	Intervention	(1) Outcomes (2) Instruments (3) Research design	Results	Conclusions
	intervention group (n = 8) First cohort control group (n = 11) Second cohort intervention group (n = 8) Second cohort control group (n = 9)		of belonging on the clinical unit. (2) - Creighton Simulation Evaluation Instrument (Creighton University, 2009) - Standardized computer-based assessment (Assessment Technologies Institute) - Investigator developed tool to report student perception of leadership, quality and safety, transition-to practice competences, and sense of belonging on the clinical unit. (3) - Randomized experimental study.	students on the DEU (p = 0.049). Scores for critical thinking skills (p = 0.049), patient safety skills (p = 0.001) were also significantly higher for students on the DEU. Differences in communication scores were no statistically significant and no difference in assessment skill scores were found. Self-reported knowledge, skills, and safety competences were rated higher by students on the DEU. Students on the DEU self-reported higher levels of confidence in clinical skills and clinical judgement capabilities, capacity to prioritize care, mindfulness of quality and safety measures and ability to think like a nurse.	

performed an experimental study where accelerated program students in two cohorts were placed in DEU or traditional clinical model education units. Results showed that students' simulation scores, critical thinking and patient safety skills were significantly higher among students educated in the DEU model than those of students educated in a traditional model. Differences in communication scores were not statistically significant and no differences in assessment skill sub-scores were found. Students in the DEU model reported higher perceived levels of knowledge and confidence, better skills and attitudes associated with quality and safety competences and a greater ability to think as a nurse through educational-service collaborative learning than students in traditional model units.

Henderson et al. (2006) study (*Pre-test and post-test evaluation of students' perceptions of a collaborative clinical education model on the learning environment*) in a pre-test/post-test quasi experimental design evaluated and compared students' perceptions of the psycho-social learning environment. Second and third year nursing students were placed in CEU or traditional supervision learning model (one supervisor moves around a number of students' clinical placements). On completion of the clinical practicum, student completed the Clinical Learning Environment Inventory. Significant differences in the CEU versus the traditional model were found. Students' scores in the CEU model were higher in "Students' involvement", "Satisfaction", "Personalization" and "Task orientation" scales. No significant differences were found between the two groups in "Individualization" and "Innovation" scales. Results suggested that students in the CEU model perceived individualized teaching based on their specific requirements and conditions, and greater engagement in clinical placement.

In the Lovecchio et al. (2012) study (*Clinical liaison nurse model in a community hospital: A unique academic–practice partnership that strengthens clinical nursing education*) students' clinical-learning perception in modified a DEU model (named Clinical Liaison Nurse model (CLN)) and traditional supervision model (one faculty instructs with a group of eight students assigned to multiple staff members in a clinical unit) was evaluated in a quasi-experimental post-test-only study design. At the end of clinical practices, students in the DEU model had higher scores in Task Orientation and Satisfaction. With application of the Bonferroni correction, the only significant difference was that DEU model students rated their placement as more organized.

Claeys et al. (2015) (*The difference in learning culture and learning performance between a traditional clinical placement, a dedicated education unit and work-based learning*) used a non-randomized experimental study to evaluate students' learning performance in "assessment" "planning" and "intervention" at the end of clinical practices in DEC, a work-based placement (8–16 students take full responsibility for a nursing department) and a traditional model (a practice tutor visits a group of one-to-nine students supervised by a number of mentors). A significant difference in learning culture was shown between traditional departments and new DEC and workplace departments. In traditional clinical placements, students gave learning culture the highest scores. There was a significant difference between traditional and workplace learning, and between DEC and workplace learning. In relation to students' learning performance, DEC student scores were higher than those of students in workplace learning. The highest percentage of students with a positive learning performance in "assessment" "planning" and "intervention" competences carried out their clinical practice in the DEC model. Students in the workplace were second and students in traditional placements represented the lowest percentage.

Students' leadership development and clinical experiences within DEU and traditional clinical instruction were evaluated by Galuska (2015) in a quasi-experimental study (*Dedicated education units: Partnerships for building leadership competency*). All students showed a statistically significant increase in overall mean leadership scores. Students educated in the DEU model demonstrated a statistically significant improvement in overall mean scores for Model the Way, Inspired a Vision, and Challenge the Process. Traditional model

Table 7
Quasi-experimental studies.

Reference	Population/sample	Intervention	(1) Outcomes (2) Instruments (3) Research design	Results	Conclusions
Henderson et al., 2006	-122 s or third year nursing students Intervention group (n = 83) Control group (n = 39)	Clinical Education Units	(1) -Student perception of the psycho-social learning environments. (2) -Clinical Learning Environment (Chan, 2003) (3) -Quasi experimental pre-test post-test study.	Significant differences in CEU and traditional students in post test scores of Students Involvement (p = 0.037), Satisfaction (p = 0.027), Personalization (p = 0.019), and Task Orientation (p = 0.012). No significant differences between CEU and facilitation model for Individualization (p = 0.057) and Innovation (p = 0.116).	Preliminary results showed CEUs' model effectiveness to enhance psycho-social elements of students' learning. But previously to the strategy, high levels of students' satisfaction were showed.
Lovecchio et al., 2012	-54 junior and senior nursing students: Intervention group (n = 40) Control group (n = 14)* *Due to unit issues only 14 students completed the post-test CLEI.	Clinical Liaison Nurse Model (DEU model modified).	(1) - Student clinical learning environment perception. (2) - Clinical Learning Environment Inventory (Chan, 2003) (3) - Quasi experimental, non-equivalent control group, only post-test study.	With Bonferroni correction CLN students had higher scores in Task Orientation and Satisfaction. The only significant difference was on the "clinical placement is disorganized".	Despite study limitations, it is showed that community hospitals and university partnerships could enhance students perceptions of clinical learning environment, and that CLN model facilitates students learning.
Newton et al., 2012	-456 s and third year nursing students MASH intervention group (n = 97) Non-MASH CT only (n = 194) Non-MASH CT + P (n = 165)	MASH model	(1) - Students clinical learning environment perceptions. (2) - Modified version of *Clinical Learning Environment Inventory* (Newton et al., 2010) - Interviews. (3) - Mixed method longitudinal study.	A difference between students' responses in relation to the degree of students' centredness during the clinical placement were showed (p = 0.001). MASH model students responded more positively (mean = 41.32 $_{SD}$ 5.48) than Non-MASH students who had both a clinical teacher and a preceptor (mean = 38.37 $_{SD}$ 6.08). Non-MASH students with only a clinical teacher was positioned between the two groups. No important differences between the responses of the students for any of the ten preceptor items.	Results identify two essential elements for effective clinical learning: a grade of constancy, and that a preceptor or/and clinical teacher offers a solid context' benchmark, and a students' centered environment.
Kim et al., 2013	-52 junior nursing students Intervention group 1 (n = 18) Intervention group 2 (n = 17) Control group (n = 17)	Collaborative Clinical Model	(1) - Student clinical practice ability. - Teaching effectiveness. (2) - Lee et al. (1991) developed tool to assess clinical practice ability. - Kim et al., 1998 developed tool to assess teaching effectiveness. (3) - Quasi experimental, non-equivalent control group pre-test post-test study.	Students in intervention group 2 had higher clinical practice ability (3.37 ± 0.53) vs control group (2.60 ± 0.81). Students in intervention group 2 tended to have higher teaching effectiveness compared to intervention group 1 (p = 0.059) and to the control group (p = 0.069).	Study showed that collaborative and preceptorship model for junior students' internship could improve clinical practice ability and teaching effectiveness.
Smyer et al. 2015	-144 four semester nursing students:	Dedicated Education Units	(1) - Student knowledge and ability to critical thinking.	No significant differences between DEU and traditional students on academic outcomes immediately after the DEU experience were found.	Students' prolonged exposition to models could grow differences between DEU and traditional environments. Even now, there is an initial confirmation that DEU stands

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Table 7 (*continued*)

Reference	Population/sample	Intervention	(1) Outcomes (2) Instruments (3) Research design	Results	Conclusions
	Intervention group (n = 90) Control group (n = 54)		- The nursing process. - Quality and Safety Education for Nurses. - Registered Nurse exit examination scores. (2) - The Health Education System standardized testing. (3) - Longitudinal quasi experimental repeated measures study.	No differences between DEU and traditional clinical students on academic Registered Nurse exit examination were showed.	up student' educational progress. High levels of satisfaction were perceived by service, instructors and faculty. Instructor believed that DEU brings a solid teaching unit and help students' learning and professional progress.
Claeys et al., 2015	-150 final year nursing students: DEC intervention group (n = 33) Work based intervention group (n = 70) control group (n = 106)	Dedicated Education Centre model Work based model.	(1) - Students competence level. - Students' clinical learning environment perception. (2) - Nursing Competence Questionnaire (Barlett et al., 2000). - Clinical Learning Environment, Supervision and Nurse teacher (Saarikoski et al., 2008). (3) - Pre-post-test non-randomized control study.	There was a significant difference in learning culture between departments that adopted traditional and new placements concepts (p = 0.001). There was a significant difference between traditional and workplace (p < 0.001) and between DEC and workplace learning (p = 0.031). The higher percentage of students with a positive learning performance were in DEC:77% for the "assessment", 67% for the "planning" and 83% for the "intervention" competences. Student in workplace came in second place 71%, 64% and 71% respectively. Student in traditional placements obtained the lower percentage 55%, 56% and 57% respectively.	Notwithstanding limitations, DEU model could be contemplate as a learning environment for last-year nursing students clinical education.
Galuska, 2015	-32 senior nursing students: Intervention group (n = 17) Control group (n = 15) -Clinical Instructors	Dedicated Education Units	(1) - Students leadership development. (2) - Student Leadership Practice Inventory. (Postner, 2004) - Students and CI focus groups. (3) - Quasi experimental pre-test post-test multisite design and qualitative focus group.	Students showed a statistically significant increase in overall mean LPI scores (p = 0.000). DEU students had a statistically significant improvement in overall mean score (p = 0.000) but no traditional students. DEU students mean scores of the three of the subscales "Model the Way", "Inspired a Vision", and "Challenge the Process", showed statistically significant improvement. In traditional model only "Challenge the Process" showed statistically significant improvement. Students in focus groups expressed an overwhelming sentiment that the DEU was "the best experience" resulting in significant learning and preparation for professional role of a "real nurse". CI focus groups shared a belief that the DEU model created an environment that enhance student leadership learning and provided satisfy teaching-learning experience.	DEU results evidence that clinical instructors efficiently direct the clinical development and leadership of the students, at the same time and taking in account its limitations, the study shows that the DEU model provides favourable environment to teach leadership skills to students.
Hendricks et al., 2016	-150 junior nursing students: PEP intervention group (n = 59) HLM intervention group (n = 45) Control group (n = 45)	Practice Education Partnership (DEU model modified) Hybrid Learning Model (Hybrid of PEP and traditional model)	(1) - Students clinical learning environment perceptions. - Students, faculty and preceptors time spent engaged with one another. - Student number of practice opportunities. - Student learning outcomes.	Significant differences were found in "Learning Opportunities" subscale. PEP students could practice more skills than the other two groups (p = 0.001). PEP student reported more time spend with staff nurse preceptor, compared with other groups students (p = 0.000). TLM students reported spent more time communicating with faculty (p = 0.002). No significant differences in the time students spent observing care (p = 0.709).	Clinical models were centered around the organization of clinical time without spotlighting on how faculty and mentors collaborate with students, but it is very important to appreciate each student's training time.

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Table 7 (*continued*)

Reference	Population/sample	Intervention	(1) Outcomes (2) Instruments (3) Research design	Results	Conclusions
	-Preceptors (n = 7) -Faculty teachers (n = 12)		(2) - Student Evaluation of Clinical Education Environment (Sand-Jecklin, 2009). - Researcher-developed questionnaires. - Kaplan medical-surgical standardized examinations. (3) - Only post quasi-experimental design.	Preceptors in PEP and HLM reported the time spent directly with students as "very high" (80%). Preceptors in TLM and PEP models reported that the time their students spent observing (but no responsible for acting) was high 37.5% to 38% of the time. Faculty reported that they believed students were directly working with preceptors approx. 78% in PEP model and 78% in HLM model. PEP faculty reported expend 16% of their time working with students, TLM faculty 50% and HLM faculty 38%. Faculty reported that they believed students were observing 22% or less of the time in all three models. No significant differences were found in the practice of communication strategies: teaching (p = 0.085), collaboration (p = 0.108) or documentation in in patient electronic health records (p = 0.085). No significant differences were noted among the three students group in examination scores (p = 0.538)	
George et al., 2017	193 four-year nursing students Intervention group n = 59 Control group n = 134	Dedicated Education Units	(1) - Students self-efficacy. (2) - Adapted Generalized Self-efficacy scale (Shwarzer and Jerusalem, 1995) (3) - Pre-post quasi experimental exploratory study.	Both groups experienced higher self-efficacy scores post clinical experience. The increase in self-efficacy for DEU students was significantly greater than traditional students (p = 0.012).	Basing on the evaluation of the concrete students' results, this study helps to define DEU as the best clinical model.
Plemmons et al., 2017	72 s term entry level nursing students DEU intervention group n = 84 Blended intervention group n = 66 Control group n = 122	Dedicated Education Units (DEU) Blended model (DEU model modified).	(1) - Students perceived clinical self-efficacy. - Students attitude toward team process. (2) - General Self-Efficacy (GSE) scale (Schwarzer and Jerusalem, 1995) - TeamSTEPPS® T-TAQ (Agency for Healthcare Research and Quality, 2014). (3) - Pre-test post-test non-equivalent control group quasi-experimental study.	Students at completion of all clinical experiences reported a significant increase in perceived clinical self-efficacy compared to baseline. DEU students and Blended students had significantly larger increases in perceived clinical self-efficacy compared to traditional students (p = 0.016) and (p < 0.001) respectively. At completion of clinical experience, all students reported a significant and equal increase in attitude toward team process compared to baseline.	In comparison with traditional model, the DEU and blended models are more effective to promote students self-efficacy. In all cases, students attitudes toward team process were improved.

Table 8
Students, clinical mentors or clinical faculty outcomes assessed in the discovered studies.

Subjects	Outcomes	Number of studies
For student	Clinical learning environment perception	6
	Clinical knowledge	5
	Clinical skills	3
	Quality and safety competence	3
	Leadership	2
	Learning opportunities perception	2
	Self-efficacy	2
	Clinical model perception	2
	Instructor/preceptor perception	2
	Critical thinking	1
	Satisfaction with achieved goals	1
	Simulation assessment	1
	Sense of belongings	1
	Teaching effectiveness	1
	Task orientation satisfaction	1
	Attitude toward team process	1
For mentor/faculty	Clinical model perception	2
	Satisfaction with student's achieved goals	1

students only had a statistically significant improvement in Challenge the Process. Students rated the DEU model as "the best experience" for learning and professional preparation. Clinical mentors believed that the DEU model created an atmosphere that enhanced student leadership and mentor-experience satisfaction.

In the Smyer et al. (2015) (*Academic Outcome Measures of a Dedicated Education Unit Over Time: Help or Hinder?*) pre-post longitudinal study, students' knowledge, critical thinking ability, nursing process, quality and safety education, and Registered Nurses exit examination scores were analysed in the DEU and traditional (preceptorship) models. DEU and traditional model students showed no significant differences in academic scores or in the Registered Nurse exit examination.

Students pre and post-clinical rotation self-efficacy was evaluated by George et al. (2017) (*Effect of the dedicated education unit on nursing student self-efficacy: A quasi-experimental research study*). Prior to clinical experiences, no significant differences were found between groups. After clinical rotation, the composite mean scores of DEU model students were significantly higher than those of traditional model students.

Plemmons et al. (2017) in a quasi-experimental non-equivalent control group study (*Comparing student clinical self-efficacy and team process outcomes for a DEU, blended, and traditional clinical setting: A quasi-experimental research study*) compared students' self-efficacy in the DEU model, blended model (differs from DEU in that students work with different staff nurses) and traditional model (one instructor supervises eight-to-ten students). In this study, a significant increase in all students' perceived clinical self-efficacy compared to baseline was observed. However, DEU and Blended model students had significantly greater increases in perceived clinical self-efficacy compared with traditional model students. Students from the three groups showed a significant and equivalent increase in positive attitude toward the team process when compared with scores before clinical experience.

A quasi-experimental only post-test study was used to compare students' perceptions, opportunities, and learning outcomes between the Practice Education Partnership model (PEP) (one faculty mentors trained staff nurse preceptors who supervised one or two students), traditional model (TLM) (one faculty member supervises 5–10 students in one or several clinical units) and hybrid learning model (HLM) (the faculty member supervises half of the student groups) (*Student, preceptor, and faculty perceptions of three clinical learning models*) (Hendricks et al., 2016). Significant differences were found in the Learning Opportunities subscale. PEP students were able to practice more skills than participants in the other two groups. The PEP students' group reported more time spent with staff nurse preceptors than those in other groups. TLM students spent more time communicating with faculty and no significant differences were seen between groups in time spent observing patient care. PEP and HLM preceptors reported that the time spent with students was "very high". Faculties from the PEP and HLM models stated that students worked directly with preceptors more than those in TLM faculties. The time spent by faculty working directly with students was highest in the HLM model. No significant differences were seen between groups in teaching, collaboration or documentation of patient electronic health records.

3.7. Collaborative teaching model

A blind, experimental, no pre-test study was used to compare students' clinical skills, student satisfaction with achieved goals, staff nurses and faculty members' satisfaction with the clinical model and staff nurses and faculty members' satisfaction with clinical education goals in CTA and traditional (faculty member instructs 6-to-12 students) models (*Effectiveness of clinical teaching associate model in nursing education: Results from a developing country*) (Rahnavard et al., 2013). Results showed no significant differences between CTA and traditional students in clinical skills. Differences in clinical faculty model satisfaction were revealed. CTA clinical faculties were more satisfied with their model than traditional ones. No significant differences in relation to achieved educational goals were seen between clinical faculties. No significant differences between students from these groups were shown in relation to goal achievement.

Parchebafieh et al. (2014) carried out an experimental pre-post-test study to compare students' clinical skills and satisfaction in CTA and traditional models (*Effectiveness of the clinical teaching associate model to improve clinical learning outcomes: a randomized controlled trial*). The results indicated no statistically significant differences between groups in knowledge, clinical skills or student satisfaction with the clinical experience. CTA students were more satisfied with clinical learning related to patient communication. Traditional students were more satisfied with theory-practice integration and with introduction to the ward and patients.

3.8. Collaborative educational-practice model

A mixed methods longitudinal study was used to examine how nurses learn on clinical placement in a collaborative educational-practice model with clinical faculty, and clinical mentor (MASH), non-collaborative educational-practice model with clinical faculty, and clinical mentor (Non-MASHa), and traditional model with clinical faculty only (Non-MASHb) (*Student centredness in clinical learning: the influence of the clinical teacher*) (Newton et al., 2012). When exploring the results, the Welch's *t*-test for "student centredness" factor revealed an important difference in students' answers: MASH students responded more positively than Non-MASH students who had clinical faculty and a clinical mentor. Traditional model students with a clinical educator only were positioned between the two groups. No important differences between groups were seen regarding the ten parallel items about the preceptor.

3.9. Partnership model

In a non-equivalent control group pre-test-post-test study (*Effects of a collaborative clinical practicum on clinical practice ability and teaching effectiveness among nursing students*) Kim et al. (2013) evaluated and compared nursing students' clinical practice ability and teaching effectiveness in traditional faculty instructor model and partnership model. Study results indicated that students from the group educated by a preceptor for 32 h and an instructor for 58 h had greater clinical practice ability after clinical experience compared with students in the traditional group. The same group also reported higher teaching

effectiveness than the other intervention group educated by a preceptor for 16 h, and students educated in traditional model groups.

4. Discussion

The aim of this systematic literature review was to examine the effectiveness of the academic-practice partnership model which includes clinical faculty and clinical mentor roles in improving nurses' clinical learning compared with traditional models implemented in clinical facilities.

This review did not find large RCT studies. Only two models; the CTA and DEU models, were tested in RCT studies. There is insufficient evidence on collaborative clinical models with clinical mentor and clinical faculty partnership based on available studies. However, it is clear that DEU, CEU and hybrid models improve the clinical learning environment, optimize the teaching-learning process, benefit both clinical and faculty professionals and increase students' learning quality maintaining patient safety (DeMeester et al., 2017; Henderson & Eaton, 2013; Jayasekara et al., 2018; Moscato et al., 2007). The results of the review showed that the academic-partnership models have certain similarities across countries and some differences in relation to model organization, and professionals' role characteristics and responsibilities.

Differences regarding the duration of students' clinical placement were found between models. The duration of student clinical placement varied from 2 weeks in the CTA model (Pachebafieh et al., 2014) to one semester in the DEU model (Smyer et al., 2015). Although both models showed student satisfaction with clinical experience, it is shown that the longest placements offer students learning opportunities, time to develop practical skills, and time to build relational abilities with patients and to learn how to work with other professionals. These targets are more difficult to meet through disconnected tasks in a brief placement and could influence students' clinical learning and satisfaction with the clinical placement (Antohe et al., 2016; Warne et al., 2010). Otherwise, Budgen and Gamroth (2008) found, as a limitation of the Dedication Units with respect to other current learning models, students' workload and difficulties in balancing clinical time with classroom responsibilities.

Students' mentoring within clinical practice is considered an essential part of nurses' training and is widely used in several countries with varied characteristics. The findings of this review confirm that students' personalised supervision, centred on pre-graduate clinical goal achievement, enables students to boost self-confidence, autonomy and clinical reasoning (Pitkänen et al., 2018). In addition, to ensure student progress in integration of theory and practice, it is necessary that mentors/preceptors offer students enough quality time to reflect on and practice in the clinical context (Andrews et al., 2006).

In a newest mixed-methods study, Cusack et al. (2020) found that staff nurses who taught and supervised nursing students in clinical placements believed they were not prepared and empowered for the teaching and supervising role and this nurses' training role was neither recognized nor supported at a system level. Thus, it is essential to support and educate mentors in their challenging role and to respond to their needs to allow them to provide appropriate nurse training (Pellatt, 2006; Myrick et al., 2011). In the DEU, CEU and hybrid models evaluated, the highlighted mentors' lack of skills, knowledge and training to carry out this role with professional competence (Cusack et al., 2020; DeWolfe et al., 2010; Myall et al., 2008; Pellatt, 2006; Yonge et al., 2008) is addressed through attendance at a clinical-teaching orientation course led by clinical faculty to facilitate student success in practice learning. Also, within DEU clinical settings, the clinical faculty coaches and supports clinical mentors and checks the student-mentor relationship (Edgecombe et al., 1999; Henderson et al., 2013).

While the clinical mentor role in all studies is easy recognizable and is carried out by an experience registered nurse who works in healthcare and provides direct patient care, the clinical faculty characteristics differ across the studies reviewed. In the CLN, PEP and DEU models, the clinical faculty was a lecturer hired by the university and responsible for supervising students' clinical goal achievement in several healthcare facilities (Claeys et al., 2015; George et al., 2017; Hendricks et al., 2016; Kim et al., 2013; Lovecchio et al., 2012; Mulready-Shick et al., 2013; Sharpnack et al., 2014; Smyer et al., 2015). In the MASH model, the clinical teacher was employed by the healthcare organization and worked across several students clinical placements. In the CTA model, the clinical faculty was a staff nurse who dedicated a couple of days per week to teaching and evaluating students in clinical sites and to supervising staff nurses' teaching role (Parchebafieh et al., 2014; Rahnavard et al., 2013). In the CEU model (Henderson et al., 2006), the clinical faculty role was performed by a ward professional who was paid by the university and supervised students and supported mentors in clinical placements without patient responsibilities. In both the DEU and CTA models, the students' clinical learning assessment was conducted willingly by clinical and faculty nurses. In contrast, in CLN model (Lovecchio et al., 2012), mentor, student and faculty collaborated to bring patients total care but full responsibility for student evaluation rested on the faculty. These results corroborate other findings showing that there is no consistent definition of the clinical faculty role and responsibilities in the clinical setting (Meskell et al., 2009). Furthermore, findings not provide more information regarding the benefits of the clinical teacher being a lecturer or practical nurse (Gustafsson et al., 2015). However, the required presence of clinical faculty during students' clinical placements are widely highlighted. The clinical faculty has a valued position in updating clinical practices and university practical level, and bridging the theory-practice gap, regardless of whether or not they participate in clinical ward tasks (Gustafsson et al., 2015). However, the required presence and involvement of clinical faculty during students' clinical placements are widely highlighted and is a strength in Dedicated Units against other current models as a preceptorship or internships models (Budgen and Gamroth, 2008). Furthermore, is imperative that clinical faculty knows the ward, staff and patient characteristics to allow students to be more comfortable at the clinical site and to respond potential learning and personal issues (Aston et al., 2000).

Reviewed studies revealed several potential benefits of clinicians and faculty collaboration such as an increase in clinical problem identification, greater opportunities to practice clinical skills, and a significant improvement in patient communication and in positive attitude toward the team process, among others. It shows that the complementary roles of clinical mentor focused on assessing, supervising and teaching clinical skills to an individual student, and clinical faculty focused on student curriculum and knowledge acquisition and supporting the clinical mentor teaching role, plus education and health institution manager commitment, could successfully facilitate student transition to the workplace (Henderson et al., 2013; Saarikoski et al., 2009). Furthermore, this collaboration between academics and clinicians is considered an indispensable element of nursing training (Wotton and Gonda, 2004).

However, when implementing strategies or models in clinical facilities that aim to improve the clinical learning environment, clinical mentor and clinical faculty workload remain one of the biggest challenges. The lack of time and the pressure that affect mentoring due to other clinical staff obligations is considered a vital aspect to consider when organizing clinical learning placements (Aston et al., 2000; Jokelainen et al., 2011). There is less time spent on supervision of students by teachers in the practical setting. Nurses must deal with an increase in the complexity of care, time pressure, student supervision, and badly organized internships (Aston et al., 2000). In the same context and with a high workload, nurses shortage, administrative tasks and patient care requirements, the clinical mentor has the responsibility to teach and to supervise students clinical labour, ensuring they are “fit for practice” (Jokelainen et al., 2011).

This review found great variability regarding the instruments used to assess student and professional outcomes. The most frequently used

questionnaires were the CLES and CLEI to evaluate clinical learning perception. These instruments have been widely used to examine the quality of learning environments. The clinical learning environment includes everything that impacts the undergraduate learning experience and students' achievement of learning goals. The physical space, the organizational philosophy, the characteristics of clinical instructors, the learning opportunities provided to students and the relationship with educational and service staff, among others, are elements that could affect students' preparation for practice (Chan, 2001; Flott et al., 2016; Henderson et al., 2010). However, few researchers have focused directly on staff and clinical faculty model perception, when the influence of engaged work teams on students' satisfaction with clinical experience and a suitable clinical environment clearly relies on clinical staff and university teachers (Löfmark et al., 2012; Tomietto et al., 2016).

4.1. Limitations

This systematic review was limited to the past 20 years, and studies not referenced in CINAHL, MEDLINE, Cochrane or PsycINFO and unpublished studies were not identified. There are also limitations with respect to sample sizes and the quality of the included studies. The large number of outcomes made it difficult to compare results between studies.

5. Conclusions

Academic-practice partnership models such as the DEU, DEC and CEU were the main models assessed and compared with traditional model. The education-practice partnership, with the presence of clinical faculty and trained clinical mentor, enhances nursing clinical learning when compared with the traditional model.

Strong partnership allows both educational and service institutions to integrate needed resources to create an environment capable of achieving the best quality patient care, sustaining nurses' professional growth and helping students to have fruitful clinical experiences. However, these findings should be applied with caution due to the sample sizes and the quality of the included studies. There are no studies which includes patient participation in nursing students' clinical learning assessment. Moreover, faculty and mentors had anecdotal participation in relevant studies. There is a need for high quality analyses and the involvement of different actors when students' clinical learning strategies are evaluated to provide the best evidence on clinical nursing education at clinical facilities.

5.1. Relevance to practice

When implementing new learning models in health care services, identifying challenges facing professionals and nursing students could guide educational and service managers to choose the best options to create an effective learning environment. This systematic review aims to incorporate best practice evidence into the clinical environment. It is shown that academic and clinical stakeholders must collaborate and plan every step of training to bring nursing students and professionals the best experience in a variety of patient care environments.

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Declaration of competing interest

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4.2. OBJETIVO Y ARTÍCULO NÚMERO 2

Objetivo:

Implementar el modelo de aprendizaje clínico "*Dedicated Education Units"* en 6 organizaciones sanitarias europeas de Bélgica, España, Portugal, Polonia y Turquía y describir y comparar las barreras y facilitadores en la implementación del modelo mediante la utilización del *"Consolidated Framework for Implementation Research"*.

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Resumen:

Antecedentes: La experiencia clínica de los estudiantes de pregrado, en contacto directo con los pacientes y con el equipo de salud es esencial para garantizar que los estudiantes adquieran la competencia necesaria para la práctica real. Existen diferencias en la calidad de los entornos de aprendizaje clínicos y en las experiencias de práctica clínica de los estudiantes y no todos los entornos clínicos son entornos de aprendizaje óptimos. El modelo de aprendizaje clínico *"Dedicated Education Units"* permite a los estudiantes

desarrollar el conocimiento práctico, las habilidades y la profesionalidad que necesitarán como enfermeras y matronas.

Objetivo: Identificar y comparar las barreras y facilitadores en la implementación del modelo *"Dedicated Education Units"* en 6 entornos de práctica clínica de estudiantes de pregrado de Enfermería y Matrona Europeos.

Métodos: Se utilizó el marco de implementación de la investigación *"Consolidated Framework for Implementation Research"* (anexo 2) para identificar y comparar las barreras y facilitadores en la implementación del modelo *"Dedicated Education Units"* en 6 entornos de práctica clínica de estudiantes de pregrado de Enfermería y Matrona Europeos. Además, lo utilizamos para describir la experiencia de las enfermeras y matronas involucradas en la implementación y en la evaluación del modelo. Se llevó a cabo una evaluación interpretativa previa y posterior a la implementación basada en las respuestas de los participantes a las preguntas que se desprenden de cada uno de los constructos que forman el "Consolidated Framework for Implementation Research"

Resultados: Aunque hubo una implementación heterogenea del modelo *"Dedicated Education Units"* en los diferentes países, no se percibieron importantes barreras de implementación. Los datos cualitativos mostraron que la colaboración entre las instituciones educativas y de atención a la salud, el enfoque en objetivos comunes, la comunicación entre las instituciones, la creación de redes de trabajo, la satisfacción de los profesionales sanitarios y docentes, y el establecimiento de un espacio seguro para la discusión y la retroalimentación profesional, se consideraron facilitadores.

Conclusiones: Este estudio describe los elementos clave que guían a los profesionales decisivos de las instituciones educativas y de atención a la salud educativas en la implementación del modewlo *"Dedicated Education Units"* involucrando a los participantes en todo el proceso y ofreciendo a otras organizaciones la oportunidad de considerar los beneficios de este modelo de educación clínica.

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RESEARCH ARTICLE Open Access

Implementing dedicated education units in 6 European undergraduate nursing and midwifery students clinical placements

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Abstract

Background: Undergraduate students' clinical experience, working directly with patients and the healthcare team is essential to ensure students acquire the necessary competence for practice. There are differences in the quality of clinical environments and in students' clinical placement experiences and not all clinical sites are optimal learning environments. The Dedicated Education Unit clinical education model allows students to develop the practical knowledge, skills and professionalism they will need as nurses/midwives.

Methods: We employed the Consolidated Framework for Implementation Research to identify and compare barriers and facilitators in the implementation of the Dedicated Education Unit in 6 European undergraduate nursing/midwifery student clinical placement settings and to describe the experience of nurses/midwives involved in the Dedicated Education Unit model implementation and evaluation. A pre-post implementation interpretive assessment was based on participants' responses to the Consolidated Framework for Implementation Research construct questions.

Results: Although Dedicated Education Unit model implementation in our project was heterogeneous, no main implementation barriers were perceived. Qualitative data showed that educational-service collaboration, including a focus on mutual goals, organizational communication and networking, satisfaction of educational and healthcare professionals, and the establishment of a safe space for professional discussion and feedback, were considered facilitators.

Conclusions: This study describes the key elements guiding educational and healthcare stakeholders in Dedicated Education Unit implementation, engaging participants in the entire process, and offering other organizations the opportunity to consider the benefits of this clinical education model.

Keywords: Dedicated education unit, Consolidated framework for implementation research, Clinical learning environment, Clinical education, Nursing students

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Background

European nursing educational context

The nursing and midwife learning process integrates theory, simulated practice and clinical placement (CP) into study programs. Although the main goal of the Bologna Declaration was to standardize European Higher Education, differences still exist in nursing curriculum implementation in Europe. There are both 3 and 4 year programs, inconsistent adoption of the European Credit Transfer System and wide variation in CP models and students' experiences [1, 2]. As students' CP represents more than 50% of nursing degree hours [3], it is vital to assist institutions and participants to deal with these issues.

Clinical learning environment

The clinical learning environment includes the characteristics of the physical space, psychosocial factors, organizational culture, teaching and learning elements and everything that influences the student experience in achieving educational outcomes and developing knowledge and skills, behaviors and confidence [4, 5]. However, the literature describes differences in the quality of clinical environments and in students' CP experiences, and shows that not all clinical sites are optimal learning environments which can, in some cases, have a negative impact on student learning [5, 6].

Dedicated education units

The main goal of the Dedicated Education Unit (DEU) clinical education model is to create an optimal clinical learning environment through educational-service partnering. The DEU model allows nursing/midwifery students to achieve practical knowledge and skills and develop their professionalism and balances the demands of student learning and professionals roles, ensuring patient comfort and safety by improving quality of care. The DEU model strengthens the teaching role of the clinical nurse in instructing students' clinical skills in the clinical setting. It also emphasizes the role of the faculty nurse in ensuring student knowledge acquisition and supporting the clinical nurses' teaching role. In addition, the collaboration of educational and health institutions allows the optimization of training resources, enhances theory and practice integration, facilitates the student' acquisition of competencies, and responds to professionals' needs to provide appropriate nurse training [7–11]. Successful students and nurses' outcomes in the DEU model are well documented [7–9].

The DEU model was implemented in the 1990s by nursing faculty from Flinders University in Australia. Then, in 2003, the University of Portland adapted the Australian DEU in an effort to improve the clinical learning environment and address a shortage of nurses. Since 2003, several educational and healthcare organizations in Australia, New Zealand, the United States of America and Europe have successfully implemented DEU units [7, 8, 10]. The essencial elements of DEU [11] are as follows:

- Committed partnership for education improvement between academic and healthcare organizations.
- Students' CP duration should vary, depending on students' curricula, from 6 to 12 weeks.
- A Clinical Mentor (CM) is an experienced and trained nurse/midwife who, in a one-on-one relationship, guides, instructs and supervises undergraduate students in clinical placement.
- A Link Teacher (LT) is an academic nurse/midwife hired by the Higher Education Institute without patient care responsibilities. As a part of a health team, the LT liaises between academic and healthcare organizations, responsible for clinical mentor-student partnership coordination and support, evaluation of the learning-teaching process, and student clinical placement assessment.
- The Head Nurse (HN) is the ward manager involved in the teaching-learning process, influencing staff motivation and creating the conditions for a ward learning culture.
- A mentoring course/program provides CM with pedagogical education, skills and support necessary to sustain students' learning.
- Meetings between the LT, CM, HN and students are established to enhance feedback and communication, and agree on teaching/learning process planning, development and evaluation.

Aims

The purposes of this study were (1) to identify and compare barriers and facilitators influencing the implementation of the DEU model in 6 European undergraduate nursing/midwifery student CP settings, and (2) to describe the experience of nursing/midwifery project coordinators involved in DEU implementation and evaluation.

Method

Study design

A multi-center qualitative study carried out in five European countries to identify facilitators, barriers and factors associated with DEU implementation in 6 European undergraduate nursing/midwifery students CP settings.

Settings and participants

An innovative academic-service partnership between 6 European academic organizations and 6 European health care institutes in 5 European countries (Belgium, Portugal, Poland, Spain, Turkey) was established. University Colleges Leuven collaborated with University Hospital Leuven,

University Colleges Limburg with Oost-Limburg Hospital, Medical University, Warsaw with Holy Family Hospital, Polytechnic Institute, Setúbal with Centro Hospitalar de Setúbal, Escola Infermeria de la Facultat de Medicina i Ciències de la Salut de la Universitat de Barcelona with Hospital Clínic de Barcelona and Ege Üniversitesi with Izmir University Medical Center. The Characteristics of the 6 countries' educational contexts and nine selected clinical units where the DEU model was implemented are described in Table 1.

This study includes the perceptions of 21 key professionals from academic and service organizations who had an active role in DEU implementation: Belgium ($n = 4$), Poland ($n = 5$), Portugal ($n = 5$), Spain ($n = 4$) and Turkey ($n = 4$). Participants roles were: hospital and faculty managers and associate managers, faculty professors, and LT, responsible for coordinating DEU implementation and evaluation of each student's CP. These professionals worked daily with various stakeholders, including clinicians, staff nurses-midwives, other health workers and the community, and this provides opportunities to deliver feedback during regular meetings. Assessing implementation from diverse perspectives ensured vital aspects (economic, organizational and human) were captured to contribute to fruitful implementation.

Implementation strategy

A research team for each country was formed with a study coordinator designated for each team. The DEU unified guidelines for carrying out implementation and assessment were registered in a protocol [12]. Meetings with universities and healthcare directors were held, contracts and agreements were signed to arrange the educational-service partnerships and to adapt the DEU to each setting. Each organization selected the appropriate units based on students' academic level, interest, motivation and the availability of nurses/midwives, or other institutional preferences. HN, LT and CM roles and responsibilities were identified, written into the implementation guidelines and given to all participants. The DEU mentoring course was imparted by experts to at least four members of each country's research team. Afterwards, each member country was responsible for giving the course to HN, LT and CM project participants. This course provided global and specific per-country theoretical and practical knowledge, skills and strategies for dealing with potential issues arising during students' CP. Staff from selected units were informed about the model and objectives. The first day of the students' CP, trained CM and students were paired in one-on-one relationships and the LT was incorporated into the student and unit health team. Follow-up meetings and evaluation of the DEU implementation process and outcomes were conducted weekly and at the end of the program, respectively.

Instrumentation/procedures for data collection

To evaluate DEU implementation, we used quantitative and qualitative measures, including structured and semi-structured interviews, focus groups, and observation with the aim of assessing organizational context attitudes and behaviors. In this part of the study, aiming to identify DEU implementation facilitators and barriers, we used the Consolidated Framework for Implementation Research (CFIR). It is considered that use of the CFIR may help to advance implementation science [13, 14]. The CFIR describes constructs related to the Process of implementation: Planning, Engaging, Executing, and Reflecting and Evaluating [15]. It is composed of five domains: intervention characteristics, outer setting, inner setting, characteristics of the individuals involved and process implementation. The CFIR has been applied in many studies and uses practical comprehensive taxonomy of constructs with the potential to influence implementation effectiveness and to encourage consistency in evaluation and reporting of translational efforts [16, 17]. We used the interview questions from the CFIR website [17] before and after the DEU implementation process. Likewise, we used the same authors' criteria to qualify each item's influence on implementation. For each construct, ratings were assigned that reflected the influence. Valences of + 2 + 1 reflect a positive influence, – 2 and – 1 a negative influence while 0 indicates that this construct had no influence on DEU implementation [16] (Table 2).

CFIR domains and constructs definition

Intervention Characteristics: This domain refers to the main intervention attributes influencing the success of the implementation. Questions explore participants' opinions about the individual or group carrying out the intervention, individuals' participation in decision processes, previous information and solid evidence about the intervention, influential stakeholder support, degree of strength of intervention implementation, required changes, alterations and the cost of adapting the intervention to the organization.

Outer Setting: This domain relates to the current organizational situation requiring this intervention. Participants were asked about patients' needs and preference awareness, how individuals are stimulated by the organization to take the initiative and make suggestions, the advantages of intervention implementation compared with similar organizations and external strategies to extend the intervention.

Inner Setting: This domain describes the organization's characteristics. Questions are related to organizational structure and social design, the nature and quality of professionals' communications, professionals' incentives and remunerations, learning climate, and personal and economic resources.

Table 1 Educational and clinical context characteristics

	Spain		Belgium			Poland	Portugal	Turkey
EDUCATIONAL CONTEXT	University		University College			University	Polytechnic Institute	University
	Nursing degree 4 years 240 ECTS		Nursing degree 3 years 210 ECTS			Midwife degree 3 years 210 ECTS	Nursing degree 4 years 240 ECTS	Nursing degree 4 years 240 ECTS
CLINICAL CONTEXT	General Hospital		General Hospital		General Hospital	Specialized maternity hospital	General Hospital	General Hospital
Number of beds	682		1756		811	297	376	2000
Number of staff Nurses/midwives	2305		2946		1250	216	695	58
Number of patients attended per year	40,451		693,592		36,090	19,255	170,000	1,000,000
Nurse or midwife/ patient ratio in the unit	(unit A)	(unit B)	(unit A)	(unit B)	(unit C)	(unit D)		
Morning	1/8	1/2–3 (ICU)[a]	1/5–6	1/2–5 (ICU)[a]	1/9	1/9	1/11	1/4	1/70
Afternoon	1/8	1/2–3 (ICU)[a]	1/ 8–9	1/3–5 (ICU)[a]	1/9	1/9	1/11	1/6	1/25
Night	1/16	1/2–3 (ICU)[a]	1/ 20–61	1/4–5 (ICU)[a]	1/32	1/32	1/11	1/10	1/45

[a]Intensive Care Unit

Table 2 Criteria used to assign ratings to constructs [16]. Authorized by Damschroder

Rating	Criteria
−2	The construct is a negative influence in the organization, an impeding influence in work processes, and/or an impeding influence in implementation efforts. The majority of interviewees (at least two) describe explicit examples of how the key or all aspects (or the absence) of a construct manifests itself in a negative way.
−1	The construct is a negative influence in the organization, an impeding influence in work processes, and/or an impeding influence in implementation efforts. Interviewees make general statements about the construct manifesting in a negative way but without concrete examples: (1) the construct is mentioned only in passing or at a high level without examples or evidence of actual, concrete descriptions of how that construct manifests; (2) there is a mixed effect of different aspects of the construct but with a general overall negative effect; (3) there is sufficient information to make an indirect inference about the generally negative influence and/or (4) judged as weakly negative by the absence of the construct.
0	A construct has neutral influence if: (1) it appears to have neutral effect (purely descriptive) or is only mentioned generically without valence; (2) there is no evidence of positive or negative influence; (3) credible or reliable interviewees contradict each other; (4) there are positive and negative influences at different levels in the organization that balance each other out; and/or different aspects of the construct have positive influence while others have negative influence and overall, the effect is neutral.
+ 1	The construct is a positive influence in the organization, a facilitating influence in work processes, and/or a facilitating influence in implementation efforts. Interviewees make general statements about the construct manifesting in a positive way but without concrete examples: (1) the construct is mentioned only in passing or at a high level without examples or evidence of actual, concrete descriptions of how that construct manifests; (2) there is a mixed effect of different aspects of the construct but with a general overall positive effect and/or (3) there is sufficient information to make an indirect inference about the generally positive influence.
+ 2	The construct is a positive influence in the organization, a facilitating influence in work processes, and/or a facilitating influence in implementation efforts. The majority of interviewees (at least two) describe explicit examples of how the key or all aspects of a construct manifests itself in a positive way.
_	Missing Interviewee(s) were not asked about the presence or influence of the construct; or if asked about a construct, their responses did not correspond to the intended construct and were instead coded to another construct. Interviewee(s) lack of knowledge about a construct does not necessarily indicate missing data and may instead indicate the absence of the construct.

Characteristics of individuals: This domain relates to individuals' beliefs, attitudes and motivation to cope with changes, their self-perception with respect to the success of the implementation or their commitment to the organization.

Process: This domain relates to implementation planning in advance and the degree to which the plan is followed. Participants were asked about involvement of appropriate individuals and leaders, outside individuals who could influence and apply the implementation, and the nature and quality of participants' feedback regarding planning, implementation and outcomes.

We examined rating patterns within and across organizations to identify barriers, facilitators and constructs that distinguished between settings. In addition, supplementary DEU-outcomes evaluation was added to analyse, quantitatively and qualitatively, nurses/midwives and students' experiences and perceptions of DEU implementation and outcomes (Table 3).

Table 3 CFIR domains, constructs and supplementary evaluation

Consolidated framework for implementation research domains					Supplementary evaluation
Intervention characteristics	**Outer setting**	**Inner setting**	**Characteristics of individuals**	**Process**	
- Adaptability - Complexity - Cost - Design quality and packaging - Evidence strength and quality -Intervention source - Relative advantage -Trialability	- Cosmopolitanism - External policy and incentives - Patient needs and resources - Peer pressure	- Culture - Implementation climate (tension for change, goals & feedback, relative priority, compatibility, learning climate, organizational incentives & rewards) - Networks and communication - Readiness for implementation (available resources, leadership engagement, access to knowledge & information) - Structural characteristics	- Knowledge and beliefs about the intervention - Individual stage of change - Individual identification with the organization - Self-efficacy - Other personal attributes	- Engaging (champions, formally appointed implementation leaders, external change agents, opinion leaders) - Executing - Planning - Reflecting and evaluating	- Students and nurses/midwives focus groups. - CLES-T questionnaire for undergraduate students. - PES-NWI survey for nurses/midwifes. - Open-ended questions for nurses/midwives.

Data analysis

Participants ratings for every CFIR construct were analized to determine if the construct had a positive, neutral, or negative influence on DEU implementation performance, and the degree of its influence. The five CFIR domains were used as a framework for identificable codes and constructs for categories. Two researchers read and re-read the participants' answers and organized the data. The participants verified the data to ensure isomorphism between the data collected and reality and to maximize the validity of findings. Computer software (ATLAS-ti version 8.2.1) was used for exploration, management and evaluation of data. During the investigation, standards of quality and scientific rigor; credibility, transferability, dependence and reliability described by Lincoln and Guba (1985) were applied [18].

Ethical considerations

The Ethics Committee at Hospital Clinic, Barcelona granted approval for this study (approval number: HCB/2017/0053). Staff received both written and oral information about the study aim and methodology. Written informed consent was signed before data collection and participants could withdraw from the study at any time. Participants' data were kept confidential and their identifying information was removed and cannot be connected to them.

Results

Although the DEU model implementation was heterogeneous, qualitative data from CFIR questions showed many more shared traits than differences in participants' answers. Table 4 shows the characteristics of the nine DEU model units implemented. Table 5 shows the valences given by each group of coordinators to qualify each CFIR construct as having a positive, negative or neutral influence on DEU implementation. Results and participants' illustrative quotations are presented as examples of the most common perceptions about facilitators and barriers in DEU planning and implementation.

Intervention characteristics

Project coordinators answered these domain questions before starting DEU model implementation. For these professionals, DEU model quality and adaptability were principal factors that positively influenced implementation. Spain participants added: *"Diverse literature describes the DEU model as an optimal context to contribute positively to the improvement of the capacities of the student and the balance of the nurses' roles and to grow their professionalism."*

Design and packaging were not perceived as influential since they considered that implementation protocols, guidelines and online resources were available, and that materials and support tools were consistently considered helpful by all participating centers. Likewise, training courses that were freely given to staff nurses/midwives by LTs helped CMs to carry out their teaching role. Furthermore, participants considered that the DEU was not a complex intervention, and every step could be planned in advance, so facilitating its implementation. Spain coordinators stated: *"Meetings between coordinators, nurses/midwives, head nurses/midwives, professors, lecturers and managers are planned with the aim of deciding on the changes we need to make and the resources we have to use to implement the intervention."*

Outer setting

Participants thought this domain had less positive impact on DEU implementation. In relation to patient needs and resources, all participants strongly agreed on the quality of the patient care guarantee because in the

Table 4 DEUs clinical learning environment

Deu clinical learning environment	Spain (unit A)	Spain (unit B)	Belgium (unit A)	Belgium (unit B)	Belgium (unit C)	Belgium (unit D)	Poland	Portugal	Turkey
CP duration in days.	32		45		35		22	42	35
CP duration in hours.	240		360		280		265	210	245
Number & year of students in DEU.	2 (4th year)	3 (4thyear)	7 (3rd year)		6 (3rd year)		2 (1th year)	1 (3rd year) 1 (4th year)	3 (3rd year)
Trained CM in DEU during CP.	6		4		11		2	2	2
% Student-CM matched in one-to-one relationships	100%		85%		85%		100%	100%	100%
Days/week LT present in DEU during CP.	1 day/week		1 day/week		1 day/week		4 day/week	1 day/week	1 day/week
Hours/week LT present in DEU during CP.	6		8		8		32	1 or 2	8
DEU mentorship course duration in hours.	18		40+ 16[a]		40		40	12	18

[a]2 days/year of CM up-dating training

Table 5 CFIR constructs and ratings

CFIR domain	CFIR construct	Spain	Belgium (A&B)	Belgium (C&D)	Poland	Portugal	Turkey
INTERVENTION CHARACTERISTICS	Intervention Source	+2	+1	+1	+1	+2	+1
	Evidence Strength & Quality	+2	+2	+2	+2	+2	+2
	Relative Advantage	+2	+1	+1	+1	+2	+1
	Adaptability	+2	+2	+2	+2	+2	+2
	Trialability	+2	+1	+2	+1	+2	+2
	Complexity	+2	+1	+1	+1	+1	+1
	Design Quality & Packaging	0	0	0	0	+2	0
OUTER SETTING	Cost	+1	+1	+1	+1	+1	+1
	Patient Needs & Resources	0	0	0	0	+2	0
	Cosmopolitanism	+2	+1	+1	+1	+2	+1
	Peer Pressure	+1	0	0	0	+1	0
	External Policy & Incentives	+1	+1	+1	+1	+1	+1
INNER SETTING	Structural Characteristics	+2	+1	+1	+1	+1	+1
	Networks & Communications	0	+1	+1	+1	+2	+1
	Culture	+1	+1	+2	+1	+2	+2
	Implementation Climate	+2	+2	+2	+2	+1	+2
	Tension for Change	0	+1	+1	+1	0	+1
	Compatibility	+1	+1	+1	+1	+2	+1
	Relative Priority	+1	+1	+1	+1	+1	+1
	Organizational Incentives & Rewards	+1	0	0	0	+1	0
	Goals and Feedback	+2	+2	+2	+2	+2	+2
	Learning Climate	+2	+2	+2	+2	+2	+2
	Readiness for Implementation	+1	+1	+1	+1	+1	+1
	Leadership Engagement	+2	+2	+2	+2	+2	+2
	Available Resources	+2	+2	+2	+2	+2	+2
	Access to Knowledge & Information	+1	+1	+1	+1	+2	+1
CHARACTERISTICS OF INDIVIDUALS	Knowledge & Beliefs about the Intervention	+2	+2	+2	+2	+2	+2
	Self-efficacy	+2	+2	+2	+2	+2	+2
	Individual Stage of Change	+1	+1	+1	+1	+2	+1
	Individual Identification with Organization	+1	+2	+2	+2	+2	+2
	Other Personal Attributes	+1	+1	+1	+1	+2	+1
PROCESS	Planning	+1	+2	+2	+2	+2	+2
	Engaging	+2	+2	+2	+2	+2	+2
	Opinion Leaders	+1	+2	+2	+2	+2	+2
	Appointed Internal Implementation' Leaders	+2	+2	+2	+2	+1	+2
	Champions	+1	+1	+1	+1	+1	+1
	External Change Agents	+1	+1	+1	+1	+2	+1
	Key Stakeholder	+1	+1	+1	+1	+2	+1
	Intervention participants	+2	+2	+2	+2	+2	+2
	Executing	+1	+1	+1	+1	+2	+1
	Reflecting & Evaluating	+1	+2	+2	+2	+2	+2

DEU model, at all times, students and patients were supervized by a qualified registered nurse/midwife. Participants in Belgium added: *"Because the students are always supervized by an experienced nurse, the quality of care could remain guaranteed. Because they were trained in total patient care, and because they were able to make time for the patient, it might even increase the ability to meet the needs."* Turkish participants believed implementation of the DEU model in their units could increase the quality of nursing students' education and the quality of patient care. They stated: "*They* (*patients*) *were happy about it because that intervention was to educate the nurses better and these nurses will attend them in the future."* Further, coordinators in Portugal agree that *"The intervention will emphasize a closer approach to the assessment and follow-up of patients' needs and preferences."*

All project coordinators believed their organizations had higher quality networking, and the option to keep in contact with other organizations where the DEU is already implemented was an additional benefit at the time of collecting, sharing and comparing experiences. Belgium participants stated: *"We talk about the DEU with all other DEUs on a formal basis. To evaluate the DEU, but also to exchange experiences. We do this with other DEUs in the hospital, but also with other partners from other hospitals, even from other schools. Then, of course, also with our international partners."* Spain participants stated*: "We promote transversality between different organizations and departments to promote team work and professional involvement."*

Belgium coordinators stated that the transition of the Nursing degree from year 3 to year 4 and the increase of students' CP hours was a performance measure that influenced DEU implementation because it implied changes, evaluation of current strategies and implementation of best practices: *"On the macro, meso and micro levels everybody is discussing the quality of internships because the impact is greater which means the quality needs to be high."*

Inner setting

Participants considered the inner setting the most positive influential CFIR domain at the time of DEU implementation. They highlight leadership engagement from the project's coordinators and declared that the educational and health teams and management were open-minded, included innovations and engaged people at all levels. They also stressed the freedom of the learning climate in allowing people to demonstrate their capacities and creativity to improve any intervention or innovation. Portugal participants added: *" The institution is an "open door hospital", which values the partnership relationship with the various community structures, with established protocols with the city's existing dynamism."* and *"There is a creative freedom within the institutional rules on quality."* Poland coordinators agree: *"Our university tries to be up-to-date with new methods, because they are very important in medicine."*

Participants stated that the common highest incentive and reward in DEU implementation was the satisfaction that the DEU learning and work environment brings to both students and nurses/midwives. Belgium participants highlighted: *"Students who make positive development during the internship. Validation of the role of mentor and link teacher. Satisfying relationships with the participants. Mentors experiencing the power of their competences that results in stronger self-confidence as mentor; also a certificate of participation for team/mentors and students."*

Through the utilization of the knowledge, skills and resources of both clinical and academic partners, participants could share and pool implementation strengths. Moreover, the opportunity to collect data on DEU implementation processes and outcomes was important in assessing DEU efficacy and possible benefits. Spain participants stated: *"Based on the project and through a data collection system, we will learn about the experience, opinions and suggestions of everyone involved: Mentors, Teachers, Head Nurses, students and project coordinators."*

Characteristics of individuals

All participants answered questions from this domain, identifying it as a facilitator in the DEU implementation process. Nurses/midwives considered themselves motivated and committed people and highly qualified professionals. Participants believed that self-efficacy and personal confidence in the health and educational team were decisive when implementing changes. Spain participants added: *"Confident, hopeful, courageous. I believe in the preparation, motivation and interest of the teams."*

Also emphasized were the participants' commitment to the organization, as well as the professionals' perception that organizational values and culture are focused on students and professionals' well-being and development. Other personal traits such as self-confidence, competence, capacity and aptitudes to undertake the project were mentioned by participants. Belgium participants stated: *"I consider that I present motivation, and ability to motivate others to change. In addition, I contribute, from the research team, to develop interventions to implement and pilot the change in such a way that it can be evaluated through the improvement of care."*

Process

Questions in this domain were answered after DEU model implementation. Engaging, Intervention participants and Reflecting & Evaluating constructs were considered by participants to be the most influential positive

factors during the DEU implementation process. DEU coordinators and implementation teams' effective leadership were strategic advantages for participants and helped to overcome difficulties in DEU implementation.

Portugal participants stated: *"Motivated and experienced ones (leaders), both in nursing care and student mentoring."* They also added: *"Choose available and experienced CM. Project marketing at the unit. Adequate training and involvement in the project. Continuous assessment of the project."*

Engaging and involving experienced and motivated people, training them to lead the implementation and to attract other professionals were beneficial to the success of the intervention. Spain coordinators declared: *"People believe that all those involved in the project have skills, and are motivated and prepared. Leaders, Coordinators, Mentors, Link Teachers, researchers and nurses who, in addition to being very prepared and motivated, spread their enthusiasm and interest to the rest of the teams."*

The opportunity for weekly DEU model meetings to identify, evaluate and handle process and outcomes issues, and the open and continuous communication channels to stimulate feedback between all parties involved, were represented as facilitators of implementation success. Portugal participants added: *"The evaluation has been continuous. There have been weekly meetings with those involved and an open communication channel with all the participants all the time."*

Discussion

This is the first process evaluation of DEU implementation in 6 European undergraduate nursing/midwifery student CP settings and the first evaluation to use the CFIR. The use of CFIR implementation science theory allowed us to explore nurses/midwives' perceptions on the factors hindering or enabling DEU implementation and to 'unpack' the reasons that professionals believed the intervention was implemented successfully. Participants did not find barriers across CFIR constructs although there were divergences with respect to the influence of constructs at the time of DEU planning and implementation.

Regarding respondents' perception, "Intervention characteristics" was highlighted as an aid to the implementation process. DEU evidence-based quality was significant in planning, readiness and implementation processes. Organizations that support safety and quality in health care encourage DEU replication in numerous sites due to the reported benefits of the DEU for educational and healthcare organizations. Additionally, the availability of several protocols, guidelines and the literature on the DEU reduced implementation complexity, facilitated the proposed strategy and its adaptation to dissimilar sites [7–11, 19]. Our results are comparable with those which show that intervention adaptability seems to be guaranteed when educational-service collaboration is based on trust, respect and mutually beneficial goals: effective use of existing resources, support for professional improvement, nursing workforce recruitment and retention, and awareness of the teaching/learning process [20, 21].

Collaboration between educational and healthcare resources and their cooperation with other national or international organizations is reflected in the 'Cosmopolitanism' construct in the CFIR framework. Excellent organizational communication and networking are considered facilitators in DEU implementation. The organization's expanded networks, together with DEU international expansion, could respond to international nursing education concerns about differences in nursing training requisites and experiences, represent a strategic opportunity to increase cooperation and mutual understanding, and facilitate nurses and students' international mobility [6, 22, 23].

We found that the "Inner setting" domain displayed more positive influence in a successful DEU implementation. Our results are in line with those of Varsi et al. (2015) [24] that showed that their organizations' structural characteristics, available resources, workplace culture and implementation climate influenced the implementation of innovations. The nursing work environment is characterized by constant change, and nursing staff are skilled in process and strategy modifications and adaptations [25]. Organizations' readiness to change was based on the experience of implementation of innovations, professionals' insight into organizational receptiveness, openness to new interventions, and encouragement of professionals to contribute ideas and opinions. Other authors also highlighted significant leadership engagement and available resources to implementation of changes [26–28].

We observed in the "Characteristics of Individuals" domain that the presence of positive perceptions of team involvement and willingness to collaborate were more likely to facilitate change at the time of implementing the DEU. Professionals' perception of gratifying experience in the DEU was reported in several studies [7–9] and the impact on patient care and the health system of nurses' confidence and satisfaction with their skills, knowledge and teaching role is shown [29]. As in the study by Glynn et al. [30], participants stated that effective communication between educational and healthcare organizations is necessary to provide nurses with educational role skills, role expectations and clarification. Likewise, it is known that sustaining this kind of educational-service collaboration is indispensable in supporting professionals, reinforcing new organizational structures and offering recognition and reward for all parties involved [30, 31].

Answers related to the "Process" domain showed that shared participants' expectations, suggestions and questions

during meetings and training courses brought greater opportunities to make adjustments and adapt the DEU to each context. Professional training and ongoing opportunities to learn how to teach students helped to improve professionals' self-confidence in their competences. It is a recommendation for improving nursing education and staff nurses' demands in the workplace [30, 31]. Moreover, the establishment of a safe space for professional discussion and satisfaction was achieved when their feedback and suggestions were accepted and seen as factors that create a positive clinical-learning environment [32].

We found the CFIR to be useful and practical tool for analyzing DEU implementation success determinants. Data about implementation processes and outcomes were important for assessing efficacy and possible benefits, and encourage reflection and team discussion aiming to detect implementation difficulties and seek solutions. The identification, supervision and handling of process and outcome data represented an aid to implementation success. The CFIR identified factors that could influence the success of implementation when moving an evidence-based intervention to a new setting [24]. In addition to helping users understand what works or does not work in implementation research, the qualitative-based CFIR also helps researchers understand how and why implementation processes work [15, 17]. In addition, our mixed-method supplementary evaluation (nurses/midwives and students' focus groups and questionnaires) created a rich pool of qualitative and quantitative data to meet the research aim. Results from supplementary evaluation will be reported in a further paper.

Limitations

Our study is limited to a small number of educational and healthcare organizations per country as it was a DEU pilot implementation in each country. Another limitation can be found in the singular elements of different curricula of educational institutions and different health care systems of healthcare providers participating in this study, which we have not subjected to a deep analysis. Therefore, its results are not representative of other European contexts, for instance, community hospitals. Although, in order to avoid possible language barriers in the collection of qualitative data, the research staff were trained to provide interpreter or translator services to translate the participants' data into the English language, this may be a limitation in a qualitative cross-language study.

Conclusion

Despite the limitations, this study gives us a complete picture of how DEU model implementation and outcomes were considered in practice. The authors can confirm that these selected methods were appropriate to the research aims of this implementation evaluation. We believe this qualitative process evaluation were interested and keen to contribute to the process analysis, and created a rich pool of data.

This study facilitates the key elements to guide educational and healthcare stakeholders in DEU implementation. It may help educational and healthcare organizations to engage people in the whole process and allow other organizations to consider DEU model benefits and sustainability.

The CFIR was able to outline those organizational, individual behavior and external agency factors that have a direct impact on DEU implementation. Use of the CFIR to guide and evaluate intervention and implementation allows researchers to compare their findings with other studies and to promote discussion about future research.

Implication for practice

This article highlights the practical benefits for nurse managers and researchers when translating research findings into practice and contributes strategies that organization leaders could explore prior to implementing the DEU model in healthcare settings. Educational and health care managers can draw on the five CFIR framework domains and consider them in the routine of change or innovations implementation and outcomes evaluation. Additionally, our findings could inform future efforts by helping to explain why implementation went well or not.

Abbreviations

DEU: Dedicated education units; CFIR: The Consolidated Framework for Implementation Research; CP: Clinical placement; CM: Clinical mentor; LT: Link teacher; HN: Head nurse

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Authors' contributions

SP and AZ conceived the study, analyzed and interpreted data and drafted the manuscript. NF, ER, MP, MS, FŞ, SM acquired and interpreted countries' data, read the manuscript and provided feedback. All authors read and approved the final manuscript.

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Availability of data and materials

The datasets generated and/or analyzed during the current study are not publicly available, but are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate
The Ethics Committee "Comitè d'Ètica de la Investigació en Medicaments" at Hospital Clínic, Barcelona granted approval for this study. Approval number: HCB/2017/0053.
Staff received both written and oral information about the study aim and methodology. Written informed consent was signed before data collection and participants could withdraw from the study at any time.

Consent for publication
Not applicable.

Competing interests
The authors declare that they have no competing interests.

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Publisher's Note

4.3. OBJETIVO Y ARTÍCULO NÚMERO 3

Objetivo:

Conocer la percepción de los estudiantes de Enfermería y Matrona del modelo de aprendizaje clínico "*Dedicated Education Units"* en 6 organizaciones sanitarias de Bélgica, España, Portugal, Polonia y Turquía.

Artículo:

Sara Pedregosa, Núria Fabrellas, Ester Risco, Mariana Pereira, Ewa Dmoch-Gajzlerska, Fisun Şenuzun, Sandra Martin, Adelaida Zabalegui. Evaluation of the clinical learning environment of Dedicated Education Units in 5 European countries. (Artículo en revision).

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Resumen:

Introducción: El periodo de prácticas clínicas es un requisito y parte de los programas académicos de los estudiantes de Enfermería y Matrona para desarrollar sus habilidades profesionales. Aunque ha habido muchos esfuerzos para mejorar la adquisición de conocimientos, la integración en el equipo de salud y la satisfacción de los estudiantes, todavía queda un largo camino por recorrer. El modelo de aprendizaje clínico *"Dedicated Education Units"* se ha establecido como una alternativa efectiva a los modelos a aprendizaje clínico tradicionales. Este estudio exploratorio describe las percepciones de los estudiantes de Enfermería y Matrona sobre la implementación modelo de

aprendizaje clínico *"Dedicated Education Units"* en 9 emplazamientos de práctica clínica de 5 países Europeos.

Objetivo: Describir las percepciones de los estudiantes de Enfermería y Matrona sobre el entorno de aprendizaje clínico donde se han implementado el modelo *"Dedicated Education Units"* .

Metodos: Tras completar su periodo de prácticas clínicas, y tras firmar el correspondiente consentimiento informado (Anexo1) cuarenta estudiantes de Enfermería y Matrona de Bélgica, Polonia, Portugal, España y Turquía, completaron la escala *"Clinical Learning Environment, Supervision, and Nurse Teacher"* (Anexo 3). Esta escala consta de 5 dimensiones: (1) ambiente pedagógico; (2) relación de supervisión; (3) liderazgo la coordinadora de la unidad; (4) los cuidados de enfermería; y (5) el papel de la enfermera docente.

Resultados: Los estudiantes calificaron el modelo de aprendizaje clínico *"Dedicated Education Units"* como satisfactorio. El ambiente de aprendizaje, las experiencias de los estudiantes durante las prácticas clínicas y su relación con la enfermera mentora y la docente fueron los aspectos mejor valorados del modelo.

Coclusiones: El modelo *"Dedicated Education Units"* proporciona un entorno de aprendizaje clínico óptimo que incide positivamente en la satisfacción de los estudiantes con su formación. La colaboración entre la practica y la docencia, el compromiso de los gerentes y los objetivos comunes durante el proceso de enseñanza-aprendizaje son necesarios para enriquecer el ambiente de aprendizaje y asegurar la satisfacción del profesional con su rol docente.

EVALUATION OF THE CLINICAL LEARNING ENVIRONMENT OF DEDICATED EDUCATION UNITS IN 5 EUROPEAN COUNTRIES

INTRODUCTION

Clinical learning time is a requirement and part of the nursing and midwifery students' academic programmes to develop their professional skills by integrating theoretical knowledge into practice. This clinical practice period offers the students an opportunity to merge cognitive, behavioural, emotional, problem-solving, and critical thinking skills while building their self-confidence and professional autonomy (D'Souza et al., 2015).

The importance of clinical learning environments is highlighted in Directive 2005/36/EU, in which clinical practices represent at least 50% of nurses and midwives' educational programme (European Commission Directive, 2005).

The clinical learning environment consists of everything that surrounds the nursing and midwifery students, including clinical environments, the healthcare team, support personnel, patients, and clinical and academic nurses. The attributes of these environments are those which encourage the students to meet the learning objectives, such as the development of clinical skills, the application of knowledge to clinical reality and the attitudes necessary for problem-solving, as well as promoting self-confidence and professional satisfaction (Flott & Linden 2016).

Although it has been demonstrated that high-quality learning environments with good supervision have considerable influence on student's professional development, not all clinical environments are optimised for learning, and not all

students complete their training or feel fully prepared for real practice (Arkan et al., 2018). Aspects which can determine the effectiveness of learning environments have recently been described: degree of academic-clinical cooperation, student-nurse ratios, unit nurses' preparation for training activities, and quality of supervision, among others (Pedregosa et al., 2021).

There is variability in the clinical learning models, which include differing strategies for the successful acquisition of students' clinical competencies and professional socialisation. Thus, future professionals can achieve different levels of adaptation to the professional world. In several countries, such as Italy, Iceland, Australia, Canada and the United States, clinical and faculty nursing staff have taken on the preceptor/mentor role to guide, teach and support students in clinical learning placements (Dobrowolska et al., 2016). In addition to the "mentorship" model, different clinical learning models were identified with intrinsic benefits such as "educational unit", "work-study", and "student wards" among others (Dobrowolska et al., 2016; Forber et al., 2016; Jayasekara et al., 2018). Moreover, nursing and midwifery students' satisfaction with their clinical learning experiences can also impact on learning models and is a determinant of students' attrition from programmess (Papastavrou et al., 2016: Williamson et al., 2020). Since nursing/midwifery students' clinical learning is a critical part of nursing education and the environment influences students' learning and well-being, it is vital to investigate students' perceptions of their clinical learning environment.

Background

The Dedicated Education Units model has been established as an effective alternative to traditional supervision models (Jayasekara et al., 2018; Pedregosa

et al., 2020). The model was implemented for the first time in Australia with the dual aim of alleviating a problem of a lack of nurses and offering quality education to students. Gradually, the model was extended to the United States, New Zealand, and Europe. The main aim of the model is to provide a quality clinical learning environment with benefits for the nurse and midwife and consequent improvements in quality of care and patient wellbeing.

The most essential elements of the Dedicated Education Units according to Moscato et al. (2013) are:

- The establishment of partnership and close collaboration between the academic and healthcare organisations.
- Longer clinical training periods (between 6 and 12 weeks).
- The role of clinical mentor in instructing and guiding students in the clinical area in a 1:1 relationship.
- The role of nurse teacher responsible for students' learning assessment and mentor-student pair support and coordination.
- Head nurse/midwife participation in the teaching-learning process.
- Implementation of training courses/programmes to mentors and.
- Establishment of communication processes between all actors involved to unify teaching-learning process criteria.

Over recent years, the model, with or without modifications, has increased students and professionals' satisfaction with the learning environment, improved students' skills and clinical knowledge and enhanced self-perception and self-efficacy. Similarly, nurses have reported an improvement in their training responsibility and greater recognition of their training role. Various studies have

described the potential benefits to the student that emerge from academic-practice cooperation, including an increase in identification of clinical problems, more opportunities to practice clinical skills and significant improvements in communication with the patient and attitudes to teamwork. Such cooperation is considered to be a fundamental element in nurses' education.

The Dedicated Education Units model reinforces collaboration between educational and health institutions and narrows the theory-practice gap by extending the nurse mentor role in instructing and supervising students' clinical skills in the clinical setting and the nurse teacher role in meeting academic curriculum objectives, ensuring student knowledge acquisition and coaching clinical nurses in their teaching activities. In addition, this model strengthens collaboration between institutions to optimise training resources, offer more learning opportunities to students and respond to professionals' needs to provide appropriate training (Jayasekara et al., 2018; Pedregosa et al., 2020; Williamson et al., 2020).

Aim

This study aims to describe nursing/midwifery students' perceptions of the clinical learning environment where the Dedicated Education Units have been implemented. This evaluation is part of the "Dedicated Education Units implementation and evaluation in 5 European countries" study (IDEU-EU 2015-1-BE02-KA202-012329)". This evaluation is part of the study "Dedicated Education Units implementation and evaluation in 5 European countries study (IDEUs-EU 2015-1-BE02-KA202-012329)" (Table 1) point (a).

Table 1. "Dedicated Education Units pilot implementation and evaluation in 5 European countries" design.

EVALUATION THE IMPLEMENTATION PROCESS/OUTCOMES BASED ON THE CONSOLIDATED FRAMEWORK FOR IMPLEMENTATION RESEARCH				
Intervention Characteristics	**Outer Setting**	**Inner Setting**	**Characteristics of Individuals**	**Process**
- Adaptability - Complexity - Cost - Design quality and packaging - Evidence strength and quality -Intervention source - Relative advantage -Trialability	- Cosmopolitanism - External policy and incentives - Patient needs and resources - Peer pressure	- Culture - Implementation climate (tension for change, goals & feedback, relative priority, compatibility, learning climate, organizational incentives & rewards) - Networks and communication - Readiness for implementation (available resources, leadership engagement, access to knowledge & information) - Structural characteristics	- Knowledge and beliefs about the intervention - Individual stage of change - Individual identification with the organization - Self-efficacy - Other personal attributes	- Engaging (champions, formally appointed implementation leaders, external change agents, opinion leaders) - Executing - Planning - Reflecting and evaluating
Evaluation of nurses, midwives, and students' outcomes				
(a) Students' perception of Dedicated Education Units model through Clinical Learning Environment and Nurse Teacher questionnaire. **(b) Nurses/midwives' clinical environment perception through the Practice Environment Scale Nursing-Work Index survey.** **(c) Nurses/midwives' Dedicated Education Units model perception through open-ended questions.** **(d) Students and nurses/midwives' experiences withing Dedicated Education Units model through focus groups interviews.**				

Study design

Exploratory, multi-centre study developed in 5 different countries.

Setting and sample

Inclusion criteria were nursing and midwifery students that had completed their clinical practices in the implemented Dedicated Education Units in 9 different clinical placements in 5 European countries (Belgium, Poland, Portugal, Spain and Turkey).

DEU model pilot implementation and development

Collaboration was established between 6 higher education institutions and 6 health organisations. One year prior to implementation, a DEU research team was set up in each country and a project coordinator was nominated for each team. Meetings were held between the managers of the educational and service organisations and new contracts and agreements were signed to adapt the Dedicated Education Units model to each context. Regular meetings and online sessions with all the research groups were conducted to identify and address institutional aspects that could arise during implementation. The unified guidelines for carrying out implementation and assessment were registered in a protocol, Dedicated education units in Europe (DEU-EU).

According to organisations' respective characteristics, needs and resources, each country coordinator selected the units, the nurses/midwives and the students who would take part in the project. The roles and responsibilities of the main actors, clinical nurse mentor (termed clinical mentor), nurse teacher (termed link teacher) and unit nurse managers (termed head nurses) were determined and recorded in a common document that was delivered to participants.

Four members of the research team from each country took part in a teacher/mentor-training course to ensure that all actors worked in the same or an equivalent manner. The courses were delivered by experts in coaching and teaching methodology. Subsequently, one member from each country was responsible for imparting the course to the participants in their centres. The course provided theoretical and practical knowledge, skills, and strategies to deal with potential and actual problems that could arise during the students' clinical practices. An information session was then conducted in each participating

institution to respond to questions posed and consider suggestions regarding model implementation and assessment.

On the first day of students' clinical practices, the link teachers and study coordinator from each country held a team meeting with students to explain the model characteristics, the implementation process and evaluation. Link teachers and students visited every unit and introduced the student to the health team. Together with the head nurse, each student was paired with a clinical mentor who become the student's primary instructor. Mentors planned and organised the students' clinical practices to meet curricula learning goals and individual needs. Responsibilities as a mentor were included in their ordinary nursing/midwifery tasks. During the clinical practices period, teachers met the students and mentors (mostly individually) weekly to discuss their learning process and provide coordination and support. Scheduled meetings between clinical mentor, link teacher, head nurse and student were held to evaluate students' learning, progress and needs, to support mentors in their teaching task and to provide more learning opportunities for students.

The characteristics of the learning environments in each country before and after implementation of the model are detailed in Table 2.

Table 2. CLES characteristics before and after Dedicated Education Unit model pilot implementation

	TRADITIONAL MODEL	DEDICATED EDUCATION UNITS MODEL
Belgium (a)	Clinical practices period of 5-6 weeks The clinical nurse instructs 2-3 students simultaneously Unit nurses are not trained to instruct students Link teacher role does not exist	Clinical practices period of 7 weeks The clinical nurse instructs students 1:1 The mentor is trained to instruct students The link teacher is at the unit 1 day/week
Belgium (b)	Clinical practices period of 4-5 weeks The clinical nurse instructs 2-3 students simultaneously Unit nurses are not trained to instruct students Link teacher role does not exist	Clinical practices period of 8-9 weeks The clinical nurse instructs students 1:1 The mentor is trained to instruct students The link teacher is at the unit 1-2 days/week (8h/day)
Poland	Clinical practices period of 22 days Unit' midwives do not instruct students 10 students perform tasks on 10 patients at the same time The midwife academic tutor supervises 7 students simultaneously Midwives are not trained to instruct students The head nurse does not participate in the process	Clinical practices period of 7 weeks Unit' midwives instruct students 1:1 1 student performs care tasks on 10 patients The link teacher is at the unit 4 days/week Midwives are trained to instruct students The unit head nurse participates in the process
Portugal	Clinical practices period of 42 days (3rd year); 84 days (4th year) The clinical nurse instructs students 1:1 Clinical nurses are not trained to instruct students Link teacher role does not exist The unit head nurse does not participate in the process	Clinical practices period of 12 weeks The clinical nurse instructs students 1:1 The clinical mentor is trained to instruct students The link teacher is at the unit 2 days/week. The unit head nurse participates in the process
Spain	Clinical practices period of 6-8 weeks The clinical nurse instructs students 1:1 Clinical nurses are not trained to instruct students There is a teacher who supervises more than 8 students simultaneously The unit head nurse does not participate in the process	Clinical practices period of 8 weeks The clinical nurse instructs students 1:1 The clinical mentor is trained to instruct students The link teacher is trained to instruct students The unit head nurse participates in the process
Turkey	Clinical practices period of 5 weeks 10 students perform care tasks on patients in the unit The nurse/academic tutor supervises 7 students simultaneously Clinical nurses are not trained to instruct students The head nurse does not participate in the process	Clinical practices period of 8 weeks The clinical mentor instructs students 1:1 The link teacher is at the unit 2 days/week to support the mentor The clinical mentor is trained to instruct students The unit head nurse participates in the process

Instrument

The research instrument used in the study was the Spanish, Portuguese, Dutch, Turkish and English language versions of the Clinical learning environment, supervision, and nurse teacher (CLES+T) evaluation scale. Permissions to use the CLES+T versions were obtained from the copyright holders. (Anagun & Anilan, 2013; Saarikoski et al., 2008; Martins da Silva et al., 2015; Vizcaya-Moreno et al., 2015) (Dutch version had not been published). CLES+T is a validated and reliable research instrument, which can be used as a part of the quality assessment of nurse education. The CLES + T questionnaire consists of 34 items classified into 5 dimensions: (1) pedagogical atmosphere; (2) supervisory relationship; (3) ward manager leadership; (4) nursing care; and (5) academic nurse's role. Items were scored using a 5-point Likert type scale. The scale options were: (1) completely disagree; (2) somewhat disagree; (3) neither agree nor disagree; (4) somewhat agree (5) completely agree. For each item, the lowest score is 1 and the highest is 5. Cronbach's alpha values for the scale dimensions varied between 0.96 and 0.77. (Saarikoski et al., 2008). Sociodemographic data were also collected from the students.

Data collection

Between February and June 2017, following completion of their clinical practice period in the Dedicated Education Units, 38 nursing students and 2 midwifery students completed the CLES+T and a sociodemographic questionnaire.

Ethical considerations

The Research Ethics Committee at Hospital Clínic, Barcelona granted approval for the study (registration number: HCB2017/0053). After receiving written and oral information on the study objectives and methodology, the students provided signed informed consent. Participants could withdraw from the study at any point. Participant data were kept confidential and any information that might allow identification of those taking part was removed.

Data analysis

The data were collected on an excel spread sheet, then processed and analysed using the SPSS statistical program (version 21, 2015). Descriptive statistical analyses of the dimensions of the CLES+T questionnaire were performed. Descriptive statistics were expressed as mean, standard deviation (SD), number and percentage.

RESULTS

Institutions' organizational subjects and staff availability meant that in Poland, Portugal and Turkey, the Dedicated Units pilot implementation was initiated with a minimal sample. All participant countries implemented the DEU model in at least 2 different clinical units. However, due these intrinsic labour dynamics, finally we had 9 clinical units with full implementation. The nursing/midwifery students' participants were from Belgium (n(A) = 7) and (n(B) = 6), Portugal (n = 2), Poland (n = 2), Spain (n = 20) and Turkey (n = 3). The mean age of the students was 21.5 years (minimum 20, maximum 26). Prior to the practices period in the DEU units, only 2 midwifery students had no previous clinical experience

(in our case, midwifery education programmes have specific degree education to direct entry into the labour market), 25% had 0-20 weeks of practices, 17.5% 20-30 weeks, 32.5% between 30-40 weeks, and 12.5% had more than 30 weeks of practices. There were 3 blank answers. The majority of nursing/midwifery students (45%) performed and assessed their practices in Critical Care Dedicated units, 20% in Obstetrics and Gynaecology, 7.5% in Emergency Room, 7.5% in Traumatology, 5% in Paediatrics, 5% in Maternity and delivery room and 10% in an Operating Room. (Table 3).

Table 3. Students' demographic data

AGE OF THE STUDENTS		
Mean	21.5	
Range	20-26	
PREVIOUS CLINICAL PRACTICES	**n**	**%**
Yes	38	95%
No	2	5%
TOTAL WEEKS OF PREVIOUS CLINICAL PRACTICES		
0 weeks	2	5%
0-20 weeks	10	25%
20-30 weeks	7	17.5%
30-40 weeks	13	32.5%
> 30 weeks	5	12.5%
Unknown	3	7.5%
DEDICATED EDUCATION UNITS IN WHICH STUDENTS COMPLETED CLINIAL PRACTICES		
Critical Care Unit	18	45%
Obstetrics and Gynaecology Unit	8	20%
Emergency Room	3	7.5%
Traumatology Unit	3	7.5%
Paediatric Unit	2	5%
Maternity and delivery room	2	5%
Operating Room	4	10%

Despite the different students' ages, clinical practice background and training level, the students' perception of their learning environment in the DEU model did not differ significantly among sites. In general, the students rated the Dedicated

Units model as satisfactory. Students gave high scores to items that described the learning environment, their experience during practices and their relationships with the mentor and the teacher. Similarly, they rated the leadership style of the head nurse in the unit as very positive. Detailed results are shown in Table 4.

5 Dimensions of the clinical learning environment (CLES+T):

The mean values for the learning environment dimensions measured with the CLES+T instrument varied between 4.02 for the “Pedagogical atmosphere” and 4.22 for the “Supervisory relationship”. The second most highly rated dimension was “Nursing care” with a mean of 4.2. Items in this dimension probe students’ perception of the philosophy in the unit, patient care, the flow of information on patient care, and the recording of care plans and procedures. The dimension that students rated positively but with lower scores was “Pedagogical atmosphere” with 4.02. The statements in this dimension refer to the student’s comfort when arriving at the unit, treatment of staff, and the learning opportunities and atmosphere that they encountered during their practices. Items related to the “Ward manager leadership” were also positively rated. The students perceived that the head nurse actively participated in the actions in the unit and in the teaching-learning process. Ratings were also favourable regarding the attitude of the head nurses toward the professionals in their charge. The statements regarding the role of the teacher were given a positive score by students. Students agreed that the teacher was able to put the learning objectives into practice, to integrate theory into practices and to narrow the gap between theory learned at university and real practice during their practices.

Supervision of the student

The quality of the relationship and the support from the mentor, together with the learning opportunities offered during the practices, were the aspects that gave most satisfaction in students' clinical learning. A total of 80% of students were supervised during their practices by their nurse or midwife as mentor, with this professional as the student's sole supervisor in 50% of cases. Three of the forty students mentioned having no relationship with the mentor during the practices period. In addition, sporadic meetings between mentor and student were held assiduously in 33.33% of cases. 23.07% of students did not have spontaneous, unplanned meetings with their mentor during the practices period.

Table 4. Clinical learning environment assessment

CLES+T DIMENSIONS	N	MEAN	SD	
Pedagogical atmosphere	n=(40)	4.02387	0.866557	
Supervisory relationship	n=(40)	4.228125	0.760549	
Ward manager leadership	n=(40)	4.0625	0.794109	
Nursing care	n=(40)	4.2	0.665544	
Academic nurse's role	n=(40)	4.05	1.139019	
Supervision of the student	n=(40)	By a nurse	n=(30)	75 %
		By a specialist nurse	n=(7)	17.5 %
		By an assistant to the head nurse	n=(1)	2.5 %
		By the head nurse	n=(0)	0 %
		Other (midwife)	n=(2)	5 %
Supervision by the mentor	n=(40)	No mentor	n=(0)	0 %
		No relationship with mentor during practice	n=(3)	7.5 %
		The mentor changed during practice without planning	n=(10)	25 %
		The mentor varied according to shift	n=(6)	15 %
		The same mentor supervised various students	n=(1)	2.5 %
		There was one mentor during the practices period	n=(20)	50 %
		Other supervision method	n=(0)	0 %
Frequency of unplanned meetings with the mentor	n=(39)	Never	n=(9)	23.07 %
		1/2 times during the practices period	n=(8)	20.05 %
		Less than once per week	n=(3)	7.69 %
		Approximately once per week	n=(6)	15.38 %
		Often	n=(13)	33.33 %

DISCUSSION

Despite the cross-country nature of this study and sample singularities, participants students rated the Dedicated Units clinical learning model as satisfactory. Regarding students' varied profiles, it is known that their different practice experiences and level of training might influence their perception of the learning environment. In the D'Souza et al. (2015) and Shivers et al. (2017) studies, older nursing students were more satisfied with the learning environment than younger participants. Authors speculated this could be due to older students having more work experience, greater motivation, and maturity, thus enabling them to deal with diverse situations. Additionally, for inexperienced students the first clinical placement could be a transitional stage that may be seen as a "culture shock".

Although no differences were found in our students', differences in student clinical placement duration might affect students' learning environment perception. The link between the duration of clinical placement and students' satisfaction is well described, with students with longer clinical placements being more satisfied with their experience (Antohe et al., 2016; Saukkoriipi et al. 2020). Student socialisation, "fitting in" to the organisational environment and acquiring a sense of belonging in the health team are processes that required time and are vital to students' clinical experiences and the mentoring process and this must be taken into consideration in nursing/midwifery training strategies (Saukkoriipi et al., 2020).

Despite sample singularities, our results are in line with those found in the literature. In the different contexts in which DEU model has been implemented, improvements in the students' clinical experiences, the involvement and

recognition of professionals and sensitisation on the part of managers to the optimisation of resources for a successful teaching-learning process have been observed (Moscato et al., 2013; Mulready-Shick et al., 2013; Pedregosa et al., 2020).

The items based on the relationship between the student and the mentor appear to have the greatest influence on student satisfaction with the DEU model. Our findings are consistent with those of Papstravrou et al. (2016) and Visier-Jimenez et al. (2021) who report that those students who have a mentor during their practices period are more satisfied with the supervisory relationship. Moreover, it is pointed out that the role of the mentor is crucial to satisfaction and achievement of the student's learning objectives (Claeys et al., 2015; Antohe et al., 2016). In our case, it is important to differentiate between two types of guidance and supervision that coincide in students' practices. The mentor carries out supervision focused on the practice in which the clinical nurse/midwife is an expert while the teacher provides a more theoretical perspective on clinical situations. Although our findings do not provide information regarding the benefits of the clinical teacher being a lecturer or practical nurse, the skill of the teacher in liaising between the university and care institution and narrowing the gap between theory and practice is emphasized by Gustafsson et al. (2015). The mentors have also expressed their commitment to training students through integration of theory and scientific evidence in the practice of care provision to the patient (Hilli et al., 2014). Evidence confirms that the supportive role of mentors is crucial in building students' professionalism. In a recent review, Pramila-Savukoski et al. (2020) highlighted mentor competences in teaching practices that include: ability to identify students' individual learning needs,

support students' learning processes, orientate students towards their own learning goals, foster students' motivation, conduct student-centred evaluation, reflect upon students' performance, provide constructive feedback, and understand nursing competence as defined in mentored students' curricula. Nevertheless, mentors perceived that they are not prepared, recognised, and supported in teaching and supervising students. They experience feelings of nervousness, fear, aggravation, and anger when faced with the possibility of compromising patient safety due to this increase in workload. It is a nurse manager's responsibility to assess the nurses' competences and readiness to train students and to provide them with new teaching-learning knowledge and skills, opportunities for professional growth and organisational support, along with consideration of nurses' workloads when assigning students (de Fulvio et. al., 2015; Pramila-Savukoski et al., 2020).

The dimensions "Nursing care" and "Pedagogical atmosphere" were also positively rated by students. The close relationship between the positive aspects of the environment and student learning outcomes has been amply demonstrated (Arkan et al., 2018; Flott & Linden, 2016). A learning environment where the mentor is an experienced nurse who is adequately prepared and acting as a role-model for students; the nurses' workload is properly managed to allow the student to observe and participate in patient care; the clinical and academic managers provide support, recognition and value to the nurses' teaching role and where there is open communication between all professionals involved in learning with the aim of working together and finding learning opportunities is essential to enhance learning (Henderson & Eaton, 2013; Pedregosa et al., 2020; Saukkoriipi et al. 2020).

The high scores given by the students to the dimension “Ward manager leadership” should be highlighted. In the DEU model, one of the premises is the participation of the head nurse in the teaching-learning process. In general, ward managers are not directly involving in clinical teaching and their participation is inexistent or anecdotal in other training models. It has been reported that the leadership style of the head nurse and their involvement in the process has an impact on student satisfaction with their clinical experience and is a key influence in establishing a quality learning environment. Additionally, the role of head nurse has been identified as a factor in influencing staff attitudes towards nursing students, and therefore the quality of the teaching of students, but very few studies have focused on this role in the teaching-learning process (Hilli et al., 2014; Saukkoriipi et al., 2020; Doyle et al., 2017).

On the other hand, the dimension “Pedagogical atmosphere”, while rated positively by students, was the one that received the lowest scores. Therefore, the importance should be pointed out of health teams fostering the sense of belonging and acceptance needed by students to ensure their satisfaction with the environment. Negative attitudes from nurses and the existence of an unfriendly atmosphere aggravates the anxiety and stress that students experience at the point of transition into clinical practices (Arkan et al., 2018). Students are familiar with the university learning environment which has long-established rules and processes, while the care environment is more flexible and functions according to care needs.

Limitations

Our study had specific limitations regarding implementation of the DEU model due to the small and heterogeneous sample from different countries or organizations. Separately, there are still notable differences between the students' educational curricula and the way nursing is carried out and perceived across countries. The entire healthcare team also differs between countries and although we were not able to examine this in depth, it may have influenced students' assessment of their learning environment. These study limitations constrain the generalisability of our findings. Fortunately, since this DEU model pilot implementation study was carried out, new European units have been transformed to the DEU model.

CONCLUSIONS

Our results show that the DEU model can be considered as an effective option for optimising the clinical learning environment from the student's perspective. The DEU provides an optimal clinical learning environment which affects student satisfaction with their training and individualised supervision, the pedagogical atmosphere and philosophy of the unit, and with the involvement of the whole health team in their training. A successful clinical learning environment should be based on collaboration between educational and healthcare institutions, focused on maintaining teamwork and common objectives with the aim of providing the student with an enriching learning atmosphere and offering nurses/midwives satisfaction with their teaching role.

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4.4. OBJETIVO Y ARTÍCULO NÚMERO 4

Objetivo:

Conocer la percepción de los estudiantes de Enfermería y Matrona, enfermeras y matronas respecto a la implementación y los resultados del modelo de aprendizaje clínico *"Dedicated Education Units"* en 6 organizaciones de Bélgica, España, Portugal, Polonia y Turquía.

Artículo:

Sara Pedregosa, Núria Fabrellas, Ester Risco, Mariana Pereira, Ewa Dmoch-Gajzlerska, Fisun Şenuzun, Sandra Martin, Adelaida Zabalegui. Nurses, midwives, and students' reports of effective Dedicated Education Units in five European countries: a qualitative study. (Artículo en revisión).

Revista: Nurse Education in Practice. Factor de impacto: 0.92 SCImago Journal Rank. Cuartil: 1. Área conocimiento: Nursing.

Resumen:

Introducción: La calidad del ambiente de aprendizaje clínico es vital para permitir que los estudiantes desarrollen el conocimiento y las habilidades para ingresar al mundo profesional. El modelo de aprendizaje clínico *"Dedicated Education Units"* ofrece a los estudiantes un entorno de aprendizaje clínico de alto nivel y mejora las condiciones del entorno clínico de los profesionales de la salud y de los pacientes.

Objetivo: Evaluar el modelo *"Dedicated Education Units"* a través de las percepciones y sugerencias de los profesionales y los estudiantes.

Métodos: A través de entrevistas de grupos focales, este estudio cualitativo, fenomenológico y multi-centro investiga las experiencias de estudiantes de Enfermería y Matrona, mentores, docentes y coordinadoras clínicas dentro del modelo de aprendizaje clínico *"Dedicated Education Units"* en 9 emplazamientos de práctca clínia Europeos. También analiza los elementos necesarios para un entorno de aprendizaje clínico efectivo.

Resultados: Tras firmar el correspondiente consentimiento informado (Anexo 1) los estudiantes se dividieron en 6 grupos de un máximo de 14 estudiantes y las enfermeras y matronas se organizaron en 7 grupos de un máximo de 6 participantes. Se identificaron cuatro temas principales: (1) la organización de las prácticas clínicas, (2) la adquisición del conocimiento clínico y de las habilidades por parte de los estudiantes, (3) las experiencias de los estudiantes y las enfermeras y matronas (4) los elementos necesarios para crear un entorno de aprendizaje eficaz.

Conclusiones: Entre los aspectos que establecen un entorno de aprendizaje clínico eficaz se encuentran una estrecha colaboración entre el las instituciones académica y de atención a la salud, la planificación realista de las prácticas clínicas, un enfoque en el proceso de aprendizaje del estudiante y una inversión en la educación y el desarrollo de los profesionales.

NURSES, MIDWIVES AND STUDENTS' REPORTS OF EFFECTIVE DEDICATED EDUCATION UNITS IN FIVE EUROPEAN COUNTRIES: A QUALITATIVE STUDY

INTRODUCTION

The clinical learning environment is vital to offer students a place to develop knowledge, critical thinking, and communication and problem-solving skills (Arkan et al., 2018; Löfmark et al., 2012). The quality of the learning environment depends on student learning opportunities, collaboration between academic and clinical services and the relationship among students, health professionals and university faculty members (Arkan et al., 2018). The expanded traditional model of nursing/midwifery students' clinical placement typically involves a group of 8 to 10 undergraduate students working with different nurses/midwives while being supervised by a clinical teacher.

Nurse educators seek innovative learning models which allow students to build the knowledge and skills to manage patient care and their transition safely and effectively to professional practice (Löfmark et al., 2012). However, the literature describes differences in the quality of placements and in students' experiences and shows that not all clinical sites are optimal learning environments (Arkan et al., 2018; Immonen et al., 2019).

Nurses and midwives also need to find a way to harmonize their roles, deliver quality patient care and coach future nurses/midwives to ensure they are "fit for practice". Thus, education-service managers need to adopt alternative methods that meet the needs of current and future generations of the nursing workforce. The Dedicated Education Unit (DEU) model has emerged as a beneficial

alternative to standard models that improves students' clinical experiences and professional growth (Pedregosa et al., 2020)

Background

The DEU model was implemented in the nineties for the first time in Australia with the aim of improving the quality of nursing education and to solve a nursing shortage. The goal of the model is to establish cooperation between health and education institutions that offer students high-standard clinical learning and enhanced clinical-setting conditions for patients and health professionals. During recent decades the model was extended to the United States, New Zealand, and Europe as it proved beneficial in improving students' clinical experiences and promoted advances in clinical knowledge and skills.

The DEU has also been shown to encourage professional development in terms of building skills and knowledge and bringing improvements to the teaching-learning process. Additionally, the DEU model has demonstrated success in bridging the education-practice gap (Jayasekara et al., 2018; Pedregosa et al., 2020; Williamson et al., 2020). The main characteristics of the DEU, as outlined by Moscato et al. (2013) are shown in Table 1. Our DEU model pilot implementation and evaluation process are shown in Figure 1.

Table 1. Essential elements of DEU model compiled by authors based on Moscato et al. (2013)

- Committed partnership between academic and healthcare organizations.
- Longer student clinical placement period from 6 to 12 weeks.
- A staff nurse/midwife acts as a mentor who guides, instructs and supervises undergraduate students in clinical placement in a one-to-one relationship. Termed clinical mentor in our study
- A faculty nurse/midwife acts as a link between academic-service institutions and is responsible for mentor-student partnership coordination, mentor coaching and learning-teaching process evaluation. In our study this was a faculty or clinical nurse/midwife and was termed link teacher.
- The ward manager is involved in the teaching-learning process and creates conditions for a ward learning culture. Termed head nurse in our study.
- A trainers' course is provided to mentors with pedagogical education, skills and support necessary to sustain students' learning.
- Meetings between mentors, teachers, head nurses and students are scheduled to enhance feedback and communication, evaluate students' learning needs, and agree on the teaching/learning process

Aim

The aim of this study is to evaluate the DEU model through staff and students' perceptions and suggestions, a key factor in evaluating the quality of educational programmes and a powerful tool to identify elements in an effective clinical learning environment. This is one evaluation point (d) of the study "DEU implementation and evaluation in 5 European countries (IDEU-EU 2015-1-BE02-KA202-012329)". No studies have evaluated the DEU model teaching-learning process in different countries clinical placements from the professionals and students' perspective.

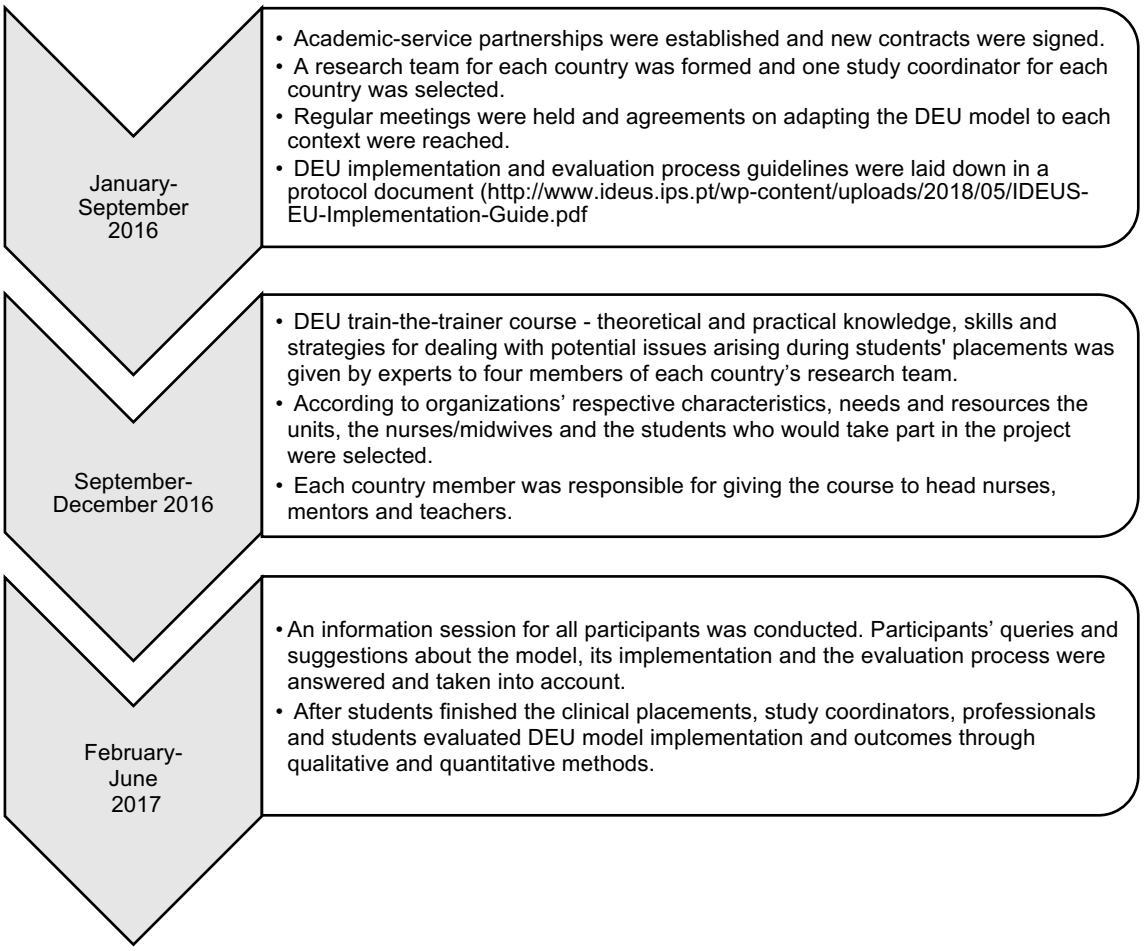

Figure 1. DEU model pilot implementation and evaluation process

Study Design

A phenomenological approach qualitative study was used to investigate the experiences of nursing/midwifery students, clinical mentors, link teachers, and head nurses in the DEU model in 5 European countries. Phenomenological studies are extensively used in nursing research to describe, understand, and interpret humans' experiences in the context of their world (Tuohy et al., 2013).

Setting and participants

This study included 6 higher educational institutions and 6 high technology healthcare institutions from 5 European countries that had implemented the DEU model: Belgium, Portugal, Poland, Spain, and Turkey. A purposive sample was used and included students and professionals at implemented DEU units. Mentors were registered nurses/midwives with at least one year of experience on the ward. Teachers were clinical or faculty nurses with past and/or future long-term connection to the ward, knowledge of the patient population and the healthcare institution, a master's degree and pedagogical competency (competences to plan, implement and evaluate students' learning outcomes). Students were nursing/midwifery students that had completed their last placement in the DEU.

Ethical considerations

The Ethics and Research Committee at Hospital Clinic, Barcelona granted study approval (number: HCB2017/0053). Participants received both written and oral information on study aims, and methodology and informed consent was obtained from each participant before the interviews. Participant's personal information was coded to ensure confidentiality. Professionals and students were free to contribute to the study. If they chose not to participate, all the services they received at these organizations continued and their learning-working or related evaluations were not affected in any way.

Data collection

Data were collected by each country's study coordinator after students' DEU placement. Two moderators and one observer participated in each focus group. The recruitment stage, the informed consent process and data collection were carried out by professionals with no dependent relationship with participants. Moderators followed a semi-structured interview guide (Table 3) to stimulate discussion on current and previous experiences. Students were divided into 6 groups of a maximum of 14 students and nurses and midwives were arranged into 7 groups of a maximum of 6 participants. Focus group duration was 60-90 minutes and were held at a location other than students and professionals' placements. Each interview was recorded and transcribed in the country's language. Subsequently, trained, qualified professionals translated participants' contributions into English.

Table 4. Focus group data themes and categories

	MAIN QUESTION	SPECIFIC QUESTIONS
1	**What were the biggest differences between the DEU and traditional placement in your view?**	a) Concerning the duration of clinical placements? b) Concerning the collaboration between educational organization and health care facility? c) Concerning the one-to-one relationship with clinical mentor? d) Other relevant differences in common?
2	**What was the one-to-one relationship with the clinical mentor like in the DEU?**	a) Concerning trust? b) Concerning independence in organizing care (connected/disconnected tasks)? c) Other relevant experiences in common?
3	**How did you find the presence and collaboration of the link teacher in the DEU?**	a) Did you experience a difference in learning climate compared with other placements? If so, what differences did you notice? b) What were the benefits of a placement in the DEU in your view? c) Could you make suggestions to improve the learning experience in the DEU?
4	**What would you change in the placement?**	
The following questions were added to clinical mentor, link teacher and head nurse focus group interviews.		
5	**Did you experience any difference in learning climate for students compared with traditional placements? If so, what differences did you notice?**	
6	**What were the benefits of the DEU in your view?**	
7	**Could you make suggestions to improve the learning experience on the DEU?**	

Data analysis

Two researchers read and re-read the transcriptions, categorized keywords or phrases, and organized them into standard themes throughout the study. Computer software (ATLAS-ti version 8.2.1) was used for exploration, management, and evaluation of data.

Rigor

Standards of quality and scientific rigor were followed (Cohen & Crabtree, 2006): credibility: data were verified by the informants ensuring isomorphism between the data collected and what they said; transferability: the focus group interviews were transcribed accurately by qualified professionals in each country; dependence: study coordinators from each country checked the process of the data analysis; confirmability: verbatim transcription draft kept safe for verification.

FINDINGS

Between February and June 2017, on completion of the DEU placement, a purposive sample of 31 nursing and 2 midwifery students participated in 6 focus groups. Belgian A (n=7) and B (n=5), Polish (n=2), Portuguese (n=2), Spanish (N=14), and Turkish (N=3). Students' average age was 21.5 years (min. 20, max. 26). In our case, midwifery education programmes have direct entry, which means that training of midwives does not require to complete nursing education. Additionally, a purposive sample of 30 nurses and 4 midwives participated in 7 focus group interviews. Belgian A (n=5), B (n=4) and C (N=5), Poland (n=4), Portugal (n=6), Spain (n=6), and Turkey (n=4). The average age of nurses and midwives was 44.4 years (min. 26, max. 64). Data analysis produced 4 main

themes (1) placement organization, (2) students' clinical knowledge and skill acquisition, (3) students and nurses/midwives' experiences within the DEU model and (4) factors for creating an effective learning environment (Table 4). We add representative comments of participants. (Table 5).

Table 4. Focus group data themes and categories

THEME	CATEGORY
1. Clinical placement organization	1.1. Collaboration between educational and service institutions 1.2. Focus on student-learning process 1.3. Longer clinical placement is better for student learning 1.4. One-to-one is the best ratio for teaching-learning process
2. Students' clinical knowledge and ability acquisition.	2.1. From theory to practice
3. Students and nurses/midwives within the Dedicated Education model.	3.1. Roles and responsibilities in teaching/learning process 3.2. Participant Interaction 3.3. Students' sense of belonging to the health team 3.4. Nurses and midwives' involvement in student learning
4. Participants' suggestions for creating an effective clinical learning environment	4.1. Agreement on learning-teaching process 4.2. Clinical placement early planning 4.3. Investment in nurses and midwives

Table 5. Students, nurses and midwives' representative comments.

THEME 1. CLINICAL PLACEMENT ORGANIZATION	
1.1. Collaboration between educational and service institutions	**Student (s16):** *"(In DEU) There was a greater partnership between the service and the school and a better partnership between nurse and teacher".* **Clinical mentor (p15):** *"Collaboration between institutions was very good (in DEU); we all become part of the same team".*
1.2. Focus on student-learning process	**Student (s16):** *"The main difference (within DEU), is a greater follow-up. Weekly meeting (in DEU) allows everyone to follow the whole process better".* **Link teacher (p18):** *"When assessing the objectives weekly, it was possible to make a more continuous assessment".* **Student (s14):** *"…(in DEU) we didn't have time to sit down and do nothing. There was simply no such time; we were working all the time. When there were no patients, the clinical mentor was saying: 'Come on, I'll tell you something about drugs'".* **Clinical mentor (p3):** *"…It makes the situation realistic; they feel that there are still opportunities to grow"*

1.3. Longer placements enhance student autonomy and responsibility	**Student (s10):** *"…It takes 3 to 4 weeks to get to know the unit, to be oriented". "(After this), I can understand better how patient care is organized and the tasks and the contributions of other caregivers".* **Clinical mentor (p4):** "*The student had more time to get into the work, to get introduced to patient care. They get more used to patient care and the unit/team. In (only) 3 weeks that was never possible for the students…it was not possible to give the student autonomy".*
1.4. One-to-one student to mentor is the best ratio for the teaching-learning process	**Student (s11):** *"That you can work mostly with the same nurse, who is a mentor, and you don't need to adjust to someone else. Not adapting every time…".* **Clinical mentor (p31):** *"One-to-one relationship was very important because we learnt the learning style of the students and we could develop our skills for students. We tried to find new ways to be specific for this person…before we didn't because there were lot of students".*
THEME 2. STUDENTS' CLINICAL KNOWLEDGE AND SKILL ACQUISITION	
2.1. From theory to practice	**Link teacher (p26):** "*The system is the same as when I studied. I dedicated many hours to issues that were very beautiful, very idealistic. But when you arrived at the unit you had to know how to administer atropine or adrenaline… many students did not know".* **Clinical mentor (p16):** *"LT should give theoretical support, protect didactic matters, watch over what student should learn according to the syllabus and mediate problems between student and mentor".* **Student (s18):** *"I am at the intensive care unit. In the HEI, we did subjects/themes about critical patients in only two weeks. And now, really, I do not know anything about these patients' care"*
THEME 3. STUDENT, NURSES AND MIDWIVES WITHIN THE DEU MODEL	
3.1. Roles and responsibilities in the teaching-learning process.	**Head nurse (p13):** *"Thanks to individual approach to students and very clear distinction between clinical mentor and link teacher, both theoretical and practical education were much easier"* **Link teacher (p18):** *"It made the role of all stakeholders more visible".* **Head nurse (p23):** *"…to achieve it (Clinical practice improvement), and go forward, previous training was fundamental. Nurses somehow feel involved in a project; training guidelines for trainers who have never had it, it seems basic".* **Clinical mentor (p28):** *"I have tried to apply what we have learned in DEU training. Because I thought that it was good"* **Student (s16):** *"Presence of the link teacher made possible to integrate it (the theory into practice). She talked a lot with head nurses and clinical mentors, helped us to realize what we could do to have better experiences, and learning opportunities increased".* **Link teacher (p9):** *"The biggest advantage (in DEU) is that you are more part of the health team. If you are in the office, students can´t reach you easily… There are so many changes in nursing and if you are sitting in the office, then you don't know about these changes. And if you are aware of all these things by still working in care, I think you can guide the student better as teachers (than in traditional model)".*

	Link teacher (p26): *"I know a lot about the surgery-intensive care unit. But if you send me to the cardiology unit, and if I have to teach students here and spend time with cardiac patients, I would not know how to explain things to them. The link teacher should also be a unit expert".* **Student (s33):** "*We respected each other and had very good communication. We weren't afraid to ask anything; during the traditional placement it was very hard even to communicate with nurses/midwives but here we had a mentor and they were like friends but teaching, showing us the new ways".* **Clinical mentor (p15):** *"Mentor is not only a teacher. Mentor empathizes with the student and can see what bothers him/her. This is a very important role. I was close to my student, so when I had to do something on my own, I was sad that the student couldn't do it with me".* **Student (s16):** *"Greater involvement of the head nurse allows acquisition of more knowledge, to encourage this work among the nurses"* **Head nurse (p23):** *"I participated in almost nothing before (in the traditional model). I have noticed a significant change in that sense. We do not have anything structured here, either. But I have felt more involved, more aware of the learning process".*
3.2. Participant interaction	**Student (s20):** *"HEI ask you for one thing, and here (on the ward) it is something different. Well, what I believe is that there is a lack of communication between HEI and hospital about clinical placement…".* **Clinical mentor (p10):** *"More communication between us and with the teacher. We discuss more than before. There (in the traditional model) were a lot of different teachers, they changed a lot and we did not know them well".* **Link teacher (s25):** *"We lacked this communication…I have found that students who came did not know where they were going to go".* **Student (s1):** "*Mentor was very consistent in making time for feedback. The quality of feedback was very good, because they were all so well informed and deeply involved. It gives the mid-period assessment a special, strong quality. It was very clear. I could really recognize myself in the feedback".* **Student (s4):** *"Further in the placement we got a lot of autonomy, then sometimes I missed strong feedback".* **Student (s1):** *"…the mentor also talked about the student's personal life…we can participate in the team as a close partner; there was also an opportunity to talk about myself as a person. They were really interested in my hobbies...".* **Clinical mentor (p19):** "*Realized better the investment that the student made. In the meetings, the student gave an opinion, what she did, what she felt, what difficulties she had. She showed more of what she was doing…It was an advantage for all parties involved".***Head nurse (p29):** *"It was totally different. Students could bring new information to us. Because they were working with clinical mentor, and it was very easy for them to give their opinion to the mentor".* **Student (s6):** *"We experienced a lot of trust in the collaboration with mentors, we got access to all information, and we validated medication under supervision… for us they are symbols of trust between us as students and the mentor as a professional".* **Clinical mentor (p12):** "*You trust them more after time. Because you have a connection. If you have the student for a short time, you can do things, but you don't know what she can do, so you always go with the student".*

3.3. Students sense of belonging to the health team	**Student (s13):** *"During the DEU placement trust was definitely greater. I felt that they (mentor) wanted to help me, not judge me, that I would learn something from my theoretical classes"* **Clinical mentor (p16):** *"Midwives wanted 'to make use of' the student, not to teach them: They said, 'bring this or that, clean those things". Students shouldn't be treated like 'stupid girls', who only help, but as a people who will become midwives soon and they will show good or bad behaviours…In the past, it was simple with a student. The nurse had an 'extra pair of hands'".* **Student (s1):** *"Once they (other professionals) got to know us better, we became more part of the health team and they treated us more as close partners. They became friendly and we had more contact…they got curious about what we were doing and gave us more responsibility to do things".* **Head nurse (p8):** *"And everybody can say what they want. It is everybody's right to say things. To say shouldn't we do it like this or this, even students".*
3. 4. Nurses/midwives involvement in student learning	**Student (s19):** "*…not only the students ask, but also the staff, who are there, staff willingness. Staff say: 'Hey! Do you have a minute? Because I want to teach you something"…They are more aware of educational part and the predisposition is very good".* **Head nurse (p17):** *"Whenever a need is detected by the team accompanying the process, the HN tries to fill in and give support".* **Student (s19):** *"If you do not understand something you can ask any nurse. In traditional units, I have asked, and they tell me: 'ask another person, I am busy. Or 'ask your nurse' or 'now I cannot answer you'. I have seen more willing staff (in DEU)".* **Student (s23):** *"…my nurse is not at all willing to teach me things. She is very nice, and she is a very good nurse…but when she comes to doing things (she says): 'let's do this technique, look at the protocol and if you have any questions, you can ask me'".* **Link Teacher (p25):** *"…but in my case, the most relevant thing has been the motivation of the nurses, the involvement they have had in teaching… I have seen them super-motivated; they made a check-list with the contents that they wanted the students to learn during practice".*
THEME 4. PARTICIPANTS' SUGGESTIONS FOR CREATING EFFECTIVE LEARNING ENVIRONMENT	
4.1. Agreement on the learning-teaching process	**Student (s10):** *"In my opinion, my mentor had different expectations than her mentor (looks at another student) and maybe it should be more consistent".* **Link teacher (p2):** *"For the final assessment we were all together, teacher, mentor, and head nurse to share our experiences and vision on the student's progress. We prepared the final assessment together, I wrote down the assessment and feedback, everyone could reread the evaluation and give feedback. We discussed the qualification together".*
4.2. Clinical placement early planning	**Student (s15):** *"Sometimes I felt that I arrived at the places and the nurses/midwives are not prepared to receive me… there is no team preparation for reception. There should be more coordination between university and service".* **Head nurse (p1):** *"It is a noble goal to go for the triangle (teacher-mentor-student). But structural organization aspects such as holiday planning, sickness, workload, absent colleagues…often make it impossible to do. To make it possible*

	we need to know many months in advance how many students will come for a placement.... And also, you need enough mentors". **Link teacher (p27):** *"Meeting all together and do like what we've done in training courses...Try to create this learning culture, I don't know, maybe through the training, to involve everybody. It is clear that mentor and teacher are mainly responsible for student training, but the rest are, with their eyes a little more open, if they collaborate at some point in explaining something...".*
4.3. Investment in nurses/midwives	**Student (s19):** *"But the best could be rotating nurses/midwives who teach students and give them time to rest would also be fine… there are students who are having a very bad placement time and maybe it is because the nurse cannot take a rest from teaching students".* **Clinical mentor (p3):** *"Rest is also necessary. Investment in the mentor team, greater than it is now is necessary to be able to continue and to make it bearable over time. We have to ensure that mentors do not become exhausted".*

Theme 1. Clinical Placement organization

Collaboration between educational and service institutions

Students stated there was better collaboration between academic and healthcare institutions in the DEU versus the TM. This new partnership brought students' curricula closer to the real activity of the clinical setting. Nurses/midwives expressed appreciation for this collaboration and viewed it as positive strategy as it allowed everyone to work towards the same goals, update faculty clinical knowledge and provide staff with effective education strategies.

Focus on student-learning process

In the DEU, weekly meetings with student, teachers, mentors, and head nurses were scheduled throughout the placement. The teaching-learning process was evaluated, and opportunities given to raise queries and discuss needs. Students stated there had more learning opportunities in the DEU versus the TM where students performed simple, disconnected clinical tasks, and had few opportunities to perform total patient care. Students added that in the TM they had to constantly ask nurses/midwives for something to do/learn. In the DEU,

mentors and teachers described a greater commitment to finding new learning opportunities.

Longer placement enhances student autonomy and responsibility

Most students said that longer placement is better as the student gets to know the ward, routines, staff, and patients in their first 3–4 weeks placement. Subsequently, students have enough time to gain autonomy and responsibility for the development of independent and professional care skills. Students and nurses/midwives considered that during the final weeks of the DEU placement, students were immersed in ward procedures and habits, with the professional responsibilities and challenges of a staff nurse/midwife but with supervision and support available.

One-to-one student to mentor is the best ratio for the teaching-learning process

Participants agreed on benefits of the one-to-one student-mentor relationship. All stated that this individual supervision enhanced student learning due to its orientation to students' personal learning goals and that it took students' traits or learning styles into account. In the DEU, students and mentors highlighted the benefit of the connection with a single person throughout the placement without the time-consuming effort of building a new relationship and adapting to other learning and teaching habits.

Theme 2. Students' clinical knowledge and skill acquisition

From theory to practice

In the DEU model, students could provide total patient care not focused on mentor-set tasks, including administrative tasks, organization of care delivery and

cooperation with other professionals. Students stated that their critical and clinical thinking, autonomy, responsibility, and self-confidence regarding patient care had improved. Students said that they had more awareness of their own learning and took greater responsibility for it and felt less pressure and anxiety and more preparation in the final assessments. Participants still noted a gap between classroom theory and practice which produced a deep sense of confusion in students and in nurses and midwives' expectations about students' clinical learning and knowledge. Consequently, students agreed on teacher weekly seminars and written patient-care reflections, while increased teacher presence on the ward contributed to bridging the theory-practice gap. Mentors highlighted the teachers' indispensable contribution in bringing them theoretical support and educational skills and matching clinical practice with students' curricula.

Theme 3. Students and nurses/midwives within the DEU model

Roles and responsibilities in the teaching-learning process.

This study revealed the difficulties experienced by teachers and mentors in defining their role and understanding their responsibilities in student learning in the TM. Mentors and teachers found that the DEU preparatory training and continuous feedback provided clarification of roles and responsibilities within the healthcare team and allowed them to act according to their responsibilities. Also, the training on teaching methods and attitudes made them feel more prepared for clinical education. In the DEU, the teachers had fewer duties in students' clinical activities and could focus on providing coaching to mentors. Participants considered the benefit of the teacher knowing ward routines and staff characteristics which allowed students to be more comfortable in the clinical site,

have a better understanding of clinical situations and more empathy with staff working or teaching habits. Moreover, the teacher felt a sense of belonging to the healthcare team and their greater presence on the ward during students' placement allowed them to interact with students, mentors, and patients. Mentors and head nurses stated that it helped the learning process, promoted deeper understanding of ward routines, and gave them support and guidance in improving their teaching abilities and in redirecting their educational habits.

Students and mentors stressed that the mentor is a role model for student socialization, professional development, and leadership. Mentors stated that their role improved their awareness of students' duties and encouraged them to express their knowledge and abilities as a professional and instructor. Some mentors stated that fruitful mentorship required student motivation, interest, and willingness to learn.

Students agreed that in the DEU, the head nurse showed greater interest in students' clinical experience, and they perceived a closer relationship than in the TM. Likewise, staff stated that the head nurses were much more aware of teaching-learning opportunities when ward duties allowed it, the head nurse actively participated in teaching about patients' healthcare problems, protocols, and nursing interventions to enhance clinical learning and reduce nurses/midwives' teaching tasks.

Participant Interaction

Some students perceived a sustained lack of communication between the university and healthcare services, differences between university learning objectives and what mentors expected from them in clinical settings. However,

professionals found improvements in academic-service interaction and communication and this close cooperation promoted familiarity and confidence with student-learning outcomes on the clinical ward and with student assessment criteria. Furthermore, participants affirmed that weekly meetings with teacher, mentor, head nurse and students allowed time for feedback. Although almost all students said they had daily or weekly feedback from their mentors; some said they occasionally missed the desired feedback from the mentor, mainly due to nurses/midwives' workload. Students described a closer relationship and greater mentor attention and that they were opened to talking about their personal or clinical experiences. In the DEU, students had more trust in the mentor than teacher as the mentor is the nurse/midwife who is always with them during placement, offering regular feedback and demonstrating knowledge of students' personal and professional traits. Also, mentor trust enabled students to care for patients more independently.

Students' sense of belonging to the health team

Students expressed a common perception regarding mentors' attitudes and teaching methods, and the inadequate support from the rest of the team had negative effects on student motivation and learning. In the TM, students avoided asking staff questions because they felt their practical and theoretical knowledge was being judged and criticized. Students noted a change in nurses/midwives' perception about them from being *"a nurse/midwife help"*, *"two more hands"* or *"not a smart girl"* to a view of them as *"an essential part of health team"* in the DEU. Students expressed a shift in their self-perception from being *"not valuable"* in the TM to the feeling that they were *"needed in the ward"* in the DEU. Students stated that, in the TM, they had to ask for nurses/midwives' permission to do

things, and in some cases, students felt they were not accepted into the health team. In contrast, in the DEU students' experience was needed and appreciated by the staff, and they were supported by the health team as a new member who is just *"starting a new placement*". Students' need to feel a sense of belonging during placement was a common finding across the five countries. Students valued being part of the health care team, feeling welcomed in the ward and considered as providers of indispensable nursing care.

Nurses/midwives' involvement in student learning

Students described an increase in everyone's awareness of their learning process. They also highlighted mentor and teacher commitment to working together to involve the rest of the health team in student education. Clinical staff stated that there was a better learning climate, an increase in other professionals' awareness of student learning needs and in everyone's readiness to identify learning opportunities and in creating a ward *"learning culture".* Students felt that more staff there were willing to teach them. In contrast to the TM model, improved staff predisposition encouraged all other health professionals to seek new student-learning opportunities, while students believed that staff engagement in teaching not only depends on the learning model implemented but also on individual nurse/midwife characteristics. Thus, students asserted that some nurses/midwives are less willing to teach and that this affects their motivation and learning.

Theme 4. Participants' suggestions for creating an effective learning environment

Agreement on the learning-teaching process

Students suggested an agreement on learning objectives and expectations between university professors and clinical staff could reduce uncertainty. Students expressed the view that there were still discrepancies between nurses/midwives-set learning goals and emphasized the need to standardize teaching performance and learning objectives. Students stated that there was better follow-up when nurses/midwives' schedules allowed students, teachers, mentors, and head nurses to hold weekly meetings to plan and discuss student learning on the ward.

Clinical placement early planning:

In our study, all participants expressed a need for early placement planning. Nurses/midwives and students stressed the importance of the mentor having time to explain things, to demonstrate the practice skill and to wait for students to perform it without pressure. Staff highlighted the need for timely, realistic planning and scheduling before beginning student placements to provide clinical practice with appropriate mentor-teacher teams and with time to ensure a high-quality teaching-learning process.

Investment in nurses/midwives:

Some nursing/midwifery staff perceived working with a student as an increase in their workload. They spend a lot of time teaching, guiding and supervising students and it consumed valuable time in the current high nurse-patient ratio and high-workload ward environment. They reported that teaching requires more

human resources, reduction in nurse/midwife duties or rest periods between one student's placement and the next. Staff reported lack of recognition, compensation and help in handling this additional role and a need to incentivize and facilitate nurses/midwives' participation to attract new nurses/midwives and to tackle tiredness among those already working. Students were aware that teaching students constantly without time to rest could exhaust nurses/midwives and that sometimes it decreased the quantity and quality of teaching time.

DISCUSSION

Despite our heterogeneous sample with professionals and students' differing ages and backgrounds, responders generally had positive experiences in the DEU model. In relation to the placement organization, in our DEU model, professionals' roles and responsibilities were clearly defined. While the mentor provided clinical knowledge and skills and acted as a role model, the teacher was responsible for guiding mentors in their mentoring role and ensuring that students are "fit for practice". The ward "learning culture" between staff, teachers and students was enhanced in our DEU environments. As the literature shows, good educational-service collaboration brings mutual understanding of student curricula, defines roles and responsibilities, promotes clinical education and evidence-based practice, and thus improves patient care (Huston et al., 2017).

We also found that personalized mentor supervision focused on students' goals with mutual respect and approval promotes organization, collaboration, and initiative in delivering care and has good effect on clinical experience outcomes, as described in Jokelainen et al. (2013) and in Pitkänen et al. (2018). Regarding student placement duration, our findings show that longer placements increased

students' learning opportunities, with time to develop practical skills and relational abilities with patients and other professionals. These targets are difficult to meet in short placement periods (Saukkoriipi et al., 2020).

It is significant that the transfer of theoretical knowledge to clinical practice was difficult despite close collaboration between mentors and teachers. This gap was one of the major challenges to nurse and midwifery students in clinical environments (Panda et al., 2021). However, our participants recognized that the teacher helped to narrow these inconsistences and our mentors and head nurses expressed their commitment to teaching students how theory and practice are integrated in direct patient care, as reported by Hilli et al. (2014).

Despite their professional background, our teachers achieved the expected standards of work in mentors, staff, and lecturers, as described in Löfmark et al. (2012). This also clarifies the benefits of the clinical teacher being a lecturer or practical nurse and provides further evidence on the teachers' role in aligning theory and practice knowledge, even if they did not participate in ward routines (Gustafsson et al., 2015). Aligned with our results, research shows that to optimize a clinical learning environment, teacher and clinical nurses need to collaborate and be aware of clinical learning opportunities (Löfmark et al., 2012; Pedregosa et al., 2020).

Few studies have considered the role of the head nurse in clinical education. Frequently, head nurse responsibilities consist of orienting students on the ward and encouraging staff to involve students. In line with Bisholt et al., (2014), our students considered the head nurse as a team member who offered valuable input and treated them as a vital resource. Although recent changes in their role preclude them from playing a direct part in students' learning, head nurses'

leadership style is fundamental in ensuring a high-quality learning environment. The head nurse influences staff motivation to teach students, creates conditions for a positive ward environment and underlines their responsibility to support mentors (Bisholt et al., 2014; Hilli et al., 2014).

Our nurses/midwives highlighted their readiness and motivation as a benefit of the preparatory training. As the literature shows, nurses feel no preparation, support, and empowerment to teach and providing them with adequate training for the role may increase perceptions of support and as a result, commitment, increasing the preceptor's ability in the role (Macey et al., 2021).

Our results are in accordance with Jansson and Ene (2016) and Pramila-Savukoski et al. (2020) that continuous feedback benefits the learning process and self-reflection, maintaining student motivation and active involvement while the absence of mentor feedback due to lack of time and workload leads to student dissatisfaction and has a significant impact on student self-esteem and learning (Sundler et al., 2014). Furthermore, our students stated that a trusting relationship between mentor and student is essential for high quality instruction. As Perry et al., (2018) found in their study, the essential requirement for mentors was to be aware of students' knowledge, abilities, and progress. Additionally, student autonomy and self-confidence are related to supervisors' trust in their abilities, which also encourages learning (Kristofferzon et al., 2013). Jansson & Ene (2016) and Jack et al. (2018) showed that when the mentor is not aware of students' clinical knowledge and abilities, or students are ignored or unsupported, they take responsibilities they are not prepared for, so putting patient well-being at risk.

Our findings are in line with previous studies showing that staff and significant other attitudes is a meaningful element for students fit in learning environment and influence students' self-efficacy and preparation for practice (Panda et al., 2021). Our students appreciated the timely and non-intimidatory manner in which staff test their knowledge, supervise their work, or offer constructive feedback. Moreover, our professionals showed more awareness of students' learning expectations than in the TM. Staff nurses with a professional mindset, which values engagement, respects students as learners and provides them with a sense of belonging and confidence, influence student learning (Jack et al., 2018; Perry et al., 2018; Tomieto et al., 2016). Similarly, we found that our emphasis on student socialization and inclusion in the health team were important for student well-being, sense of belonging and effective clinical teaching. The literature shows that students' confidence in performing tasks and asking for help improves learning and that team efforts to involve all staff in building student abilities and it positively influencing their attitude towards students (Lee et al., 2018).

Our findings reinforce the idea that the learning environment should be carefully organized with a clear definition of each participant's role and responsibilities, realistic schedules, and educational-service manager commitment to ensure administrative and human resources are available to facilitate the experience (Moore & Nahigian, 2013). However, in the current health care system in countries like Spain, Poland and Portugal, mentors do not have enough time to teach students due to their workload. These countries have a very high patient/nurse ratio, for instance, in Spain, a nurse takes care of about 13 patients on average (Aiken et al., 2014). Heavy workloads were identified as the biggest

issue for both mentors and teachers and there is pressure on staff to take on an educational role, with insufficient preparation and support due to demand in working conditions that are not ideal (Hilli et al., 2014; Macey et al., 2021). Teaching is a very time-consuming responsibility, with low recognition, and in some cases, it is not a management priority. Not responding to nurses' requests can compromise the quality and quantity of student supervision (Löfmark et al., 2012; Macey et al., 2021) and adequate training of students is a key factor in the provision of quality nursing care. On the other hand, in the DEU implementation part of the whole study (Pedregosa et al., 2021) countries' coordinators no perceived that the costs of DEU implementation were a barrier at the implementation time. Several authors have illustrated various components of what may contribute to DEU sustainability through evaluation of short and long-term objective, subjective, and economic outcomes. These included an economic evaluation for the clinical partner, nurse retention, orientation and training times, recruitment costs and nurse turnover rates, observing that cost effectiveness and monetary savings were associated with successful DEU sustainability (Pfannes, 2019). To summarize our results, Figure 1 shows the professional and organizational elements necessary to achieve an effective clinical learning environment.

Limitations

Due to organizational restraints and professionals' availability, DEU pilot implementation was done in a few units per country, therefore it is limited to a small number of participants, and this constrains the generalisability of our findings. Despite staff being trained to manage qualified professionals'

translations of participants' contributions, linguistic factors may be a limitation in a qualitative cross-language study. The specific elements of the different curricula of educational institutions and the diverse healthcare systems participating in this study were not subjected to deep analysis.

CONCLUSIONS

Responders generally had positive experiences in the DEU model and required standards to create a successful DEU learning environment were highlighted: close educational-service collaboration along with frequent and accurate feedback and trust in communication between faculty and staff; structural and human resources to construct sites where future nurses/midwives can develop personal and professional skills and attitudes to effectively deal with nursing challenges; nurses/midwives' participation in the model implementation and process; professionals roles and responsibilities clarification; managers' contributions with the necessary support, time and skills to perform each role effectively and respond to educational needs though initiatives for continuous educational training.

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Anexo 1. Consentimientos informados

NURSES/MIDWIFES INFORMED CONSENT

This informed consent is for **nurses/midwifes** who are involved in nursing/midwife students' clinical practices in the units of Hospital Clinic de Barcelona, Centro Hospitalar de Setúbal, Izmir University Medical Center, St. Sophie Hospital, University Hospital Leuven and Hospital East-Limburg participating in the "Implementation of Dedicated Education Units in Europe" project.

Principal Investigator: Adela Zabalegui
Researcher: Sara Pedregosa
Name of Organization: _____
Sponsor: Erasmus+ IDEU-EU 2015-1-BE02-KA202-012329
Proposal and version: 1.1

Part I: Introduction

The Dedicated Education Unit (DEU) learning model main objective is to create a partnership between the educative resource and health organization to provide a quality clinical learning environment for students, and benefits for staff and patient in the clinical setting.
"Implementation and Evaluation of Dedicated Education Units in Europe (IDEU-EU)" Erasmus+ project wants to strengthen the concept DEU in European educational contexts, expanding the model identification, establish a broad spread of a sustainable international network of teachers and students' mobility and cross-border care using high quality standards.
With the aim of evaluating the Dedicated Education Unit (DEU) model in our organization, I would like to give you information and invite you to be part of this research. You do not have to decide today whether you will participate, you can talk with anyone about the research to feel comfortable. There may be some words that you do not understand. Please ask me to stop as we go through the information, and I will take time to explain. If you have questions later, you can ask either the staff or me.

Purpose of the research

Given the interest of applying DEU model at European context, I would like to evaluate the effectiveness of DEU model in our organizations by an analysis of:

a) Nursing/midwifes student competences.
b) Nursing/midwifes student learning environment perception.
c) Nurses/midwifes work environment perceptions.
d) The quality of care provide to the patient.

Type of Research Intervention

This quasi-experimental research is composed of a group nurses/midwifwes of the Hospital Clínic de Barcelona, Centro Hospitalar de Setúbal, Izmir University Medical Center, St. Sophie Hospital, University Hospital Leuven and Hospital East-Limburg DEU nursing units from February 2017 to June 2017.

a) To evaluate the clinical practices assessment, students, anonymously, will let us to include his/her qualifications of clinical practice evaluation in a data base with the aim to analize it.

b) To evaluate learning environment perception, students, anonymously, will fill in a bio-data questionnaire and the Clinical Learning Environment Survey plus teacher (CLES+T) before and after their clinical internship.

c) To evaluate work environment perception, nurses/midwife, anonymously, will fill in a bio-data questionnaire and the Practice Environment Scale of Nursing Work Index (PES-NWI) before and after students' internship.

d) To evaluate the quality of care, provide to the patient, the Head Nurse will assess the nursing quality indicators before and after student' internship.

Voluntary Participation

Your participation in this research is entirely voluntary. It is your choice whether to participate or not. If you choose not to participate all the services, you receive at this organization will continue and it will not affect any aspect of your work work-related evaluation anyway.

Duration

The research takes place over nursing/midwifes work emplacement; you only must fill out the bio-data questionnaire and the PES-NWI survey twice.

Risks and Benefits

There will be no risk or direct benefit for you neither your learning process. Your participation is likely to help us find out the best learning and work clinical environment.

Reimbursements

You will not be provided any incentive to take part in the research.

Confidentiality

Every Self-assessment questionnaire will have a number to anonymize it. We will not be sharing your information about you to anyone outside the research team. The information that we collect from this research project will be kept private. Only the researchers will know what your number is and we will lock that information up with a lock and key.

Sharing the Results

The knowledge that we get from this research will be shared with you and your community before it is made widely available to the public. Following this, we would like to publish the results so that other interested people may learn from the research.

Right to Refuse or Withdraw

You do not have to take part in this research if you do not wish to do so and choosing to participate will not affect your work or work-related evaluations in any way. You may stop participating in the project at any time that you wish without your learning being affected.

Who to Contact

If you have any questions, you can ask them now or later. If you wish to ask questions later, you may contact any of the following:

Name_____
Telephone number_____
Email address_____

This proposal has been reviewed and approved by [name of the local IRB]_____, which is a committee whose task it is to make sure that research participants are protected from harm. If you wish to find about more about the IRB, contact _____

Part II: Consent form

I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any questions I have been asked have been answered to my satisfaction. I consent voluntarily to be a participant in this study

Print Name of Participant_____

Signature of Participant _____

Date _____
(Day/month/year)

Statement by the researcher/person taking consent

I confirm that the participant was given an opportunity to ask questions about the study, and all the questions asked by the participant have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily.

A copy of this ICF has been provided to the participant.

Print Name of Researcher/person taking the consent_____

_ Signature of Researcher /person taking the consent_____

Date _____
(Day/month/year)

NURSE/MIDWIFE STUDENTS INFORMED CONSENT

This informed consent is for **nursing/midwifes students** who are performing their clinical practices in the units of Hospital Clinic de Barcelona, Centro Hospitalar de Setúbal, Izmir University Medical Center, St. Sophie Hospital, University Hospital Leuven, and Hospital East-Limburg participating in the "Implementation of Dedicated Education Units in Europe" project.

Principal Investigator: Adela Zabalegui
Researcher: Sara Pedregosa
Name of Organization: _____
Sponsor: Erasmus+ IDEU-EU 2015-1-BE02-KA202-012329
Proposal and version: 1.1

Part I: Introduction

The Dedicated Education Unit (DEU) learning model main objective is to create a partnership between the educative resource and health organization to provide a quality clinical learning environment for students, and benefits for staff and patient in the clinical setting.
"Implementation and Evaluation of Dedicated Education Units in Europe (IDEU-EU)" Erasmus+ project wants to strengthen the concept DEU in European educational contexts, expanding the model identification, establish a broad spread of a sustainable international network of teachers and students' mobility and cross-border care using high quality standards.
With the aim of evaluating the Dedicated Education Unit (DEU) model in our organization, I would like to give you information and invite you to be part of this research. You do not have to decide today whether you will participate, you can talk with anyone about the research to feel comfortable. There may be some words that you do not understand. Please ask me to stop as we go through the information, and I will take time to explain. If you have questions later, you can ask either the staff or me.

Purpose of the research

Given the interest of applying DEU model at European context I would like to evaluate the effectiveness of DEU model in our organizations by an analysis of:

a) Nursing/midwifes student competences.
b) Nursing/midwifes student learning environment perception.
c) Nurses/midwifes work environment perception.
d) The quality of care provide to the patient.

Type of Research Intervention

This descriptive research is composed of a group of nursing/midwifes students performing their clinical practice in nursing units of the Hospital Clínic de Barcelona Hospital, Centro Hospitalar de Setúbal Hospital, Izmir University Medical Center, St. Sophie Hospital, University Hospital Leuven and Hospital East-Limburg that have implemented DEU model from February 2017 to June 2017.

a) To evaluate the clinical practices assessment, students, anonymously, will let us to include his/her qualifications of clinical practice evaluation in a data base with the aim to analyze it.

b) To evaluate learning environment perception, students, anonymously, will fill in a bio-data questionnaire and the Clinical Learning Environment Survey plus teacher (CLES+T) before and after their clinical internship.

c) To evaluate work environment perception, nurses/midwife, anonymously, will fill in a bio-data questionnaire and the Practice Environment Scale of Nursing Work Index (PES-NWI) before and after students clinical.

d) To evaluate the quality of care, provide to the patient, the Head Nurse will assess the nursing quality indicators before and after student' internship.

Voluntary Participation

Your participation in this research is entirely voluntary. It is your choice whether to participate or not. If you choose not to participate all the services, you receive at this organization will continue and it will not affect any aspect of your learning or learning-related evaluations in any way.

Duration

The research takes place over your clinical emplacement; you only have to fill out the bio-data questionnaire and CLES+T survey twice.

Risks and Benefits

There will be no risk or direct benefit for you neither your learning process. Your participation is likely to help us find out the best learning and work clinical environment.

Reimbursements

You will not be provided any incentive to take part in the research.

Confidentiality

Every CLES+T survey and clinical competences marks will have a number to anonymize it. We will not be sharing your information about you to anyone outside the research team. The information that we collect from this research project will be kept private. Only the researchers will know what your number is and we will lock that information up with a lock and key.

Sharing the Results

The knowledge that we get from this research will be shared with you and your community before it is made widely available to the public. Following this, we would like to publish the results so that other interested people may learn from the research.

Right to Refuse or Withdraw

You do not have to take part in this research if you do not wish to do so and choosing to participate will not affect your learning or learning-related evaluations in any way. You may stop participating in the project at any time that you wish without your learning being affected.

Who to Contact

If you have any questions, you can ask them now or later. If you wish to ask questions later, you may contact any of the following:

Name_____

Telephone number_____

Email address_____

This proposal has been reviewed and approved by [name of the local IRB], _____which is a committee whose task it is to make sure that research participants are protected from harm. If you wish to find about more about the IRB, contact _____

Part II: Consent form:

I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any questions I have been asked to have been answered to my satisfaction. I consent voluntarily to be a participant in this study

Print Name of Participant_____

Signature of Participant _____

Date _____
(Day/month/year)

Statement by the researcher/person taking consent

I confirm that the participant was given an opportunity to ask questions about the study, and all the questions asked by the participant have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily.

A copy of this ICF has been provided to the participant.

Print Name of Researcher/person taking the consent_____

Signature of Researcher /person taking the consent_____

Date _____
(Day/month/year)

Anexo 2. *Consolidated Framework for Implementation Research*

CONSOLIDATED FRAMEWORK FOR IMPLEMENTATION RESEARCH CONSTRUCTS		
CFIR Website		
Construct		**Short Description**
I. INTERVENTION CHARACTERISTICS		
A	**Intervention Source**	**Perception of key stakeholders about whether the intervention is externally or internally developed**. *1- Who developed the intervention?* *2- Why is the intervention being implemented in your setting?*
B	**Evidence Strength & Quality**	**Stakeholders' perceptions of the quality and validity of evidence supporting the belief that the intervention will have desired outcomes.** *1- What kind of information or evidence are you aware of that shows whether or not the intervention will work in your setting?* *2- What do influential stakeholders think of the intervention?* *3- What kind of supporting evidence or proof is needed about the effectiveness of the intervention to get staff on board?*
C	**Relative Advantage**	***Stakeholders' perception of the advantage of implementing the intervention versus an alternative solution.*** *1- How does the intervention compare to other similar existing programs in your setting?* *2- How does the intervention compare to other alternatives that may have been considered or that you know about?* *3- Is there another intervention that people would rather implement?*
D	**Adaptability**	**The degree, to which an intervention can be adapted, tailored, refined, or reinvented to meet local needs.** *1- What kinds of changes or alterations do you think you will need to make to the intervention so it will work effectively in your setting?* *2- Who will decide (or what is the process for deciding) whether changes are needed to the intervention so that it works well in your setting?* *3- Are there components that should not be altered?*
E	**Trialability**	**The ability to test the intervention on a small scale in the organization, and to be able to reverse course (undo implementation) if warranted.** *1- Will the intervention be piloted prior to full-scale implementation?*

		2- Do you think it would be possible to pilot the intervention before making it available to everyone?
F	**Complexity**	**Perceived difficulty of implementation, reflected by duration, scope, radicalness, disruptiveness, centrality, and intricacy and number of steps required to implement.** *1- How complicated is the intervention?*
G	**Design Quality & Packaging**	**Perceived excellence in how the intervention is bundled, presented, and assembled.** *1- What is your perception of the quality of the supporting materials, packaging, and bundling of the intervention for implementation?* *2- What supports, such as online resources, marketing materials, or a toolkit, are available to help you implement and use the intervention?* *3- How available materials will affect implementation in your setting?*
H	**Cost**	**Costs of the intervention and costs associated with implementing the intervention including investment, supply, and opportunity costs.** *1- What costs will be incurred to implement the intervention?* *2- What cost were considered when deciding to implement the intervention?*
II. OUTER SETTING		
A	**Patient Needs & Resources**	**The extent to which patient needs, as well as barriers and facilitators to meet those needs, are accurately known and prioritized by the organization.** *1- To what extent is staff aware of the needs and preferences of the individuals being served by your organization?* *2- To what extent were the needs and preferences of the individuals served by your organization considered when deciding to implement the intervention?* *3- How well do you think the intervention will meet the needs of the individuals served by your organization?* *4- How do you think the individuals served by your organization will respond to the intervention?* *5- What barriers will the individuals served by your organization face to participating in the intervention?* *6- Have you elicited information from participants regarding their experiences with the intervention?* *7- Have you heard stories about the experiences of participants with the intervention?*
B	**Cosmopolitanism**	**The degree to which an organization is networked with other external organizations.** *1- To what extent does you network with colleagues or people in similar professions/positions outside your setting?* *2- What kind of information exchange do you have with others outside your setting, either related to the intervention, or more generally about your profession?* *3- To what extent does your organization encourage you to network with colleagues outside your own setting?*

C	**Peer Pressure**	**Mimetic or competitive pressure to implement an intervention; typically because most or other key peer or competing organizations have already implemented or are in a bid for a competitive edge.** *1- Can you tell me what you know about any other organizations that have implemented the intervention or other similar programs?* *2- To what extent are other organizations implementing the intervention?* *3- To what extent are other units within your organization implementing the intervention?* *4- To what extent would implementing the intervention provide an advantage for your organization compared to other organizations in your area?*
D	**External Policy & Incentives**	**A broad construct that includes external strategies to spread interventions, including policy and regulations (governmental or other central entity), external mandates, recommendations and guidelines, pay-for-performance, collaborative, and public or benchmark reporting.** *1- What kind of local, state, or national performance measures, policies, regulations, or guidelines influenced the decision to implement the intervention?* *2- What kind of financial or other incentives influenced the decision to implement the intervention?*
III. INNER SETTING		
A	**Structural Characteristics**	**The social architecture, age, maturity, and size of an organization.** *1- How will the infrastructure of your organization (social architecture, age, maturity, size, or physical layout) affect the implementation of the intervention?* *2- What kinds of infrastructure changes will be needed to accommodate the intervention?*
B	**Networks & Communications**	**The nature and quality of webs of social networks and the nature and quality of formal and informal communications within an organization.** *1- Can you describe your working relationships with your colleagues?* *2- To what extent do you get together with colleagues outside of work?* *3- Do you meet (formally or informally) with a team of people?* *4- Can you describe your working relationship with leaders?* *5- Can you describe your working relationship with influential stakeholders?* *6- Are meetings, such as staff meetings, held regularly?* *7- How do you typically find out about new information, such as new initiatives, accomplishments, issues, new staff, staff departures?* *8- When you need to get something done or to solve a problem, who are your "go-to" people?*
C	**Culture**	**Norms, values, and basic assumptions of a given organization.**

		1- How would you describe the culture of your organization? Of your own setting or unit? *2- How do you think your organization's culture (general beliefs, values, assumptions that people embrace) will affect the implementation of the intervention?* *3- To what extent are new ideas embraced and used to make improvements in your organization?* *4- Some people characterize culture in terms of four general types. To what extent would you characterize your culture as:*
D	**Implementation Climate**	**The absorptive capacity for change, shared receptivity of involved individuals to an intervention, and the extent to which use of that intervention will be rewarded, supported, and expected within their organization.** *1- What is the general level of receptivity in your organization to implementing the intervention?*
1	**Tension for Change**	**The degree to which stakeholders perceive the current situation as intolerable or needing change.** *1- Is there a strong need for this intervention?* *2- How essential is this intervention to meet the needs of the individuals served by your organization or other organizational goals and objectives?* *3- How do people feel about current programs/practices/process that are available related to the intervention?*
2	**Compatibility**	**The degree of tangible fit between meaning and values attached to the intervention by involved individuals, how those align with individuals' own norms, values, and perceived risks and needs, and how the intervention fits with existing workflows and systems.** *1- How well does the intervention fit with your values and norms and the values and norms within the organization?* *2- How well does the intervention fit with existing work processes and practices in your setting?* *3- Can you describe how the intervention will be integrated into current processes?* *4- Will the intervention replace or compliment a current program or process?*
3	**Relative Priority**	**Individuals' shared perception of the importance of the implementation within the organization.** *1- What kinds of high-priority initiatives or activities are already happening in your setting?* *2- Describe activities or initiatives that (appear to) have highest priority for you (for the organization)?* *3- To what extent might the implementation take a backseat to other high-priority initiatives going on now?* *4- How will you juggle competing priorities in your own work? How will your colleagues juggle these priorities?*
4	**Organizational Incentives & Rewards**	**Extrinsic incentives such as goal-sharing awards, performance reviews, promotions, and raises in salary, and less tangible incentives such as increased stature or respect.** *1- What kinds of incentives are there to help ensure that the implementation of the intervention is successful?*

		2- To what extent do you think your supervisor will consider your role in this implementation in your (next) evaluation? In his/her regard for your work or role? *3- Are there any special recognitions or rewards planned that are related to implementing the intervention?*
5	**Goals and Feedback**	**The degree to which goals are clearly communicated, acted upon, and fed back to staff, and alignment of that feedback with goals.** *1- Have you/your unit/your organization set goals related to the implementation of the intervention?* *2- To what extent does your organization/unit set goals for current programs/initiatives?* *3- To what extent are organizational goals monitored for progress?* *4- Do you get any feedback reports about your work?* *5- How does implementation of the intervention align with other organizational goals?*
6	**Learning Climate**	**A climate in which: a) leaders express their own fallibility and need for team members' assistance and input; b) team members feel that they are essential, valued, and knowledgeable partners in the change process; c) individuals feel psychologically safe to try new methods; and d) there is sufficient time and space for reflective thinking and evaluation.** *1- Can you describe a recent quality improvement initiative or an implementation of a new program?* *2- If you saw a problem in your own setting, what would you do?* *3- To what extent do you feel like you can try new things to improve your work processes?*
E	**Readiness for Implementation**	**Tangible and immediate indicators of organizational commitment to its decision to implement an intervention.**
1	**Leadership Engagement**	**Commitment, involvement, and accountability of leaders and managers with the implementation.** *1- What level of endorsement or support have you seen or heard from leaders?* *2- What level of involvement has leadership at your organization had so far with the intervention?* *3- What kind of support or actions can you expect from leaders in your organization to help make implementation successful?*
2	**Available Resources**	**The level of resources dedicated for implementation and on-going operations, including money, training, education, physical space, and time.** *1- Do you expect to have sufficient resources to implement and administer the intervention?* *2- How do you expect to procure necessary resources?*
3	**Access to Knowledge & Information**	**Ease of access to digestible information and knowledge about the intervention and how to incorporate it into work tasks.** *1- What kind of training is planned for you? For colleagues?*

		2- What kinds of information and materials about the intervention have already been made available to you? *3- Who do you ask if you have questions about the intervention or its implementation?* *4- What kinds of information and materials about the intervention are planned for individuals in your setting?*
IV. CHARACTERISTICS OF INDIVIDUALS		
A	**Knowledge & Beliefs about the Intervention**	**Individuals' attitudes toward and value placed on the intervention as well as familiarity with facts, truths, and principles related to the intervention.** *1- What do you know about the intervention or its implementation?* *2- Do you think the intervention will be effective in your setting?* *3- How do you feel about the intervention being used in your setting?* *4- At what stage of implementation is the intervention at in your organization?*
B	**Self-efficacy**	**Individual belief in their own capabilities to execute courses of action to achieve implementation goals.** *1- How confident are you that you will be able to successfully implement the intervention?* *2- How confident are you that you will be able to use the intervention?* *3- How confident do you think your colleagues feel about implementing the intervention?* *4- How confident do you think your colleagues feel about using the intervention?*
C	**Individual Stage of Change**	**Characterization of the phase an individual is in, as he or she progresses toward skilled, enthusiastic, and sustained use of the intervention.** *1- How prepared are you to use the intervention?*
D	**Individual Identification with Organization**	**A broad construct related to how individuals perceive the organization, and their relationship and degree of commitment with that organization.**
E	**Other Personal Attributes**	**A broad construct to include other personal traits such as tolerance of ambiguity, intellectual ability, motivation, values, competence, capacity, and learning style.**
V. PROCESS		
A	**Planning**	**The degree to which a scheme or method of behavior and tasks for implementing an intervention are developed in advance, and the quality of those schemes or methods.** *1- What have you done (or what do you plan to do) to get a plan in place to implement the intervention?* *2- Can you describe the plan for implementing the intervention?* *3- What role has your plan for implementation played during implementation?*

B	**Engaging**	**Attracting and involving appropriate individuals in the implementation and use of the intervention through a combined strategy of social marketing, education, role modelling, training, and other similar activities.**
1	**Opinion Leaders**	**Individuals in an organization who have formal or informal influence on the attitudes and beliefs of their colleagues with respect to implementing the intervention.** *1- Who are the key influential individuals to get on board with this implementation?* *2- What are influential individuals saying about the intervention?*
2	**Formally Appointed Internal Implementation Leaders**	**Individuals from within the organization who have been formally appointed with responsibility for implementing an intervention as coordinator, project manager, team leader, or other similar role.** *1- How did your organization become involved in implementing the intervention?* *2- Who will lead implementation of the intervention?* *3- Who else is involved with leading the implementation?*
3	**Champions**	**"Individuals who dedicate themselves to supporting, marketing, and 'driving through' an [implementation]" [101] (p. 182), overcoming indifference or resistance that the intervention may provoke in an organization.** *1- Other than the formal implementation leader, are there people in your organization who are likely to champion (go above and beyond what might be expected) the intervention?* *2- Can you describe people's perception of this champion/individual?* *3- What kinds of behaviors or actions do you think this individual/champion will exhibit?*
4	**External Change Agents**	**Individuals who are affiliated with an outside entity who formally influence or facilitate intervention decisions in a desirable direction.** *1- Will someone (or a team) outside your organization be helping you with implementing the intervention?*
5	**Key Stakeholder**	*1- What steps have been taken to encourage individuals to commit to using the intervention?* *2- What is your communication or education strategy (not including training, see Access to Knowledge and Information) for getting the word out about the intervention?* *3- Who are the key individuals to get on board with the intervention?*
6	**Intervention participants**	*1- Will you or your colleagues communicate to the individuals that are served by your organization about the intervention?*
C	**Executing**	**Carrying out or accomplishing the implementation according to plan.** *1- Has the intervention been implemented according to the implementation plan?*

D	**Reflecting & Evaluating**	**Quantitative and qualitative feedback about the progress and quality of implementation accompanied with regular personal and team debriefing about progress and experience.** *1- What kind of information do you plan to collect as you implement the intervention?* *2- Will you receive feedback reports about the implementation or the intervention itself?* *3- How will you assess progress towards implementation or intervention goals?* *4- Will feedback is elicited from staff? From the individuals served by your organization.* *5- To what extent has your organization/unit set goals for implementing the intervention?*

Anexo 3. *Clinical Learning Environment, Supervision and, Nurse Teacher Scale*

CLINICAL LEARNING ENVIRONMENT, SUPERVISION AND NURSE TEACHER
(Saarikoski & Leino-Kilpi 2008)

This is an anonymous survey to assess students nursing perceptions about their clinical learning environment, supervision and the role of nurse teacher with the aim to compare Dedicated Education Unit learning model with traditional model. Complete the survey will take 2 minutes, if you have any question to fill in; please do not hesitate to ask your preceptor nurse or your ward supervisor/manager.

The following statements concerning the learning environment, supervision and the role of nurse teacher are grounded into main areas, each with their own title.

The learning environment:

For each statement, please choose the option that best describes your own opinion.

Evaluation scale:

1 = fully disagree
2 = disagree to some extent
3 = neither agree nor disagree
4 = agree to some extent
5 = fully agree

1.The staffs were easy to approach	1	2	3	4	5
2. I felt comfortable going to the ward at the start of my shift	1	2	3	4	5
3. During staff meetings (e.g., before shifts) I felt comfortable taking part in the discussions	1	2	3	4	5
4. There was a positive atmosphere on the ward	1	2	3	4	5
5. The staffs were generally interested in student supervision	1	2	3	4	5
6. The staff learned to know the student by their personal names	1	2	3	4	5
7. There were sufficient meaningful learning situations on the ward	1	2	3	4	5
8. The learning situations were multi-dimensional in terms of content	1	2	3	4	5
9. The ward can be regarded as a good learning environment	1	2	3	4	5
Leadership style of the ward manager (WM):					
10. The WM regarded the staff on her/his ward as a key resource	1	2	3	4	5
11. The WM was a team member	1	2	3	4	5
12. Feedback from the WM could easily be considered as a learning situation	1	2	3	4	5

13. The effort of individual employees was appreciated	1	2	3	4	5
Nursing care on the ward:					
14. The wards nursing philosophy was clearly defined	1	2	3	4	5
15. Patients received individual nursing care	1	2	3	4	5
16. There were no problems in the information flow related to patients' care	1	2	3	4	5
17. Documentation of nursing (e.g. nursing plans, daily recording of nursing procedures etc.) was clear	1	2	3	4	5

The supervisory relationship: In this form, the concept of supervision refers guiding, supporting and assessing of student nurses made by clinical staff nurses. Supervision can occur as individual supervision, or as group (or team) supervision. The concept of mentor means a named personal supervisor.

18. Occupational title of supervisor:

nurse	1
nurse specialist	2
assistant ward	3
manager	4
sister/ ward manager	
other, what? ……..	

19. Occurrence of supervision: (circle one alternative only):

I did not have a supervisor at all	1
A personal supervisor was named, but the relationship with this person did not work during the placement	2
The named supervisor changed during the placement, even though no change had been planned	3
The supervisor varied according to shift or place of work	4
Same supervisor had several students and was a group supervisor rather than an individual supervisor	5
A personal supervisor was named and our relationship worked during this placement	6

Other method of supervision, please specify?

.....

20. How often did you have **separate private unscheduled supervision with the supervisor** (without nurse teacher):

not at all	1
once or twice during the course	2
less than once a week	3
about once a week	4
more often	5

The content of supervisory relationship: The following statements concerning the supervisory relationship. For each statement, please choose the option that best describes your own opinion. *Evaluation scale:* 1 = fully disagree 2 = disagree to some extent 3 = neither agree nor disagree 4 = agree to some extent 5 = fully agree					
21. My supervisor showed a positive attitude towards supervision	1	2	3	4	5
22. I felt that I received individual supervision	1	2	3	4	5
23. I continuously received feedback from my supervisor	1	2	3	4	5
24. Overall I am satisfied with the supervision I received	1	2	3	4	5
25. The supervision was based on a relationship of equality and promoted my learning	1	2	3	4	5
26. There was a mutual interaction in the supervisory relationship	1	2	3	4	5
27. Mutual respect and approval prevailed in the supervisory relationship	1	2	3	4	5
28. The supervisory relationship was characterized by a sense of trust	1	2	3	4	5
Role of the nurse teacher: Nurse teacher is a lecturer (employed by University or Polytechnic) who is responding the clinical placement. The following statements concerning the linking nurse teacher are grounded into main areas, each with their own title. For each statement, please choose the option that best describes your own opinion. *Evaluation scale:* 1 = fully disagree 2 = disagree to some extent 3 = neither agree nor disagree 4 = agree to some extent 5 = fully agree					
Nurse teacher as enabling the integration of theory and practice:					
29. In my opinion, the nurse teacher was capable to integrate theoretical knowledge and everyday practice of nursing	1	2	3	4	5
30. The teacher was capable of operationalising the learning goals of this clinical placement	1	2	3	4	5
31. The nurse teacher helped me to reduce the theory-practice gap	1	2	3	4	5
Cooperation between placement staff and nurse teacher:					

32. The nurse teacher was like a member of the nursing team	1	2	3	4	5
33. The nurse teacher was able to give his or her pedagogical expertise to the clinical team	1	2	3	4	5
34. The nurse teacher and the clinical team worked together in supporting my learning.	1	2	3	4	5
Relationship among student, mentor, and nurse teacher:					
35. The common meetings between myself, mentor and nurse teacher were comfortable experience	1	2	3	4	5
36. In our common meetings I felt that we are colleagues	1	2	3	4	5
37. Focus on the meetings was in my learning needs.	1	2	3	4	5

5. DISCUSIÓN

5.1. DISCUSIÓN DE LOS RESULTADOS DEL ESTUDIO

Los diferentes estudios que conforman esta tesis doctoral abordan y aportan información completa sobre la implementación piloto del modelo de aprendizaje clínico "*Dedicated Education Units*" (DEU) en el contexto europeo. Este nuevo conocimiento es necesario ya que describe de una forma clara y precisa los factores limitantes y facilitadores a la hora de implementar un nuevo modelo de aprendizaje en nuestro entorno clínico. Además, este estudio identifica los elementos que tanto los coordinadores de la implementación, los profesionales del entorno educativo y de las instituciones sanitarias y los propios estudiantes consideran esenciales para establecer un óptimo ambiente de aprendizaje clínico. Esto representa una oportunidad para los gestores y directores de instituciones educativas y de atención a la salud europeas e internacionales de obtener el conocimiento y las herramientas de utilidad si su objetivo es mejorar la formación de las enfermeras.

Hoy en día el cuidado a las personas se brinda en entornos cada vez más complejos, que cambian rápida y constantemente, con nuevas necesidades de salud y mayores expectativas por parte de las personas. Es por ello por lo que las enfermeras requieren de competencias cada vez más flexibles y multidimensionales que abarquen procedimientos terapéuticos, gestión de relaciones interpersonales, trabajo en equipo, socialización, liderazgo, política, conciencia y desarrollo profesional que se centren en las necesidades de las personas [4 p. 34]. Estas competencias flexibles y multidimensionales se adquieren y se desarrollan principalmente durante las experiencias clínicas de los estudiantes de enfermería. Las experiencias de práctica clínica son fundamentales para que los estudiantes de enfermería logren conocimientos

clínicos, habilidades, autoconfianza y autonomía para afrontar con éxito el trabajo real de la enfermera y están consideradas el componente clave de la formación en enfermería [6]. Además, la experiencia clínica permite a los estudiantes integrar y aplicar todo el conocimiento teórico aprendido durante las clases teóricas en el cuidado directo al paciente [44]. Por otra parte, la naturaleza cambiante de las necesidades en la atención a la salud de las personas, junto con el cambio en la formación de las enfermeras, desde la práctica a niveles académicos, ha transformado la experiencia clínica de los estudiantes de enfermería del tradicional "aprender al hacer" a un contexto de aprendizaje práctico, apoyado en el aprendizaje teórico y respaldado por la evidencia [4 p. 37]. Es por ello por lo que, nuestra obligación como educadores, debe ser la de proporcionar la mejor formación a las actuales y futuras enfermeras con el objetivo de que puedan proveer de una mayor calidad de cuidados al paciente. Para alcanzar este propósito, tal y como confirma este estudio, a la hora de implementar estrategias o protocolos que pretendan impulsar el aprendizaje y mejorar las prácticas clínicas de las enfermeras, es imperativo fundamentar nuestras decisiones en la mayor evidencia disponible [21, 22, 45]. Para alcanzar el objetivo general de este estudio, la implementación y evaluación del modelo de aprendizaje clínico DEU en los diferentes entornos clínicos, se han seguido las directrices para el desarrollo de intervenciones complejas de Craig et al. (2008) [39]:

5.1.1. Búsqueda de la evidencia

Uno primer objetivo específico de este estudio ha sido examinar la eficacia de los modelos de aprendizaje clínico para mejorar el aprendizaje clínico de los

estudiantes de enfermería/matrona. Modelos en los que se establece una colaboración entre las instituciones de educación superior y de atención a la salud y que incluyen los roles de la enfermera docente clínica y de la enfermera mentora clínica. Los resultados de este primer estudio refuerzan la evidencia sobre los beneficios reales y potenciales de los modelos de aprendizaje clínico colaborativos como es el modelo DEU, tanto para las instituciones académicas y sanitarias como para los profesionales y los estudiantes. Tras una búsqueda sistemática de la literatura, este estudio, en línea con diferentes autores, resalta que el modelo DEU, a nivel institucional, presenta los beneficios siguientes: asegurar un uso efectivo de los recursos educativos y asistenciales disponibles; visibilizar y promocionar los roles de las enfermeras clínicas y docentes con una mayor clarificación de las responsabilidades de los profesionales; mejorar el reclutamiento y la retención de los profesionales; proporcionar una mayor conciencia sobre el proceso de enseñanza-aprendizaje. Además de cara a la formación clínica de los estudiantes, este tipo de modelo facilita un aumento en la identificación de problemas clínicos, provee de mayores oportunidades para practicar habilidades clínicas y una mejora significativa en la comunicación con el paciente y en la actitud hacia el trabajo en equipo, garantiza que los estudiantes adquieran el conocimiento clínico necesario y logren los resultados de aprendizaje esperados, entre otros [21, 22, 45, 46]. Asimismo, se ha corroborado que el compromiso de los gestores de las instituciones académica y sanitaria con el proceso de enseñanza-aprendizaje y los roles complementarios de la enfermera mentora clínica enfocados en instruir, supervisar y evaluar las habilidades clínicas del estudiante y el rol de la enfermera docente clínica, enfocado en el currículo del estudiante, en su adquisición de conocimientos y el

apoyo al rol docente de la enfermera mentora facilitan la transición al mundo laboral de los estudiantes [45, 46]. En definitiva, un entorno de aprendizaje clínico fructífero debe ser organizado cuidadosamente, con una definición clara de los roles y responsabilidades de cada profesional y realista en cuanto a la planificación del tiempo y de los recursos necesarios para llevar a cabo el proceso de enseñanza-aprendizaje [46].

5.1.2. Implementación de la evidencia. Pilotaje de la intervención

Para alcanzar el segundo objetivo específico de este estudio, implementar una intervención basada en la evidencia, como es el modelo DEU, en la práctica, ha sido imprescindible un exhaustivo análisis del entorno y la organización, la evaluación de todas las partes involucradas en la gestión, la participación de todos los profesionales implicados y de aquellas personas a las que se ha pretendido beneficiar con la innovación [47,48]. Actualmente, existen diferentes teorías y marcos de implementación de la investigación en los que apoyarnos para conseguir el mayor éxito en la implementación y en los resultados de las intervenciones y para evitar errores al trasladar lo que ha demostrado ser efectivo en la investigación a lo que es realista, práctico y transferible a los diferentes entornos de práctica clínica [47]. Los resultados de este estudio son consistentes con muchos otros en los que el marco de implementación "*Consolidated Framework for Implementation Research"* es una herramienta útil y práctica para analizar las barreras y facilitadores durante el proceso de planificación, implementación y resultados de una intervención. Los numerosos datos que se pueden extraer mediante la utilización de un marco de implementación son esenciales para evaluar la eficacia de la intervención en un nuevo contexto y

permiten la reflexión y el debate entre los responsables de la implementación, los profesionales implicados y los beneficiarios [47, 48, 49, 50]. Apoyar la implementación del modelo DEU en contextos con culturas, tradiciones y expectativas tan heterogéneas en este tipo de herramientas, nos ha permitido realizar un análisis en profundidad sobre que funciona y que no y debatir y deliberar en todo momento y entre todas las partes implicadas sobre que puede promocionar o dificultar el aprendizaje en cada emplazamiento clínico de los estudiantes [49].

A pesar de la heterogénea implementación del modelo, no han sido percibidas barreras para su puesta en marcha. Los resultados de esta evaluación van en línea con los de diferentes estudios en los que, las características estructurales de las organizaciones participantes, los recursos disponibles, la comunicación y cultura del lugar de trabajo y el clima de implementación han influido de manera positiva en la implementación del modelo DEU. La adaptación del modelo a los diferentes entornos, parece que se ha garantizado cuando existía una colaboración entre las instituciones educativas y sanitarias basadas en la confianza, el respeto y unos objetivos de beneficio mutuo como han sido: un uso efectivo de los recursos; un apoyo para la mejora del desarrollo profesional; un reclutamiento y retención de enfermeras/matronas y una mayor conciencia del proceso de enseñanza-aprendizaje [46, 51]. Por otro lado, los participantes de este estudio resaltan los conocimientos, motivación, compromiso y habilidad de las enfermeras para modificar y adaptar los procesos y estrategias a las necesidades cambiantes del entorno [49].

5.1.3. Evaluación de la intervención

Tras la implementación del modelo de aprendizaje clínico "*Dedicated Education Units*" en los emplazamientos clínicos de los estudiantes de los cinco países europeos, el siguiente objetivo específico ha sido evaluar la implementación y los resultados del modelo según la percepción de los estudiantes y profesionales. Además, se ha encuestado a los participantes sobre qué mejoras consideran necesarias para instaurar un entorno de aprendizaje optimo. En la figura 5 se resumen los elementos que, en base a la percepción de los estudiantes y de las enfermeras/matronas, se consideran indispensables a la hora de optimizar el ambiente clínico de aprendizaje y mejorar las experiencias clínicas de los estudiantes y profesionales. A continuación, se discuten los elementos resaltados por los participantes como aquellos que han mejorado con la implementación del modelo DEU y/o son considerados indispensables para optimizar el ambiente de aprendizaje.

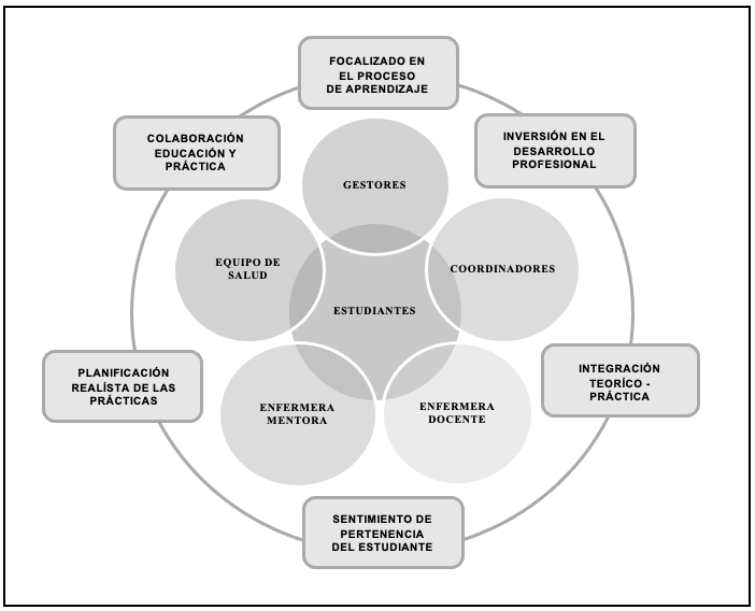

Figura 5. Elementos de un ambiente de aprendizaje óptimo. Ilustración propia el autor de la tesis.

Focalización en el proceso de aprendizaje del estudiante

Uno de los elementos del modelo DEU que los participantes han considerado muy satisfactorio e imprescindible para el establecimiento de un óptimo ambiente de aprendizaje clínico y han resaltado como clave para la consecución de sus objetivos de aprendizaje y la construcción de su profesionalidad ha sido la tutorización o preceptoría del estudiante. Este proceso de instrucción, guía y supervisión del estudiante que realiza la enfermera mentora clínica durante las prácticas del estudiante está considerado como una intervención psicosocial dinámica que incluye interacciones educativas y de apoyo entre los estudiantes, las enfermeras mentoras y las enfermeras docentes en el emplazamiento clínico [52]. La mayoría de las enfermeras clínicas que llevan a cabo el rol de mentoras son enfermeras experimentadas, especializadas en determinadas áreas clínicas e idealmente deberían transmitir la cultura, la ética y los valores de la enfermería y actuar como modelo de rol.

Como se ha evidenciado en este y diversos estudios, las enfermeras mentoras tienen un papel clave en la calidad y los beneficios del entorno de aprendizaje y se les atribuye unas competencias propias para ejercer su rol formativo como son: crear una relación interactiva con el estudiante; desarrollar sus propias características; enfocar su instrucción a objetivos; identificar las más apropiadas oportunidades de aprendizaje; apoyar el desarrollo de los estudiantes hacia la profesión de enfermera y el proceso de aprendizaje del estudiante; mostrar competencias para la toma de decisiones en el trabajo en equipo; planificar, brindar y proporcionar los cuidados al paciente y desarrollar el liderazgo de enfermería [53, 54].

Como se ha reflejado en este estudio, si durante la interacción mentor-estudiante el estudiante siente que es bien recibido y motivado para hacer frente a nuevas situaciones, se verá facilitado su aprendizaje y tendrá un gran impacto en sus actitudes y relaciones interpersonales, dotando de mayor significado a su aprendizaje. Por el contrario, si el estudiante se siente criticado, menospreciado o ignorado, es muy fácil que presente distrés emocional, tenga problemas en su transición a la práctica autónoma o acabe abandonando la profesión [6, 55, 56] Sin embargo y en base a los resultados de este estudio y de estudios publicados recientemente, para que las enfermeras mentoras puedan desarrollar las competencias expuestas anteriormente es fundamental que no solo les sean proporcionadas una formación básica sobre cómo llevar a cabo su rol formativo, sino que además se les proporcionen conocimientos y herramientas para apoyar el proceso de aprendizaje de los estudiantes focalizado a sus objetivos de aprendizaje. En relación a los objetivos, éstos deben establecerse en relación con el emplazamiento clínico, deben conducir al estudiante hacia la reflexión sobre la práctica clínica durante este periodo, deben estar acompañados de una retroalimentación constructiva al estudiante y deben evaluarse con un enfoque individual y centrado en el estudiante [52, 54, 57].

Inversión en el desarrollo profesional de las enfermeras/matronas

Como también ha sido reflejado en este estudio, en la mayoría de los países de la Unión Europea no existen requisitos educativos específicos o estrategias de formación para las enfermeras mentoras [57, 58]. En esta misma línea, este estudio se une a la literatura existente para demostrar que la distancia existente entre las instituciones educativas y sanitarias produce en la enfermera mentora

una sensación de aislamiento, ansiedad, e incertidumbre y una falta de preparación, de reconocimiento, de tiempo y de apoyo frente a las dificultades del alumno o en aspectos vitales de su progreso [49, 53, 59, 60, 49]. Además, tal y como reflejan las enfermeras de este estudio, aunque éstas perciben beneficios de su rol formativo como son la relación con el alumno, el aprendizaje recíproco, la satisfacción de poder ayudar y una afirmación como profesional, en su mayoría tienen que enfrentarse a barreras importantes como la falta de expectativas y pautas claras del rol formativo. La formación de las enfermeras es una responsabilidad que requiere de tiempo y preparación, y tal y como se expone en este estudio y se expone en estudios recientes, son las propias enfermeras y los estudiantes quienes, a raíz de las necesidades detalladas anteriormente, reclaman la necesidad de unas iniciativas de formación continua, un tiempo exclusivo para la instrucción y el aprendizaje y un reconocimiento de esta labor cuando ésta, actualmente, no se encuentra entre las prioridades de los gestores [46, 49, 57, 61].

En línea con otros autores, las enfermeras/matronas que participan en este estudio también reconocen que con los cursos de formación que les ha ofrecido el modelo DEU para la llevar a cabo la su rol formativo, han experimentado una mejora en sus conocimientos y herramientas para guiar e instruir al estudiante, así como una mejora en su actitud, su confianza y su motivación hacia la formación de los estudiantes, en línea con resultados de diversas publicaciones [33, 63]. Este estudio, al igual que muchos otros, enfatiza la necesidad del compromiso de los gestores de los centros educativos y de centros de atención a la salud para proporcionar a las enfermeras las habilidades, el tiempo, los recursos organizacionales y humanos necesarios para desempeñar todos sus

roles de manera efectiva. Por otro lado, se destaca la necesidad de evaluar el rol docente de enfermería, seleccionar quién debe formar a los estudiantes y otorgar el valor, el reconocimiento y el prestigio necesarios a este rol, ya que son requisitos que potenciarían la formación clínica de los estudiantes. Existe una responsabilidad no cubierta por parte de los gestores académicos y sanitarios en evaluar las competencias y la preparación de las enfermeras para instruir a los estudiantes, además de ofrecerles conocimientos y habilidades de enseñanza y aprendizaje, oportunidades de crecimiento profesional y apoyo de la organización, así como de considerar sus cargas de trabajo a la hora de asignarles estudiantes en prácticas [52, 64, 65, 66]. Al igual que en las recomendaciones de Tuomikoski et al. [57] y de la Agència per la Qualitat del Sitema Universitari [67], en este estudio se reafirma la idea de que deberían ser las instituciones de educación superior las que debería incluir una formación docente como parte de sus programas de formación continua de enfermería acreditados. Como queda reflejado en este estudio, la sustentabilidad del rol docente de la enfermera depende del compromiso de los gerentes y profesionales de ambas instituciones y debe ser apoyada por políticas, programas de formación e incentivos para seguir siendo promotor de futuros enfermeros calificados para hacer frente a las cambiantes y cada día más exigentes necesidades de atención a la salud de las personas. En consecuencia, es importante recordar que el no responder a las solicitudes de las profesionales compromete la adecuada formación de los estudiantes, un factor clave en la prestación de cuidados de enfermería de calidad [62].

Integración de la teoría y la práctica

Por otro lado, y tal como describen los participantes de este estudio, para una mejora de las experiencias clínicas de los estudiantes, es necesaria una complementación entre los conceptos teóricos aprendidos en clase y la práctica real que los estudiantes encuentran en el emplazamiento clínico, teniendo en cuenta que el aprendizaje como tal, no se establece hasta que los estudiantes han tenido la oportunidad de aplicar la teoría en las situaciones prácticas reales [67,68].

Durante décadas la literatura ha reflejado esta brecha entre la teoría y la práctica y no ha habido mayores cambios al respecto. En línea con los resultados del estudio de Houston et al. [70], en este estudio se sugieren algunas estrategias encaminadas a minimizar esta fisura: instaurar el rol de la enfermera docente clínica como enlace entre la teoría y la práctica; promover el aprendizaje simulado y el aprendizaje activo centrado en el estudiante; instaurar y extender programas de orientación; y los modelos de aprendizaje clínico colaborativos como el modelo DEU [70].

Como hemos podido constatar en este estudio, la conexión e integración de la teoría y la práctica depende en gran medida de la enfermera mentora y de la enfermera docente clínica. Al igual que en recientes estudios este estudio indica que el rol de la enfermera docente en el modelo DEU, ha evidenciado ser una buena estrategia para aproximar la brecha entre la teoría y la práctica de manera que los estudiantes aprenden a aplicar los principios teóricos y prácticos de manera flexible a diversas situaciones clínicas. Junto con la enfermera mentora, la enfermera docente tiene la responsabilidad de vincular la teoría y la investigación dadas durante las clases con la práctica clínica, la planificación de

los cuidados y la toma de decisiones con el ánimo de lograr unos resultados de aprendizaje, promover la independencia, la responsabilidad y el pensamiento crítico del estudiante [38, 69, 71]. Pero a pesar de la figura de la enfermera docente los estudiantes han manifestado cierta incoherencia entre la teoría desarrollada en clase y la práctica durante el emplazamiento clínico, percibiendo esto como uno de sus mayores retos en línea con los resultados de Panda et al. (2021) [16] Para mejorar esta situación, además de mejorar el ambiente de aprendizaje clínico, se ha propuesto orientar la teoría hacia la realidad del cuidado del paciente, permitiendo a los estudiantes interpretar la teoría en base a la observación y la experiencia y desarrollar su identidad profesional, un elemento clave en cualquier profesión [72].

Sentimiento de pertenencia del estudiante

Otro de los elementos bien valorados en el modelo DEU y considerados imprescindibles para optimizar el ambiente de aprendizaje clínico que se resalta en este estudio y que incide en la satisfacción del estudiante y su proceso de aprendizaje, es el sentido de pertenencia y la relación que el alumno establece con el resto del equipo de salud. Los hallazgos de este estudio están en línea con estudios previos que muestran que las actitudes del personal y los profesionales son un elemento significativo para que los estudiantes encajen en el entorno de aprendizaje e influyen en su autoeficacia y preparación para la práctica real. En reconocido que, en ambientes donde el equipo de salud es acogedor, solidario y receptivo y trata al estudiante como un aprendiz, un miembro del equipo y persona existe una mejora en la autoconfianza y autoeficacia e iniciativa de los estudiantes y un crecimiento gradual de su

independencia y responsabilidad [16, 56] En línea con los resultados de Salifu et al. (2019) [69] algunos de los estudiantes participantes del estudio describieron la sensación de estar en la periferia del equipo de salud en situaciones de falta de compañerismo, conexión y apoyo del resto de los profesionales. Así también, los estudiantes manifestaron que en ocasiones se han sentido rechazados, ridiculizados y criticados y esto les ha ocasionado distrés emocional, efecto que, según varios autores, puede llegar a influenciar en la provisión de cuidados al paciente [73, 74] Así mismo, los estudiantes reclaman la necesidad de contribuir de manera significativa y reconocida al cuidado del paciente como miembro del equipo de salud y, por tanto, deberían ser las enfermeras las que favoreciesen un entorno clínico acogedor y empoderante para los estudiantes y actuar como modelo de rol para ellosgallett [56, 74]. El apoyo del estudiante por parte del resto de enfermeras representa un importante recurso con el potencial de mitigar los estresores a los que son expuestos los estudiantes durante la práctica clínica. Como se ha resaltado en este estudio, la actitud positiva del equipo hacia el aprendizaje clínico es un prerrequisito para maximizar las oportunidades de aprendizaje, continuar los estudios universitarios y fortificar la identidad profesional de las futuras enfermeras [56, 74, 75].

Planificación realista de las prácticas clínicas

Por otro lado, como han resaltado los participantes de este estudio, aun hoy, uno de los mayores desafíos al que nos enfrentamos a la hora de mejorar los entornos de aprendizaje clínico, sigue siendo la elevada carga de trabajo de las enfermeras/matronas clínicas [76, 77]. En la mayoría de los países participantes, la formación de los estudiantes de enfermería durante sus prácticas clínicas es

una responsabilidad adicional a la carga de trabajo de la enfermera. Las enfermeras deben llevar a cabo esta responsabilidad en medio de un entorno plagado de tareas burocráticas, escasez de enfermeras, una mayor complejidad de los cuidados al paciente, un número elevado de estudiantes o una inadecuada o inexistente planificación de las prácticas clínicas [76, 77]. Las cargas de trabajo estresantes actuales más el tiempo extra indispensable que requiere la participación reflexiva y activa de los estudiantes en el cuidado del paciente, hacen que el papel docente de las enfermeras sea un gran desafío [61].

Este estudio reitera los resultados de estudios anteriores en los que las enfermeras docentes y mentoras afirman que sus actuales condiciones de trabajo es un elemento que limita el aprendizaje clínico del estudiante [61, 64, 78]. En España y en la mayoría de los países que participan en este estudio, las enfermeras trabajan con ratios inestables e inadecuadas, una gran variabilidad del personal y una mayor presión hacia la prestación de cuidados que disminuyen el□ínea□o necesario que las enfermeras deben dedicar a los estudiantes [61, 64]. Esto, añadido a la falta de preparación de los estudiantes y su desánimo de permanecer en la profesión, conlleva la exacerbación de la existente escasez global de enfermeras [66].

Según la Organización para la Cooperación y el Desarrollo Económicos en 2019 en España había 5,7 enfermeras en ejercicio por cada 1.000 habitantes, en Polonia, 5,1, en Portugal 6,7 y en Turquía 2,1. Todos excepto Bélgica con una ratio de 11 se encuentran muy por debajo de la media de los estados (9,8) [79]. En recientes estudios publicados, queda patente que esta inasumible carga de trabajo a la que están sometidas las enfermeras no solo pone en riesgo su adecuada formación y preparación para el mundo laboral, sino que pone en

riesgo la propia seguridad del paciente [80, 81]. Además, en estos casos se pone en evidencia las deficiencias en la calidad de la atención, el alto grado de desgaste de las enfermeras, la insatisfacción laboral y la intención de las enfermeras de dejar sus puestos actuales [81, 82, 83]. En esta mismo □ínea, en estudios publicados recientemente, las enfermeras de los hospitales con mejores entornos de trabajo tenían la mitad de las probabilidades de informar sobre la calidad deficiente o regular de atención al paciente. Las mejoras habilitadas en los hospitales con relación a los entornos de trabajo, a los profesionales de enfermería y a la formación de las enfermeras coincidían con las mejoras en la calidad de la atención y la seguridad del paciente [81,84].

Colaboración entre las instituciones educativas y prácticas

Otro de los elementos que los participantes de este estudio consideran que ha mejorado tras la implementación del modelo DEU ha sido la colaboración entre la institución académica y la sanitaria. Entre los beneficios que se pueden desprender de iniciar o estrechar la colaboración entre las instituciones posibilita, como en este estudio, que las universidades se beneficien del conocimiento y las habilidades de las enfermeras clínicas y éstas últimas de los recursos educativos y la formación continuada para mantener este conocimiento actualizado. Además, tal y como reflejan estudios recientes, esta colaboración ayuda acercar la brecha entre la teoría y la práctica, a incrementar el uso de la práctica basada en la evidencia, proporcionar las condiciones necesarias para impulsar la investigación y desarrollar un cuerpo mutuo de conocimiento [85]. Además, este tipo de colaboraciones se contempla como una estrategia para salvar la escasez de enfermeras.

En línea con lo expuesto anteriormente, la Organización Mundial de la Salud [86] impulsa y apoya un progreso de la enfermería/matrona para el año 2030, e insta a los gobiernos y a todas las partes interesadas a: invertir en educación para capacitar correctamente a las enfermeras y así poder abordar las necesidades de la población; incrementar las vacantes de enfermeras sobre todo en países de rendas medias y bajas y así corregir las desigualdades y fortalecer el liderazgo de las enfermeras, para garantizar la influencia de las enfermeras en políticas de salud y la toma de decisiones para contribuir a la eficacia de los sistemas de atención sanitaria y social. Los estudiantes son un activo muy valioso para los sistemas de salud y para llevar a cabo los propósitos propuestos por la esta organizacion [86]. Desde las instituciones educativas y de atención a la salud, como profesionales e inherentes educadores, tenemos que tomar conciencia de ello y adoptar una actitud positiva hacia el aprendizaje, instaurando programas efectivos que mejoren la formación y competencia de los estudiantes y los profesionales, optimizar el entorno de aprendizaje clínico, además de la experiencia de aprendizaje, su satisfacción, su competencia y su profesionalidad [49, 87].

5.1.4. Difusión de los resultados

Para llevar a cabo la difusión de este proyecto, durante su implementación y resultados, se han realizado 4 conferencias transnacionales en Barcelona, Lovaina, Setúbal y Varsovia. En estas conferencias han participado profesionales y estudiantes de todo el mundo, así como impulsores del modelo DEU en EUA y Europa. Además, para realizar una difusión internacional del projecto y de este estudio, todo el proceso de implementación y los resultados

de la evaluación del modelo se puede consultar en la plataforma on-line http://www.ideus.ips.pt/ [88]. En esta web se han incluido la guía de implementación, una aplicación para el seguimiento de las prácticas clínicas de los estudiantes y las diferentes actividades que se han ido desarrollando durante el proyecto. Además, tras este proyecto piloto, se han implementado más unidades DEU en los emplazamientos clínicos de Bélgica y Varsovia, y se han puesto en marcha cursos preparatorios para enfermeras y matronas para formar estudiantes en Barcelona y Varsovia. Por último, es importante resaltar que mediante este proyecto ha sido posible la consecución del título de Doctor en Ciencias de la Enfermería de dos coordinadores: la Dra. Małgorzata Stefaniak (Polonia) y el Dr. Sadık Hancerlioglu (Turquía).

5.2. LIMITACIONES DEL ESTUDIO

Este estudio analiza desde una perspectiva europea las percepciones y experiencias de las enfermeras/matronas, estudiantes y gerentes en la implementación del modelo de aprendizaje clínico “DEU” en los emplazamientos clínicos de los estudiantes de cinco países Europeos. Debido a las restricciones organizativas y la disponibilidad de los profesionales, la implementación del proyecto piloto DEU se realizó en máximo dos unidades de pacientes agudos por país, por lo tanto, se limita a un pequeño número de participantes y esto limita la generalización y representatividad de los hallazgos de este estudio. Por ejemplo, en España solo se ha implementado el modelo DEU en 2 unidades del Hospital Clínic de Barcelona. Por otro lado, los estudiantes de enfermería estaban en sus últimos cursos del grado y la representatividad de las matronas ha sido a través únicamente de 2 profesionales (en España es una especialidad enfermera reconocida por el ministerio de sanidad). A la hora de llevar a cabo investigaciones futuras, un requisito necesario sería contar con la participación de más participantes e incluir a los pacientes y al resto de profesionales que forman parte del equipo de salud por su gran impacto en la experiencia clínica de los estudiantes. Además, es recomendable la implementación y evaluación del modelo en diferentes instituciones de atención a la salud como residencias, centros de día o centros de atención primaria para proveer de una mayor evidencia que apoye el modelo.

5.3. APLICABILIDAD A LA PRÁCTICA Y BENEFICIOS PARA FUTURAS INVESTIGACIONES

Los resultados de este estudio contribuyen a aumentar el conocimiento sobre los beneficios del modelo *"Dedicated Education Units"* para la mejora del aprendizaje clínico de los estudiantes y el desarrollo profesional de las enfermeras/matronas.

Además, en este estudio se han destacado los beneficios de trasladar los resultados de la investigación a la práctica y se han aportado estrategias que investigadores y gestores de las organizaciones podrían explorar antes de implementar un nuevo modelo de aprendizaje clínico. La identificación de las barreras y facilitadores previamente y durante el proceso de implementación de un modelo de aprendizaje y el conocimiento de las experiencias tanto de gestores, coordinadores, enfermeras/matronas y estudiantes se recomienda como una excelente estrategia para garantizar un proceso de implementación y unos resultados del modelo adecuados a cada emplazamiento clínico.

Por otro lado, en este estudio han sido identificados los factores físicos, psicosociales y organizativos de relevancia para los estudiantes y las enfermeras/matronas en cuanto a crear un entorno de aprendizaje clínico óptimo. En el momento de futuras implementaciones del modelo, sería recomendable cubrir las necesidades y expectativas de los participantes que han sido expuestas en este estudio y analizar cómo estas iniciativas afectan al proceso de enseñanza-aprendizaje, al bienestar de las enfermeras en su rol docente, a la adquisición de conocimientos por parte de los estudiantes y a la calidad de los cuidados brindados al paciente.

6. CONCLUSIONES

1. El modelo de aprendizaje clínico "*Dedicated Education Units",* ha resultado ser una buena opción para optimizar el entorno de aprendizaje clínico que incide en la satisfacción del alumno y de la enfermera/matrona con el proceso de enseñanza-aprendizaje. Así como, una buena estrategia para incrementar la formación, la motivación y la involucración de los profesionales respecto al aprendizaje de los estudiantes.

2. A pesar de las peculiaridades educativas y profesionales de los países participantes de este estudio, el modelo "*Dedicated Education Units*" se ha identificado como una herramienta útil para harmonizar los diferentes entornos de aprendizaje clínico y podría ser un impulsor de la formación y el trabajo transfronterizo de las enfermeras/matronas.

3. Para lograr la optimización del entorno de aprendizaje es imprescindible una estrecha colaboración entre las organizaciones educativas (universidades y escuelas de enfermería) y de atención a la salud, enfocada en objetivos comunes y manteniendo una buena comunicación basada en el respeto y la confianza.

4. A la estrecha colaboración entre instituciones se le debe facilitar los suficientes recursos educativos, estructurales, organizacionales y humanos para un mejor equilibrio entre las diferentes responsabilidades de los profesionales.

5. Para mantener la sostenibilidad del rol docente de la enfermera clínica es necesario el compromiso de los gerentes y profesionales y debe ser apoyada por políticas, programas de formación e incentivos.

Por último, se considera recomendable y urgente mejorar las condiciones laborales de las enfermeras/matronas y los entornos de aprendizaje de los estudiantes como una estrategia para paliar la escasez global de enfermeras y dar respuesta a las necesidades de protección y restauración de la salud cada día más exigentes de la población.

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