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FACULTAD DE CIENCIAS DE LA SALUD

EFFECTIVENESS OF ADVANCED PRACTICE NURSING INTERVENTIONS IN OLDER PEOPLE AND THEIR DESCRIPTION THROUGH THE NURSING INTERVENTIONS CLASSIFICATION. A SYSTEMATIC REVIEW AND QUALITATIVE STUDY

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A mis padres, José y Rosa María, por hacerlo posible.

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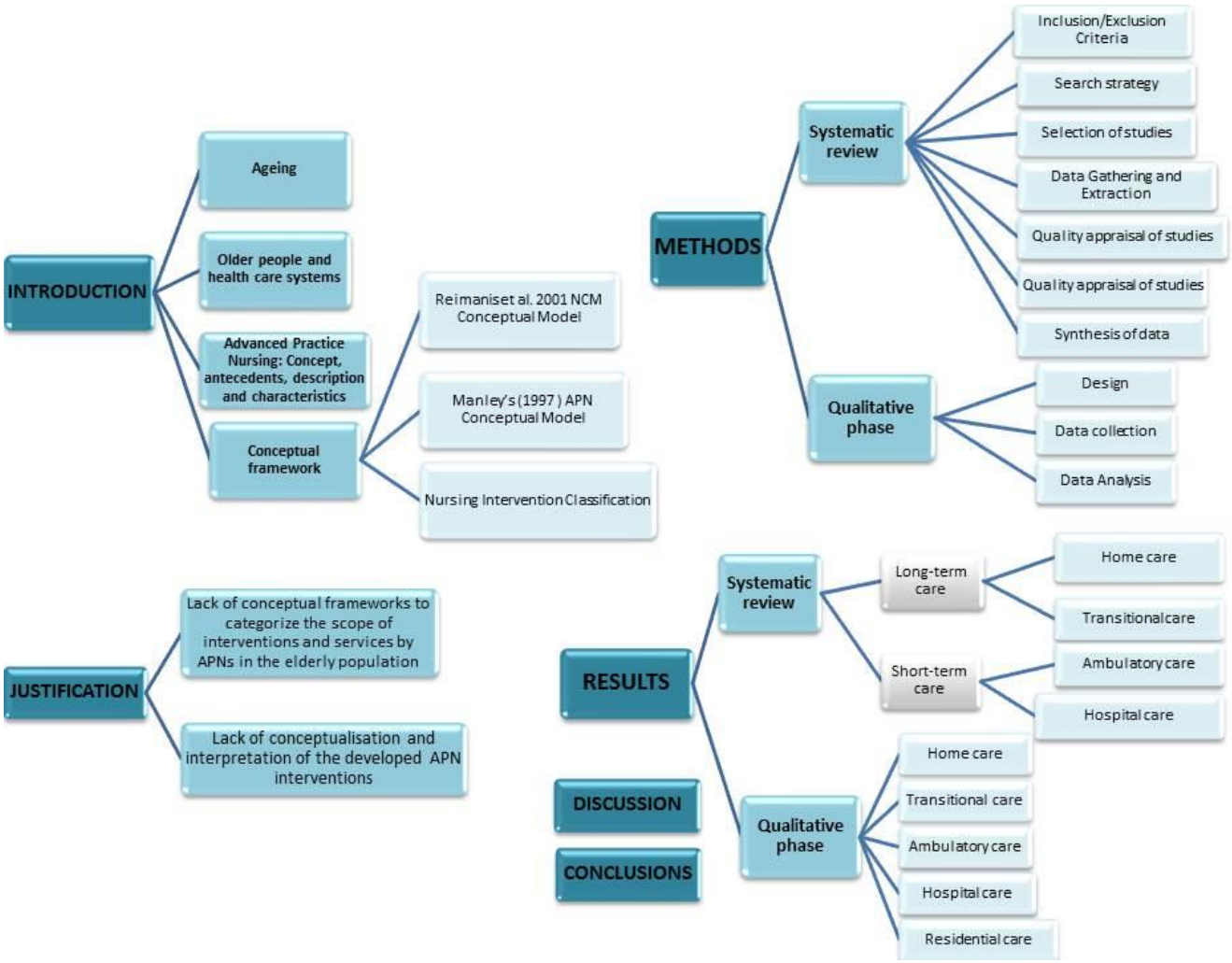

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I. LIST OF ABBREVIATIONS

AIIC: Association des Infirmiers et Infirmieres of Canada
ANA: American Nurses Association
APN: Advance Practice Nurse/Nursing
BADL: Basic Activities of Daily Living
CHF: chronic heart failure
CONP: Control Over Nursing Practice
COPD: Chronic Obstructive Pulmonary Disease
GP: General Practitioner
ICT: Information and Communication Technologies
ICU: Intensive Care Unit
INE: Spanish Statistic National Institute
NANDA: North American Nursing Diagnosis Association
NIC: Nursing Intervention Classification
NOC: Nursing Outcomes Classification
OASIS: Outcome and Assessment Information Set
SD: Standard Desviation
SN: Staff Nurses
SNL: Standarized Nursing Language
SR: Systematic Review

ABBREVIATIONS EXTRACTED FROM THE QUOTES OF THE QUALITATIVE PHASE

CCM: chronic care model.
ED: Emergency Department
HFC: Heart Failure Clinic
MCCD: The Medicare Coordinated Care Demonstration (MCCD), a randomized controlled trial, was initiated by the Centers for Medicare & Medicaid Services in 2002 as an effort to gain insight into whether coordinated care programs can improve medical treatment plans, reduce avoidable hospital admissions, and promote behavioral and clinical outcomes without increasing costs for Medicare beneficiaries with chronic medical conditions.
NLIU: nursing-led inpatient units.

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II. EXECUTIVE SUMMARY

i. ENGLISH

Background: The Association des Infirmières et Infirmiers du Canada (AIIC) (2008), defines Advanced Practice Nursing (APN), as "an advanced level of nursing practice that maximizes the use of specialized skills and nursing knowledge in order to respond to the customers' needs in health's sphere". APNs' programs, were initially introduced in the 1960s to fulfil gaps both in services traditionally carried by physicians, in order to improve access to care particularly in under-served services and contexts by doctors (Delamaire & Lafortune 2010), and also as a consequence to the reduction of physicians' and resident doctors hours internationally (Dowling et al. 2013; Olson & Chioffi 2005; Por 2008). Despite that, advanced practice is still being unclear due to the differences related to health settings and policies (Gardner *et al.* 2007). In the recent years, it has been introduced the concept of 'complex chronic disease', which is linked to the concept of aging and frailty, and determined by the presence of multiple and complex chronic conditions. The most differential characteristics of this group of people are the presence of several chronic diseases concurrently, multiple admissions in hospital emergency services in the same year, the presence of certain diseases such as heart failure or Chronic Obstructive Pulmonary Disease (COPD), polypharmacy and reduced personal autonomy. In

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addition, there are additional factors such as older age, living alone or not having enough family support and being in risk of falling, among others (Contel et al. 2012). In this sense, the APN is in an ideal position to cover the necessities of this population group. Case management and telemonitoring could be essential to the success in the developing of individualized care plans to improve chronic patients' health status (Contel *et al.* 2012; Carroll *et al.* 2007; Clark *et al.* 2010).

Moreover, several models of APN attention have been developed in a wide variety of heath contexts in the elderly population (Oeseburg *et al.* 2009; Low *et al.* 2011), with remarkable outcomes in terms of effectiveness. Examples of those models could be those in transitional care (Brand et al. 2004), case management (A. Leung et al. 2004) or heart diseases (Blaha et al. 2000; Duffy et al. 2010) to improve quality of life or reduce rehospitalizations. Also, APN carried out interventions in patients that suffered dementia (Callahan *et al.* 2006), with older people with low incomes and acute health problems (Counsell *et al.* 2007), or in the community, giving support to families and patients to manage resources (Thompson *et al.* 2008).

However, there is a deficit of conceptual frameworks to characterize and describe the range of interventions and services by APNs in the older population (Morales Asencio 2010). In this sense, the availability of a standardized language to describe nursing

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interventions (Nursing Intervention Classification, NIC) (Bulecheck GM et al. 2008; Thoroddsen 2005) can provide an additional resource to classify the components of different APN models and could facilitate the description of APN in a universal language, available in a vast majority of health care record systems around the world.

Aims: The aims of this thesis are:

1. To identify, assess and summarise available scientific evidence about the effect of interventions deployed by APNs when providing care to older people in different settings (hospital, home, outpatient, residential).
2. To describe the roles and components of the interventions developed by APNs in the contexts mentioned before.
3. To identify the interventions provided by APNs to older people in different contexts (acute and long-term care) with a Standardized Nursing Language, in the studies included in the Systematic Review.

Design: The present study was divided in two parts: firstly, a systematic review, and secondly, a qualitative with mixed methods study.

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Methods:

Systematic review:

Data Sources: Sixteen electronic databases were consulted (1990-2010). The research also included reviews, papers, reports and evaluations from research health services centres and Health Technology Agencies.

Review Methods: Studies that met inclusion criteria were reviewed for quality, using RevMan 5 application's checklist of bias, together with the methodological quality criteria of the Cochrane COPD group.

Qualitative study

Quotes of the interventions carried out by advanced practice nurses were codified by experts into the Nursing Intervention Classification. A content analysis was carried out, followed by a Delphi technique

Results:

Systematic review: Eleven studies were included. They were classified depending on the follow-up period, and also on the scope of the advanced practice nursing services. In both cases, integrative, multi-component and continuous advanced practice nursing care, reduced readmissions, improved patients' self-care and quality of life, as well as increased patients' and caregivers' satisfaction.

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Qualitative study: In total 73 different interventions codified in the Nursing Intervention Classification were extracted from the studies in different care contexts, with a clear predominance of interventions related to the Behavioural and Health care system domains, which could be explained due to the need of improving the psychosocial functioning and self-care of these patients to lead them to preserve their quality of life.

Conclusion: Advanced practice nurses seems to be crucial to improve the health status of elderly people, which main characteristic is to bear with chronic diseases, in almost every care context. Moreover, Advanced Practice Nurses' interventions could be considered as complex but with the use of standardized nursing languages as the Nursing Intervention Classification, they can be better described, reported and analysed along different contexts. Moreover, core elements of the APNs' roles can be identified and they could be used for delineating or remodelling services. Further investigation will be needed to confirm that advanced practice nursing programs decreases health costs, to compare their effectiveness in both, the generalist and the specific model, and to analyse the pertinence of a mixed model.

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ii. ITALIAN

Introduzione:

L'associazione Infirmières Infirmiers et du Canada (AIIC) (2008) definisce Pratica Infiermeristica Avanzata (PIA) come " un livello avanzato di pratica infermieristica che massimizza l'utilizzo delle competenze e conoscenze infermieristiche in modo per rispondere alle esigenze dei clienti in materia di salute ".I primi programmi dalla PIA sono stati sviluppati negli anni '60 per due scopi : sia per colmare le lacune nei servizi tradizionalmente gestiti da medici, per migliorare l'accesso alle cure sanitarie , in particolare nei servizi e impostazioni di cura nei servizi abbienti (Delamaire e Lafortune 2010) , e anche a causa della riduzione delle ore a livello internazionale di medici e medici residenti (Dowling et al 201; Olson e Chioffi 2005; Por 2008). Ciò nonostante, ci sono ancora incertezze in pratica avanzata a causa delle differenze nei contesti di politiche sanitarie e salute (Gardner et al. 2007). Negli ultimi anni, si è introdotto il concetto di "malattia cronica complessa", che è legata al concetto di invecchiamento e fragilità, e determinata dalla presenza di molteplici patologie croniche in condizioni complesse. La maggior parte delle caratteristiche distintive di questo gruppo di persone, sono la presenza di varie malattie croniche contemporaneamente, più reddito in servizi di emergenza nello stesso anno, la presenza di alcune malattie come l'insufficienza cardiaca o BPCO, politerapia e la riduzione dell'autonomia personale. Inoltre, ci sono altri fattori quali l'età avanzata, "vivono da soli" o non avere abbastanza sostegno della famiglia e di essere a rischio di caduta, tra gli altri (Contel et al. , 2012.) A questo proposito, l'EPA è in una posizione ideale per soddisfare le esigenze di questa popolazione. Gestione dei casi e la telemedicina potrebbe essere essenziale per lo sviluppo positivo di cura individualizzato per migliorare lo stato di salute dei pazienti

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cronici (Contel et al 2012; Carroll et al 2007; Clark et al 2010).

Inoltre, hanno sviluppato diversi modelli di cura PIA in un'ampia varietà di contesti di salute nella popolazione anziana (Oeseburg et al 2009, Basso et al 2011), con notevoli risultati in termini di efficacia. Esempi di tali modelli di intervento della Pia potrebbe essere la cura di transizione (Brand et al 2004). Gestione dei casi (Leung et al 2004), le malattie cardiache (Blaha et al 2000, Duffy et al 2010), la demenza (Callahan et al., 2006), anziani con basso reddito e problemi di salute acuti (Counsell et al., 2007) , o nella comunità , dando sostegno alle famiglie e pazienti nella gestione delle risorse (Thompson et al . 2008).

Comunque, c'è un deficit in termini di strutture concettuali per caratterizzare e descrivere la gamma di interventi e servizi da parte PIA nella popolazione anziana (Morales Asencio 2010). In questo senso, la disponibilità di un linguaggio standardizzato per descrivere interventi infermieristici (Infermieristica Interventi Classificazione NIC) (Bulecheck GM et al,2008; Thoroddsen, 2005) potrebbe essere una risorsa aggiuntiva per classificare i componenti dei diversi modelli dalla PIA e, parimenti, potrebbe facilitare la descrizione di PIA in un linguaggio universale, disponibili nella stragrande maggioranza dei sistemi di cartelle cliniche in tutto il mondo.

Obiettivi:

Gli obiettivi di questa tesi sono:

1 . Identificare, valutare e sintetizzare le evidenze scientifiche sugli effetti degli interventi attuati dalla PIA nel fornire assistenza alle persone anziane in diversi contesti (ospedale , casa , ambulatoriale , residenziale)

2. Descrivere le funzioni e componenti di interventi sviluppati da PIA nei contesti sopra menzionati.

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3. Identificare interventi PIA per anziani in contesti diversi (assistenza a breve e lungo termine), con un linguaggio infermieristico standardizzato, negli studi inclusi nella revisione sistematica.

Disegno:

Questo studio è stato diviso in due parti : in primo luogo , una revisione sistematica , e il secondo , uno studio qualitativo con i metodi misti.

Materiali e metodi:

Revisione sistematica: Sono stati consultati Sedici banche dati elettroniche (1990-2010). Inoltre facciamo ricerche in Google accademico, documenti del Consiglio Internazionale degli Infermieri ei rapporti OCSE e la American Academy of Nurse Practitioners, così come ricerche secondarie dei riferimenti degli studi trovati. Sarà usato un modulo elettronico per l'introduzione dei risultati di base degli studi inclusi e valutati, in base all'applicazione verrà utilizzato RevMan 5.0.24. In parallelo, verrà creato una banca dati con informazioni dettagliate per ogni studio incluso, secondo i criteri del gruppo Cochrane BPCO.

Studio qualitativo: Gli interventi di infermieri di pratica avanzata, sono stati tradotti in interventi NIC e condotto un analisi dei contenuti da parte di esperti utilizzando il metodo Delphi in Infermieristica Interventi di classificazione.

Risultati:

Revisione sistematica: sono stati inclusi undici studi. Essi sono stati classificati in base al periodo osservazionale, anche la portata dei servizi PIA. In entrambi i casi, la cura globale, multicomponente e

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continuo di PIA, era comportato una riduzione di riammissioni, migliore cura di sé e della qualità della vita, così come aumentare la soddisfazione dei pazienti e dei loro assistenti.

Studio qualitativo : In totale sono stati estratti dagli studi inclusi, 73 diversi interventi codificati in Infermieristica Interventi di classificazione in ambiti di cura diversi, con una netta predominanza di interventi relativi con i domini " Comportamentale " e "Sistema Salute" che potrebbe essere spiegato con la necessità di migliorare la cura di sé e psicosociale funzionamento di questi pazienti per preservare la loro qualità di vita.

Conclusione: La PIA sembra essere cruciale per migliorare lo stato di salute degli anziani, la cui caratteristica principale è quella di affrontare le malattie croniche, quasi tutte le impostazioni di cura. Inoltre, anche se gli interventi di PIA possono essere considerati complessi, l' uso delle lingue di enfermieri standardizzati, come gli Interventi Infermieristica Classificazione, facilita l'identificazione, la descrizione, la distribuzione e l'analisi in diversi contesti sanitari e il loro possibile uso per delineare o ristrutturare i vari servizi di assistenza sanitaria.

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iii. SPANISH

Introducción:

La Asociación de Infirmières et Infirmiers du Canada (AIIC) (2008), define Enfermería de Práctica Avanzada (EPA), como "un nivel avanzado de la práctica de enfermería que maximiza el uso de los conocimientos especializados y los conocimientos de enfermería con el fin de responder a los clientes las necesidades en la esfera de la salud". Los primeros programas de EPA se desarrollaron en la década de 1960 con dos fines: para cubrir las brechas tanto en los servicios tradicionalmente dirigidos por los médicos, con el fin de mejorar el acceso a la atención sanitaria, en particular en los servicios y contextos de atención en servicios insuficientemente atendidos (Delamaire y Lafortune 2010), y también como consecuencia de la reducción de horas a nivel internacional de los médicos y residentes de medicina (Dowling et al 2013; Olson y Chioffi 2005; Por 2008). A pesar de ello, siguen existiendo incertidumbres en la práctica avanzada debido a las diferencias entre contextos de salud y políticas sanitarias (Gardner et al. 2007). En los últimos años, se ha introducido el concepto de "enfermedad crónica compleja", que está vinculado al concepto de envejecimiento y fragilidad, y determinado por la presencia de múltiples enfermedades crónicas en condiciones complejas. Las mayoría de las características diferenciales de este grupo de personas son la presencia de varias enfermedades crónicas simultáneamente, múltiples ingresos en servicios de urgencias en el

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mismo año, la presencia de ciertas enfermedades como la insuficiencia cardíaca o la EPOC, la polimedicación y la reducción de la autonomía personal. Además, hay factores adicionales, tales como la edad avanzada, vivir solos o no tener apoyo familiar suficiente y tener riesgo de caídas, entre otros (Contel et al. 2012). En este sentido, la EPA está en una posición ideal para cubrir las necesidades de este grupo de población. La gestión de casos y la telemedicina podrían ser esenciales para el éxito en el desarrollo de planes de atención individualizados para mejorar el estado de salud de los pacientes crónicos (Contel et al 2012; Carroll et al 2007; Clark et al 2010).

Por otra parte, se han desarrollado varios modelos de atención EPA en una amplia variedad de contextos de salud en la población de edad avanzada (Oeseburg et al 2009; Low et al 2011), con resultados notables en términos de eficacia. Ejemplos de esos modelos de intervenciones de EPA podrían ser los de cuidados transicionales (Brand et al. 2004), la gestión de casos (Leung et al 2004), enfermedades del corazón (Blaha et al 2000; Duffy et al 2010), demencias (Callahan et al. 2006), ancianos con un nivel bajo de ingresos y problemas agudos de salud (Counsell et al. 2007), o en la comunidad , dando apoyo a las familias y los pacientes en el manejo de recursos (Thompson et al . 2008).

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Sin embargo, hay un déficit en cuanto a marcos conceptuales para caracterizar y describir la gama de intervenciones y servicios por parte de EPA en la población mayor (Morales Asencio 2010). En este sentido, la disponibilidad de un lenguaje estandarizado para describir las intervenciones de enfermería (Clasificación de Intervenciones de Enfermería, NIC) (Bulecheck GM et al, 2008; Thoroddsen, 2005) podría ser un recurso adicional para clasificar los componentes de los diferentes modelos de EPA y, del mismo modo, podría facilitar la descripción de la EPA en un lenguaje universal, disponible en la gran mayoría de los sistemas de registros de salud en todo el mundo.

Objetivos:

Los objetivos de esta tesis son:

1. Identificar, evaluar y resumir la evidencia científica disponible sobre el efecto de las intervenciones implementadas por las EPA en la prestación de cuidados a las personas mayores en diferentes entornos (hospital, domiciliario, ambulatorio, residencial).
2. Describir las funciones y componentes de las intervenciones desarrolladas por EPA en los contextos mencionados anteriormente.
3. Identificar las intervenciones de EPA a las personas mayores en diferentes contextos (cuidados a corto y largo plazo) con un lenguaje estandarizado enfermero, en los estudios incluidos en la revisión sistemática.

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Diseño:

El presente estudio se dividió en dos partes: en primer lugar, una revisión sistemática, y en segundo lugar, un estudio cualitativo con métodos mixtos.

Material y método:

Revisión sistemática:

Fueron consultadas dieciséis bases de datos electrónicas (1990-2010). También se realizaron búsquedas en Google Académico, documentos del Consejo Internacional de Enfermería e informes de la OCDE y la American Academy of Nurse Practitioners, así como búsquedas secundarias sobre las referencias de los estudios encontrados. Se empleó un formulario electrónico para la introducción de los resultados básicos de los estudios incluidos y evaluados, sustentado por la aplicación RevMan 5.0.24. Paralelamente, se creó una base de datos con información detallada de cada estudio incluido, mediante el uso de los criterios del grupo EPOC de la Cochrane.

Criterios para la selección de los estudios

Tipos de estudios: Ensayos controlados aleatorizados, estudios cuasi- experimental, y series de tiempo interrumpido que incluyeran un análisis longitudinal de los resultados con un mínimo de tres

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observaciones antes y después de la intervención. Los estudios anteriores a 1990 fueron excluidos.

Tipos de participantes: Los profesionales de la salud incluidos eran principalmente EPAs, aunque también fueron incluidos médicos y enfermeras, debido a que en la mayoría de los estudios las intervenciones se desarrollaron en el seno de un equipo multidisciplinar. Se aplicaron los criterios de Reimanis et al. (2001) y de Manley (1997) para reconocer el papel de las EPAs en los artículos analizados. Otros profesionales fueron trabajadores sociales, agentes comunitarios, fisioterapeutas, rehabilitadores, terapeutas ocupacionales, podólogos y/o nutricionistas. Dichos profesionales de la salud únicamente fueron incluidos si estaban asociados con la intervención de la EPA.

Tipos de pacientes: Fueron incluidos los estudios cuyos sujetos principales eran ancianos mayores de 65 años que estaban recibiendo atención hospitalaria, atención ambulatoria, o atención residencial por enfermedades crónicas o agudas. Se excluyó a los pacientes ingresados en Unidades Agudas Psiquiátricas, Unidades de Salud Mental de Segundo Nivel y Unidades de Salud Mental Comunitaria.

Tipos de intervenciones: Cualquier tipo de servicio en el que intervengan enfermeras con roles de práctica avanzada (cartera de

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pacientes propia, habilidades avanzadas de valoración de salud, de razonamiento diagnóstico, prescripción, solicitud de pruebas, derivación, consultoría para otros profesionales, gestión de casos, etc.).

Tipos de medidas de resultado

A. Resultados de los pacientes: Morbilidad, Mortalidad, Funcionalidad física, Funcionalidad cognitiva, Calidad de vida, Satisfacción, Apoyo social y/o familiar, y/o Eventos adversos que comprometan la seguridad de la persona (medicación, caídas, fallo en el rescate, etc.).

B. Resultados del proceso de atención

I. Utilización de recursos por parte de los profesionales:

- Pruebas y análisis
- Derivaciones
- Prescripciones
- Estancias

II. Utilización de recursos por los pacientes:

- Reingresos
- Frecuentación de consultas
- Nº de visitas en el domicilio

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C. Resultados económicos: Costes de la atención

Métodos de revisión:

En la primera etapa de revisión de los resultados se realizó la evaluación detallada de los títulos y resúmenes para determinar si cada artículo reúne los requisitos predeterminados para ser escogido Si este paso ofrecía dudas, se evaluaba el texto completo del artículo con el objetivo de valorar si reunía o no los criterios de inclusión. Para garantizar la calidad del proceso, se procederá a doble evaluación de los registros obtenidos por parte de dos revisores de forma ciega.

Tras este primer proceso, todas las referencias identificadas como potencialmente elegibles, fueron evaluadas con el objetivo de determinar si cumplían los criterios de inclusión para la revisión. Este proceso, nuevamente fue llevado a cabo en paralelo por dos revisores de forma ciega. Las discrepancias que pudieran surgir en el proceso fueron resueltas mediante discusión entre los dos evaluadores y la intervención de un tercer evaluador ajeno al proceso. Adicionalmente, se realizó una prueba piloto con los revisores para la aplicación de los criterios de inclusión, sobre una muestra piloto de 15 artículos previamente elegida.

Extracción de datos

Se empleó un formulario electrónico para la introducción de los resultados básicos de los estudios incluidos y evaluados, sustentado por la aplicación RevMan 5.0.24, que incluye los siguientes ítems:

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métodos, intervenciones, participantes, resultados considerados y anotaciones del revisor. Previamente, fueron consensuados posibles códigos para describir rutinas de resultados habituales en estos estudios. Cuando los estudios originales no aporten con claridad los datos necesarios para la extracción, se contactó directamente con los autores para aclarar dudas u obtenerlos directamente.

Paralelamente, se creó una base de datos más exhaustiva con información detallada de cada estudio incluido, con la información estructurada con arreglo a una adaptación de los criterios del grupo EPOC de la Cochrane (Grimshaw *et al.* 2001).

Síntesis de datos:

La realización de metaanálsis fue considerada. Sin embargo, dicha consideración fue descartada debido a la heterogeneidad de los estudios incluidos en términos de seguimiento y resultados. Como consecuencia, se realizó una revisión integrativa de la literatura.

Estudio cualitativo:

Las intervenciones realizadas por las enfermeras de práctica avanzada fueron traducidas a intervenciones NIC y se llevó a cabo un análisis de contenido mediante método Delphi por expertos en la Clasificación de Intervenciones de Enfermería.

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Diseño

El diseño de esta fase fue de tipo cualitativo con métodos mixtos (Barnett-PAGE & Thomas 2009): en primer lugar, se llevó a cabo un análisis de contenido, seguido de una técnica Delphi. Como orientación metodológica, se consideraron los criterios de Hasson (Hasson et al. 2000). La fuente de datos fueron los 11 estudios seleccionados pertenecientes a la revisión sistemática y 24 estudios adicionales que, pese a que no cumplían los criterios de inclusión de la revisión sistemática en cuanto a la metodología, esto no afectaría a las intervenciones realizadas por las enfermeras de práctica avanzada.

Recolección de datos

La fase de análisis de contenido se llevó a cabo mediante la incorporación en PDF (formato de documento portátil) del texto de los artículos seleccionados en el software de análisis de datos cualitativos Atlas.ti 6.2 (ATLAS.ti Scientific Software Development GmbH), como documentos primarios de una unidad hermenéutica. La lista de intervenciones de la NIC en el idioma nativo y contextos de atención (residencial, hospital, hogar y cuidado de transición) se utilizaron como códigos (codificación deductiva). Los estudios seleccionados constituyen la principal unidad de análisis. Los resultados de la codificación arrojaron una lista con las intervenciones aisladas en cada estudio vinculados a sus respectivas citas y clasificados según el

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tipo de contexto de la atención de la salud. Este proceso se inició en 2012 y terminó en los primeros meses de 2013.

Análisis de Datos

Para el análisis de contenido, las unidades de significado fueron concebidos como aquellas combinaciones de palabras, oraciones, párrafos o frases relacionadas con un mismo significado central (Graneheim y Lundman 2004), en este caso, una intervención proporcionada por una EPA. El análisis del texto se desarrolló tratando de interpretar el significado subyacente de las intervenciones descritas por los autores originales (contenido latente) (Kondracki et al. 2002). Dos revisores independientes codificaron las ditas de los documentos primarios dividiendo el texto en unidades de significado representadas por las intervenciones NIC. Se han usado los criterios de Berelson (1984) para formular inferencias e identificar sistemáticamente las características específicas de las intervenciones dentro del texto. Fueron generadas categorías se generaron intervenciones de agrupación por los dominios de NIC.

Los resultados del análisis de contenido fueron sometidos a análisis de consenso de expertos, con la finalidad de fortalecer la credibilidad del proceso de codificación. Dicho consenso se llevó a cabo mediante una técnica Delphi.

Los cinco expertos externos fueron seleccionados entre enfermeros/enfermeras con más de 10 años de práctica clínica en

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funciones avanzadas, tales como la gestión de casos, y un alto conocimiento y experiencia en el uso de las taxonomías de enfermería, que aceptaron participar y mantenerse involucrados/as hasta que el proceso fue completado. Se les pidió que indicaran la relevancia de las asociaciones entre los documentos y las intervenciones NIC previamente establecidas por el equipo de investigación, utilizando una escala Likert con un rango de 1-9, a través de una plataforma web.

Los rangos de los valores de las respuestas se agruparon en tres grupos: 1 a 3, 4 a 6 y 7 a 9, en orden ascendente de pertinencia para la codificación propuesta. El nivel de acuerdo se midió por percentiles y rango intercuartil: Acuerdo (puntuaciones por encima del tercer percentil), acuerdo parcial (puntuaciones entre el primero y el tercer percentil) y desacuerdo (puntuaciones en el primer percentil). En cuanto al rango intercuartílico, si era menor que 2, se consideró que el grado de homogeneidad entre era alto; entre 2 y 3, aceptable; y amplia disparidad si el valor obtenido era superior a 3. Fueron empleadas dos rondas para obtener consenso. La fase de Delphi fue apoyado con la plataforma on-line LimeSurvey (Carsten Schmitz & Jason Cleeland) y el análisis de los datos se llevó a cabo con el programa SPSS 20 (Java 2011).

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Consideraciones Éticas:

El presente estudio se realizó con datos secundarios de estudios primarios y, por tanto, no fue necesaria ninguna forma de consentimiento.

Tanto en la revisión sistemática como en el estudio cualitativo, los revisores hicieron una declaración explícita de no poseer conflicto de interés con ninguno de los estudios incluidos o excluidos de la revisión.

La aprobación del Comité de Ética e Investigación del Distrito de Atención Primaria de Salud de Málaga se obtuvo en julio de 2010 y la financiación fue obtenida en marzo de 2011.

Resultados:

Revisión sistemática:

La búsqueda produjo 2.222 estudios, incluyendo los duplicados. Después de la eliminación de duplicados y la revisión por pares, se eliminaron 1.688 estudios, debido a los criterios de exclusión (Adelman et al. 1992), idioma (Wakayama et al. 2008), y la fecha de publicación (Cockcroft et al. 1987). Finalmente, once estudios cumplieron los criterios de inclusión y de calidad. Fueron publicados entre 1999 y 2010, y los países donde se llevaron a cabo fueron EE.UU. (Callahan et al 2006;.. Mion et al 2003;. Naylor et al 2004;. Naylor et al 1999), Nueva Zelanda (Elley et al ... 2008), Reino Unido

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(P. Griffiths et al 2001), Dinamarca (Hordam et al 2010), China (Huang y Liang 2005), Suecia (Strömberg et al 2003) y Suiza (Stuck et al 2000; Stuck et al. 1995). Todos ellos fueron ECA y se llevaron a cabo por equipos de atención multidisciplinarios, a excepción de uno (Hordam et al. 2010). La edad de los pacientes osciló entre 65 y 86 años. Los problemas de salud reportados con mayor frecuencia fueron: demencia, fractura de cadera, enfermedad cardiaca crónica y personas con multi-morbilidad.

Los estudios se clasificaron de acuerdo a los siguientes criterios: composición del equipo de atención, los contextos donde la intervención fue desarrollada y el problema de salud.

Los principales resultados analizados fueron: admisión en servicios de emergencias/críticos, tasa de caídas, calidad de vida, ingreso hospitalario, mortalidad e institucionalización.

Papel de las enfermeras de práctica avanzada en los estudios

Las características comunes encontradas en cuanto al rol de las EPAs podrían resumirse en: un nivel de educación superior a otras enfermeras, como la educación de postgrado (master, especialista o doctorado), y una práctica basada en la evidencia. Las principales intervenciones extraídas fueron las relacionadas con la educación y la formación de los pacientes; relación con las familias; evaluación integral de los niveles físico, social y psicológico; gestión de la atención interdisciplinaria durante un período de tiempo definido;

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intervenciones clínicas directas y asesoramiento al equipo multidisciplinar.

Además, las EPAs se encontraban insertas en equipos multidisciplinares, teniendo un papel activo como consultore/as y colaborando con otros profesionales de la salud para desarrollar planes de cuidados individualizados basados en la evidencia después de una evaluación inicial.

Resultados por contextos de prestación de servicios

Contextos de atención a largo plazo:

Ocho estudios se incluyeron en esta categoría, tres de atención domiciliaria y cinco de cuidados transicionales. Las principales diferencias entre los contextos fueron el punto inicial de la intervención (hospital en el caso de atención transicional y el hogar del paciente en la atención domiciliaria) y el tipo de seguimiento, sobre todo con las visitas en atención domiciliaria, y con Tecnologías de Información y Comunicación (TIC) en cuidados transicionales.

A. Cuidados domiciliarios:

Las intervenciones en todos los estudios incluidos en este tipo de atención seguían el mismo esquema: en primer lugar, la enfermera realizaba una valoración geriátrica compleja, en la que fueron evaluados los estados físico y cognoscitivo de los pacientes. Después de ser identificadas las necesidades y los riesgos

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potenciales, la enfermera, dentro de un equipo multidisciplinar, desarrollaba un plan de atención individualizada que incluía, si era necesario, derivaciones a otros profesionales de la salud. Las enfermeras también seguían a los pacientes periódicamente por teléfono y, en caso de ser necesario, gestionaban de la utilización de los recursos económicos o de salud adicionales.

A.1 Enfoque de cuidados a pacientes con enfermedades concretas:

Este grupo incluye a los pacientes que han sido dados de alta del hospital debido a un problema de salud específico. En los dos estudios incluidos en esta categoría, las EPAs llevaron a cabo intervenciones específicas dirigidas a esas enfermedades. Sólo se encontró un estudio, en el que las intervenciones se centraron en la prevención de caídas. Sin embargo, dichas intervenciones no redujeron la tasa de caídas.

A.2 Enfoque de cuidados a pacientes con multimorbilidad:

Los dos artículos incluidos en esta categoría siguen esquemas similares. Los pacientes fueron sometidos a una evaluación exhaustiva. Con los datos obtenidos, y en colaboración con el geriatra, la EPA desarrolló un plan de atención individualizado, basado en las necesidades del paciente.

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Ambos autores encontraron que un programa de valoración geriátrica integral en el hogar, con especial importancia a la educación para la salud, dando a los pacientes y cuidadores habilidades para promover el auto-cuidado, siempre con el apoyo de la EPA. Dicho enfoque implicó una mejora significativa en la funcionalidad, la institucionalización y supuso una reducción en la mortalidad.

B. Atención transicional

Los puntos clave de este tipo de atención de la salud son la planificación de cuidados al alta y la continuidad de cuidados, lo que permite a los pacientes y enfermeras desarrollar una relación basada en confianza. Es más cómodo para los pacientes que no pueden o tienen dificultades para moverse de su casa.

La EPA actuó como enlace entre los pacientes, los recursos ofrecidos en la comunidad y el sistema sanitario. La planificación de cuidados al alta es un proceso que comprende desde la evaluación de los pacientes mientras se encuentran hospitalizados y la planificación del alta, que incluía una evaluación psicosocial, asesoramiento, educación y detección de problemas de salud, coordinación de un equipo interdisciplinario de proveedores, activación de los servicios de la comunidad, seguimiento y evaluación (Huang y Acton 2004). Este modelo de atención ha mostrado una reducción en los costes de salud debido a una reducción de los

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reingresos (Caplan et al 2004;. Huang y Acton 2004;. Naylor et al 2004).

En todos los artículos incluidos, excepto en Naylor et al. (2004), la EPA realizó llamadas de teléfono para ponerse en contacto con los pacientes durante el período de seguimiento. Estos contactos tuvieron dos objetivos: consulta, en el caso de que los pacientes o los cuidadores necesitaran cualquier tipo de ayuda relacionada con su estado de salud; y seguimiento, para asegurarse de que el programa se siguió correctamente por los pacientes y los cuidadores.

B.1 Enfoque de cuidados a pacientes con enfermedades concretas:

Este enfoque fue dirigido a la reducción de la readmisión en las unidades de cuidados agudos debido a una enfermedad específica. Debido a que la enfermera debe tener formación y un conocimiento experto sobre el problema de salud para atender las necesidades de los pacientes, y también para evitar situaciones adversas. En Hordam et al. (2010), las EPAs llevaron a cabo intervenciones para reducir las caídas y mejorar la calidad de vida. Por otro lado, en Naylor et al. (2004) fueron evaluados los reingresos en el hospital y en servicios de agudos. Las intervenciones de EPA no sólo se centraron en la educación, sino también en el seguimiento del estado de salud de los pacientes y en mejorar la función cardíaca, lo que redujo las rehospitalizaciones. Del mismo modo, es importante destacar que la

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satisfacción del paciente con la atención recibida también mejoró. Los resultados mostraron mejoras en general: a excepción de la tasa de caídas, todos los resultados fueron significativamente mejores en los pacientes del grupo de intervención.

B.2 Enfoque de cuidados a pacientes con multimorbilidad:

Los resultados medidos en los dos artículos incluidos en esta categoría son: mejoras en el estado funcional, readmisión hospitalaria y mortalidad. Las intervenciones de EPA se centraron en la educación sanitaria del paciente, el apoyo al cuidador, el desarrollo de programas de promoción de la salud y gestión de casos.

En Mion et al. (2003) se encontraron diferencias significativas en la satisfacción del paciente y en las tasas de ingreso a residencias de ancianos, sin diferencias en los costes de salud, mientras que en Naylor et al. (1999), las intervenciones de EPA redujeron los reingresos hospitalarios, alargaron el tiempo hasta la primera readmisión, y la disminuyeron los costes de atención ($1 238 928 CG vs $642 595 IG [*P*=.001]).

Contextos de atención a corto plazo

c. Atención hospitalaria

Las actividades que la EPA desarrolló en este entorno fueron la evaluación integral y el examen físico del paciente en el momento de la admisión hospitalaria, contrastando los datos obtenidos con su

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historia clínica; la coordinación e implementación de los cuidados al realizar e interpretar el diagnóstico; y, por último, evaluación de las intervenciones. En consecuencia, la EPA actúa como líder y referente para el resto del personal sanitario.

En el estudio de Griffiths y col. (2001), los pacientes con diferentes condiciones fueron ingresados en una unidad de hospitalización gestionada por enfermeras. Las intervenciones desarrolladas por las EPAs fueron la gestión de casos, la evaluación de la salud y la planificación de cuidados al alta alta. Las medidas de resultado fueron las relacionadas con la calidad de vida de los pacientes. No se encontraron resultados negativos.

D. Atención ambulatoria

Los dos estudios incluidos en este contexto reúnen las características del enfoque "enfermedad específica". En el caso de Callahan et al. (2006), los pacientes sufrían de demencia. Fueron seguidos en una clínica de atención primaria por la EPA. La medida de resultado principal fue la readmisión en servicios de agudos. Las intervenciones realizadas por las EPAs en este contexto se centraron no sólo la educación y la atención directa de los pacientes, sino también en el bienestar de los cuidadores. Las intervenciones mostraron mejorías conductuales en los pacientes, y también revelaron menor estrés en los pacientes y los cuidadores debido a las

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manifestaciones conductuales de la demencia. En Strömberg et al. (2003), los pacientes sufrían de insuficiencia cardíaca crónica (ICC). En consecuencia, las intervenciones de la EPA fueron dirigidas a la prevención de eventos cardíacos. Se obtuvieron resultados positivos en términos de mortalidad, reingresos y autocuidado.

Estudio cualitativo:

Fase Delphi:

Se invitó a los cinco panelistas expertos para responder la primera ronda Delphi, que fue finalizada en ocho semanas. Para la segunda ronda Delphi, los mismos 5 panelistas fueron invitados, y todos ellos aceptaron.

En la primera ronda, se analizaron 468 citas. Los panelistas informaron 15 citas duplicadas, y discrepancias en 100 citas. Fue necesaria una segunda ronda para evaluar esas citas con acuerdo parcial. Finalmente, después de la eliminación de duplicados, se obtuvo un acuerdo pleno entre las 453 citas y sus intervenciones de la NIC correspondientes.

Análisis cualitativo:

En total fueron extraídas, de los estudios incluidos, 73 intervenciones diferentes codificadas en la Clasificación de

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Intervenciones de Enfermería en los diferentes contextos de atención, con un claro predominio de las intervenciones relacionadas con los dominios de "Conductual" (27.40%) y "Sistema Sanitario" (24.66%), lo que podría explicarse debido a la necesidad de mejorar el funcionamiento psicosocial y autocuidado de estos pacientes para preservar su calidad de vida.

Tanto atención domiciliaria (60 intervenciones, 12,57%), como atención transicional (51 intervenciones, 29,14%), fueron los contextos de atención donde se extrajeron más intervenciones NIC. Atención residencial, ambulatoria y hospitalaria no superaron el 20% de las intervenciones totales detectadas.

A. Atención domiciliaria:

60 intervenciones, repetidas 167 veces, fueron extraídas de los 16 estudios incluidos en este contexto de atención. La densidad de las intervenciones varió desde 1 hasta 10. Los códigos NICs más repetidos en este contexto fueron: Fomento del ejercicio, Enseñanza: actividad/ejercicio prescrito, Control de casos específicos, Reunión multidisciplinar sobre cuidados, Intercambio de información de cuidados sanitarios, Seguimiento telefónico (7 repeticiones), Documentación y Desarrollo de un programa (8 repeticiones), Educación sanitaria y Análisis de la situación sanitaria (10 repeticiones).

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B. Atención transicional:

51 intervenciones fueron extraídas, repetidas 160 veces. La densidad de las intervenciones varió de 1 a 9, lo que implica que no hubo intervenciones comunes en los 12 estudios clasificados dentro de este tipo de atención. Las intervenciones más repetidas en este contexto fueron: Apoyo al cuidador principal, Documentación, Consulta por teléfono, Seguimiento telefónico (6 repeticiones), Derivación, Enseñanza proceso enfermedad (7 repeticiones), Educación sanitaria (8 repeticiones), Análisis de la situación sanitaria (8 repeticiones) y Desarrollo de un programa (9 repeticiones).

C. Atención residencial:

Se obtuvieron sólo tres estudios, con un total de 22 intervenciones repetidas 28 veces. En este caso, las intervenciones comunes encontradas fueron: Apoyo emocional, Educación sanitaria, Documentación, Control de casos específicos, Intercambio de información de cuidados sanitarios y Derivación.

D. Atención ambulatoria:

Se obtuvieron sólo dos estudios en este contexto, con un total de 11 intervenciones repetidas 13 veces. Como en el caso anterior, se encontraron intervenciones comunes: Asesoramiento, Apoyo al cuidador principal y Control de casos específicos.

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E. Atención hospitalaria:

Se incluyeron tres estudios en este contexto, con un total de 28 intervenciones, repetidas 38 veces. Las intervenciones comunes fueron: Análisis de la situación sanitaria e Intercambio de información de cuidados sanitarios.

Conclusiones:

1. La Enfermería de Práctica Avanzada parece ser un elemento clave para mejorar el estado de salud de las personas de edad avanzada, cuya característica principal es la de lidiar con enfermedades crónicas, en casi todos los contextos de atención.

2. Se han encontrado dos maneras de implementar la Enfermería de Práctica Avanzada en diferentes contextos de atención: por un lado, un modelo de especialización centrado en los problemas de salud concretos que utilizan los mejores conocimientos para el control de riesgos; por otra parte, un modelo generalista centrado en mejorar la autonomía en pacientes con múltiples condiciones.

3. La atención de Enfermería de Práctica Avanzada integral, multi-componente y continua a las personas mayores,

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conduce a una reducción a corto y largo plazo de admisión, a mejoras en el auto-cuidado y la calidad general de la vida de dichos pacientes, y al incremento en la satisfacción con la atención sanitaria y los cuidados de los pacientes y sus cuidadores.

4. Las intervenciones de Enfermería de Práctica Avanzada pueden ser considerados como complejas, pero el uso de lenguajes enfermeros estandarizados como la Clasificación de Intervenciones de Enfermería, pueden ser mejor descritos, alcanzados y analizados en los diferentes contextos de atención.

5. Los elementos centrales de los roles de Enfermería de Práctica Avanzada pueden ser identificados a través de la Clasificación de Intervenciones de Enfermería y que pueden ser utilizados para la delineación o remodelación de los servicios de salud.

6. Futuras investigaciones que analicen la replicación de las intervenciones NIC utilizadas en el diseño de los servicios de Enfermería de Práctica Avanzada para las personas mayores en los diferentes contextos de la atención, son necesarios para confirmar estos resultados.

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7. Se necesitan estudios adicionales para confirmar que los programas de Enfermería de Práctica Avanzada disminuye los costes de salud, así como para comparar su eficacia tanto en el modelo generalista como en el específico y analizar la pertinencia de un modelo mixto.

8. Investigar sobre las ventajas de la Enfermería de Práctica Avanzada para el incremento de la satisfacción del paciente, sustentará la idea de que, dar a las enfermeras la oportunidad de obtener un nivel de excelencia, combinando la experiencia en el cuidado con la expertía académica, de que tengan un papel destacado en el sistema sanitario, es fundamental.

Limitaciones

Aunque nuestra intención era describir los modelos de atención en múltiples entornos de salud, basados en las intervenciones desarrolladas por Enfermeras de Práctica Avanzada en diferentes ámbitos de la salud, debido a la reducida cantidad de artículos en la atención hospitalaria y ambulatoria (uno y dos en cada contexto, respectivamente), sólo era posible desarrollar en profundidad los modelos de atención de Enfermería de Práctica Avanzada en los

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cuidados domiciliarios y tradicionales. Sin embargo, esto puede explicarse por los criterios rigurosos empleados en términos de evaluación de la calidad de los estudios incluidos en la revisión. Como resultado, los once estudios pueden ser considerados como de "bajo riesgo de sesgo". La heterogeneidad de los estudios incluidos impidió la realización de un metanálisis.

Los detalles de las intervenciones de Enfermería de Práctica Avanzada están generalmente mal descritos y, en consecuencia, las comparaciones internacionales con frecuencia enfrentan dificultades debido a la falta de conceptualización e interpretación de las intervenciones desarrolladas. En este sentido, la disponibilidad de un lenguaje estandarizado para describir las intervenciones de enfermería (Bulecheck GM et al. 2008) podría proporcionar un recurso adicional para la clasificación de los componentes de los diferentes modelos y facilitaría la descripción de APN en un lenguaje universal.

En cuanto a la investigación cualitativa, las fuentes de datos fueron los estudios incluidos en la revisión sistemática, y otros que no se incluyeron en la misma debido a su baja calidad metodológica. Sin embargo, esos estudios, a pesar de no tener suficiente calidad metodológica, contienen descripciones pertinentes de las intervenciones desarrolladas por Enfermeras de Práctica Avanzada. Una vez más, como en la fase cuantitativa, encontramos una cantidad inferior de artículos en la atención residencial, ambulatoria y

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hospitalaria, que en domiciliaria y transicional. La razón de las diferencias en la cantidad de artículos entre los contextos podría explicarse debido a las dificultades para evaluar si los resultados obtenidos en los pacientes en atención hospitalaria, residencial o ambulatoria fueron atribuibles a las intervenciones de los Enfermeras de Práctica Avanzada o a intervenciones de otros profesionales de la salud. Decidimos incluir artículos con atención multidisciplinaria, porque consideramos que estar insertada en un equipo multidisciplinar es uno de los principales requisitos que debe tener una Enfermera de Práctica Avanzada para desarrollar plenamente este papel. Esto se apoya en Newhouse et al., (2011), cuyos autores concluyeron que un enfoque de colaboración entre Enfermeras de Práctica Avanzada con médicos y otros proveedores de salud, conduciría a una mayor calidad de la atención y a la mejora de los sistemas de atención de salud. Sin embargo, la representatividad de los diferentes contextos de la atención para personas mayores fue suficientemente garantizada.

Aunque se realizó una técnica de consenso para mejorar la credibilidad de los resultados, algunos autores han mostrado su preocupación sobre la triangulación de los códigos durante el análisis de contenido (Sandelowski, 1998). Consideramos que cuando el análisis se centra en el contenido latente, este problema adquiere mayor relevancia, ya que las interpretaciones subjetivas basadas en el esquema mental de los codificadores necesita ser compartido entre

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todos los sujetos, de modo que también sea probable que el mismo significado pueda llegar a los lectores de los resultados (Potter y Levine-Donnerstein, 1999).

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III. INTRODUCTION

iv. Ageing

The older population is increasing throughout the world. The total European population has increased in, approximately, twelve million people in the last decade. Today, this population has reached the total amount of 505,701,172 (Table 1). Presently, the 20 per cent of this population are people over than 65 years of age (Graphic 1).

In Spain, people over 65 years old represent almost the 18 per cent of the total population (Graphic 1). Moreover, accordingly to the Spanish Statistic National Institute (INE), previsions seem to reflect that the population over 65 years old is going to be increased exponentially while people grow older, i.e., people aged 65 years will grow from 471.103 to 487.565 between 2012 until 2052, whereas those aged 90 years are expected to grow from 88.373 to 317.240 in the same period of time (Table 2). Thus, although rate of death is projected to be higher in the following years for people over 85, this rate will diminish in people ranged from 65 to 85 (Table 3).

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Table 1: UE Population

Population on 1 January

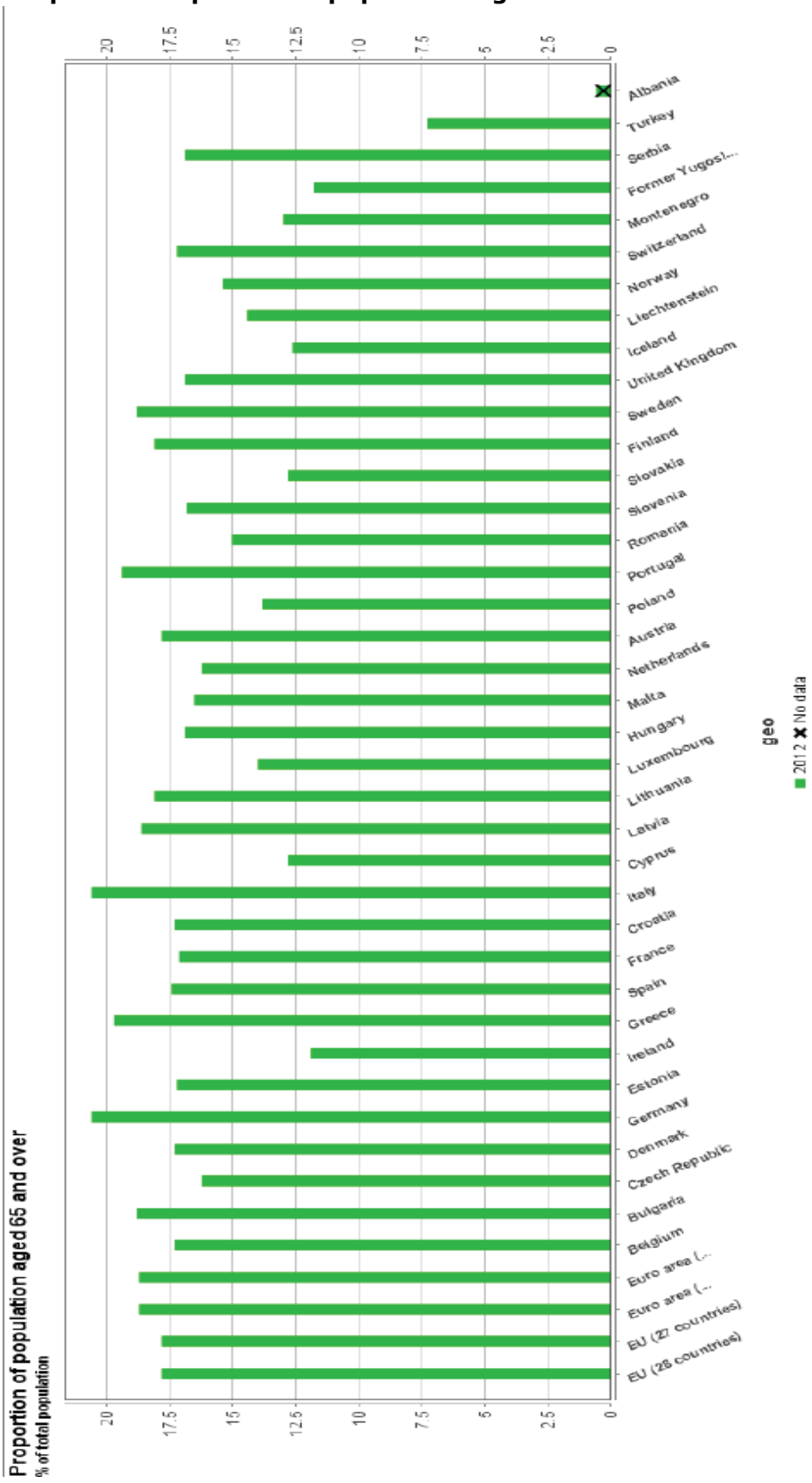
Persons

geo \ time	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
EU (28 countries)	480058316 (p)	480995098 (p)	483093846 (p)	485357225 (p)	487318778 (p)	489316631 (bp)	501398097 (p)	503183180 (p)	504557513 (p)	506274995 (bp)	504830940 (bp)	505701172 (p)
EU (27 countries)	484752822 (p)	486689714 (p)	488788121 (p)	491046364 (p)	493006291 (p)	495003101 (bp)	497086130 (p)	498873384 (p)	500254666 (p)	501985138 (bp)	500354956 (bp)	501439032 (p)
Euro area (17 countries)	317117373 (p)	319108246 (p)	321120491 (p)	323222931 (p)	324986031 (p)	326761612 (p)	328793424 (p)	330216510 (p)	331246379 (p)	332288406 (bp)	330348791 (bp)	331125862 (p)
Euro area (18 countries)	315747036 (p)	317741568 (p)	319762040 (p)	321869077 (p)	323811423 (p)	325418151 (p)	327452225 (p)	328877181 (p)	329908713 (p)	330952299 (bp)	329015003 (bp)	329801048 (p)
Belgium	10309725	10355844	10396421	10445852	10511382	10584534	10666866	10753080	10839905	11000638 (b)	11094850	11161642
Bulgaria	7891095	7845841	7801273	7761049	7718750	7572673 (b)	7518002	7467119	7421766	7369431	7327224	7284552
Czech Republic	10201182	10192649	10195347	10198855	10223577	10254233	10343422	10425783	10462088	10486731	10505445	10516125
Denmark	5368854	5383507	5397640	5411405	5427459	5447084	5475791	5511451	5534738	5560628	5580516	5602628
Germany	82440309	82536680	82531671	82500849	82437995	82314906	82217837	82002356	81802257	81751602	80327900 (bp)	80523746 (p)
Estonia	1370337	1364878	1358451	1353854	1348608	1343461	1341199	1339329	1337666	1336107	1333788	1324814
Ireland	3890702	3964191	4028851	4111672	4208156	4340118	4457765	4450030	4549428	4570881	4582707	4591087
Greece	10968542	10998903	11037745	11073713	11112113	11143780	11182224	11190654	11183516	11123392	11123034	11062508
Spain	41035278	41827838	42547451	43296338	44009971	44784866	45666939	46239273	46486619	46667174	46818219	46704308
France	61424036	61864088	62292241	62772870	63229635	63645065	64007193	64350226	64658856 (p)	64994907 (p)	65327724 (p)	65633194 (p)
Croatia	4305494	4305384	4305725	4310861	4312487	4313530	4311967	4309796	4302847	4289857	4275984	4262140
Italy	56993742 (p)	57321070 (p)	57888245 (p)	58462375 (p)	58751711 (p)	59131287 (p)	59619290 (p)	60045068 (p)	60340328 (p)	60626442 (p)	59394207 (b)	59685227 (p)
Cyprus	705539	713720	722693	733067	744013	757916	776333	796930	819140	839751	862011	865878
Latvia	2320958	2299390	2276520	2249724	2227874	2208840	2191810	2162834	2120504	2074605	2044813	2023825
Lithuania	3454937	3431497	3398929	3355220	3289935	3249983	3212605	3183856	3141976	3052588	3003641	2971905
Luxembourg	444050	448300	454960	461230	469086	476187	483799	493500	502066	511840	524853 (b)	537039
Hungary	10174853 (p)	10142362 (p)	10116742 (p)	10097549 (p)	10076581 (p)	10066158 (p)	10045401 (p)	10030975 (p)	10014324 (p)	9985722 (p)	9931925 (b)	9908798
Malta	394641	397296	399867	402668	404999	405616	407832	410926	414027	414989	417546	421364
Netherlands	16105285	16192572	16258032	16305526	16334210	16357992	16405399	16485787	16574989	16655799	16730348	16779575
Austria	8063640	8100273	8142573	8201359	8254298	8282984	8318592	8355260	8375290	8404252	8408121	8451860
Poland	38242197 (p)	38218531 (p)	38190608 (p)	38173835 (p)	38157055 (p)	38125479 (p)	38115641 (p)	38135876 (p)	38167329 (p)	38529866 (b)	38538447	38533299
Portugal	10394869	10444592	10473050	10494872	10511088	10532588	10553339	10563014	10573479	10572721	10542398	10487289
Romania	21833483	21627509	21521142	21382354	21257016	21130503	20635460	20440290	20294683	20199059	20095998	20020074
Slovenia	1994026	1995033	1996433	1997590	2003358	2010377	2010269 (b)	2032362	2046976	2050189	2055496	2058821
Slovakia	5378951	5374873	5371875	5372685	5372928	5373180	5376064	5382401	5390410	5392448	5404322	5410836
Finland	5194901	5206295	5219732	5236611	5255580	5276955	5300484	5326314	5351427	5375276	5401267	5426674
Sweden	8909128	8940788	8975670	9011392	9047752	9113257	9182927	9256347	9340682	9415570	9482855	9555893
United Kingdom	59239564	59501304	59793759	60182050	60620361	61073279	61571647	62042343	62510197	63022532	63495303	63896071
Iceland	286575	288471	290570	293577	299891	307672	315459	319368	317830	318452	319575	321857
Liechtenstein	33525	33863	34204	34600	34905	35168	35356	35589	35894	36149	36475	36838
Norway	4524066	4552252	4577457	4606363	4640219	4681134	4737171	4799252	4858199	4920305	4985870	5051275
Switzerland	7255653	7313853	7364148	7415102	7459128	7508739	7593494	7701856	7785806	7870134 (b)	7954662	8039060
Montenegro	617085	619300	621258	622978	623576	624896	627508	630142	618087 (b)	619872	621240	622777
Former Yugoslav Republic of Macedonia, the	2038651	2023654	2029892	2035196	2038514	2041941	2045177	2048619	2052722	2057284	2059794	2062294
Serbia	7502126	7490918	7470263	7456050	7425487	7397651	7365507	7334937	7306677	7251549 (b)	7216649	7181505
Turkey	68838069	69770026	70692009	71610009	72519974	69882256 (b)	70586256	71517100	72561312	73722988	74724269	75627384
Albania	3084148	3102781	3119548	3134975	3149143	3162825	3170050	3184701	:	2831741	:	:
Bosnia and Herzegovina	3813167 (e)	3830349 (e)	3837414 (e)	3842532 (e)	3842650	3844017	3843846	3843908	3844048	3843183	3839265 (p)	3835645 (p)
Kosovo (under United Nations Security Council Resolution 1244/99)	:	1985000	2016000	2041000	2100000	2126708	2153139	2180088	2208107 (p)	1794180 (b)	1798845	1815606

: = not available p = provisional b = break in time series e = estimated

Source of Data: Eurostat
Last update: 23.01.2014
Date of extraction: 03 Feb 2014 09:51:16 MET
Hyperlink to the table: http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&plugin=1&language=en&pcode=tps00001

Graphic 1: Proportion of population aged 65 and over



Source: Eurostat.
http://epp.eurostat.ec.europa.eu/tgm/graph.do?pcode=tps00028&language=en

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Table 2: Expected population in Spain

Age	2012	2022	2032	2042	2052
65	471.103	538.934	644.706	670.584	487.565
70	371.568	462.107	582.150	640.629	574.914
75	346.049	412.655	487.336	595.521	631.119
80	303.929	295.359	386.384	505.581	573.268
85	192.536	225.849	292.074	368.764	474.662
90	88.373	136.216	151.410	221.367	317.240
95	23.135	43.643	61.865	94.024	136.566
100 and older	8.143	15.888	31.327	42.894	75.494

Source: INE (Spanish Statistic National Institute

Table 3: Expected deaths in Spain

Age	2012	2022	2032	2042	2051
65	4.163	3.930	3.785	3.175	1.935
70	5.258	4.816	4.665	3.898	2.746
75	8.038	7.815	7.293	6.884	5.835
80	13.470	10.799	10.931	11.517	10.535
85	16.230	15.236	17.040	18.100	19.346
90	13.894	17.873	17.475	21.153	25.712
95	5.866	10.247	12.788	18.484	23.762
99	6.471	12.390	23.042	31.665	50.793

Source: INE (Spanish Statistic National Institute

Healthy life years since birth are 65.7 years, in case of females, and 64.7 in case of males (Eurostat). Life expectancy at birth is one of the highest in the EU, 81 years (Eurostat). That means that, in both cases, there will be 15 years in which Spanish population will be susceptible of suffering any disease related to their advanced age. In this sense, the death rate due to chronic diseases (malignant neoplasms, diabetes mellitus, ischemic heart diseases, cerebrovascular diseases, chronic lower respiratory diseases, and

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chronic liver diseases) is 92.4 per 100,000 habitants (Graphic 2) (Figure 1), being tumors, heart failure related diseases and Chronic Obstructive Pulmonary Disease the pathologies with higher rates of death due to chronic diseases (Table 5). It is important to highlight that this rate has decreased considerably since 1999, as could be seen in Graphic 2. In addition, according to the data extracted from a 2008 inquiry of the INE, there are 56,267 people between 65 and 79 years old dependent to develop Basic Activities of Daily Living (BADL), and 158,251 people over 80 years old.

As life expectancy continues growing, the definition of 'elderly' or 'aged' population has changed. In differs from an age criteria, being accepted for people over 50 until people over 80 years old, to a mere economic and political assumption, which chose retirement ages and the ages at which individuals become eligible for aged-related benefits as the eligible criteria to determine when a person becomes 'elderly' (Ward et al. 2011).

Non-communicable diseases (NCDs), mainly cardiovascular diseases, cancers, diabetes and chronic lung diseases are responsible of almost 67% of deaths of the world population. They are responsible of the 80% deaths in medium-low income countries. Low incomes and educational level, plus behavioural risk factors, seems to be the most important reasons for the prevalence of those diseases. Health promotion and prevention are keys in the reduction of this

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prevalence. The costs to health-care systems from NCDs are high and projected to increase (WHO- World Health Organization 2010).

Health problems in the elderly population are usually linked with chronic conditions, geriatric syndromes, and the so called 'geriatric impairments' in vision, mobility, cognition, and hearing. Geriatric syndromes are dementia, mainly because of Alzheimer disease, osteoporosis, and falls (Ward et al. 2011).Factors associated and implicated in the susceptibility of this population group are not clear, being suggested that, although genetics and heritability has been demonstrated to be a predisposing factor for neuro-degeneration, osteopenia and cardiovascular conditions, there are some epigenetics or environmental issues, both internal, as DNA methylation, and external, as diet and exercise and smoking habits (Steves et al. 2012).

Furthermore, the concept of frailty is emerging in researching as a distinct clinical syndrome in ageing. Frailty refers to a vulnerability to external stressors due to reduced physiological resilience and reserve (Ward et al. 2011).

Although data showed differences in the relation between getting older and prevalence of disability and chronic conditions, it seems that, even though the life expectancy have increased considerably, this does not necessary means that the prevalence of disability and dependency need to be increased in the same way. This

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is supported by the 'compression of morbidity' theory (Ward et al. 2011).

Another aspect that should not be forgotten is that an ageing population involves a variety of impacts across society, with social, political, and economic implications. Health policies in each country about health care expenditures are different. In this sense, there are two schools of thought that assess the economic impact: the 'Doomsday' and the 'Panglossian' school. The Doomsday school purports that an ageing population in industrialised countries will lead to a large and unsustainable increase in spending on health-care. This point of view is heavily based on demographic data, and also on evidence that older people consume more health-care resources. The Panglossian school does not associate the ageing population with rising health-care expenditure. The contributing factors to rising health spendings are attributed to other variables, such as a pro-technology payment bias, escalating hospital costs and an over-reliance on expensive medical specialists.

On the other hand, there are authors that suggested aging as a major debilitating risk factor and life-threatening, considering it as an illness, including conditions like cardiovascular disease, neurodegeneration and cancer (Niccoli & Partridge 2012). Thus, the association that involves processes in ageing and ageing related disease aetiology, could be modulated to improve health status of the elderly population. In this respect, the assumption that aging could

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be considered as an 'illness', being defined as a pathological condition of great impact for the economic, social and personal welfare of the individual and the state, which could be cured or ameliorated with the so called 'anti-aging medicine', has raised as a new trend that contradicts the usual concept of aging as a 'natural' life process. In addition, there is a growing trend in some countries that supports the idea of 'ageism', which is defined as 'the discrimination against, contempt for, abuse, stereotyping, and avoidance of older people' (Butler, RN et al. 2006). This concept is commonly used in the financial literature, linking the elderly population with the reason of the global economic failure, defining it as 'apocalyptic demography' or 'pension time-bomb' (Martin et al. 2009). Portraying the elderly population as frail, dependent and non-contributors to the society represents a superficial and dangerous assessment, which could lead in a reduction in the health investments to this sector of population.

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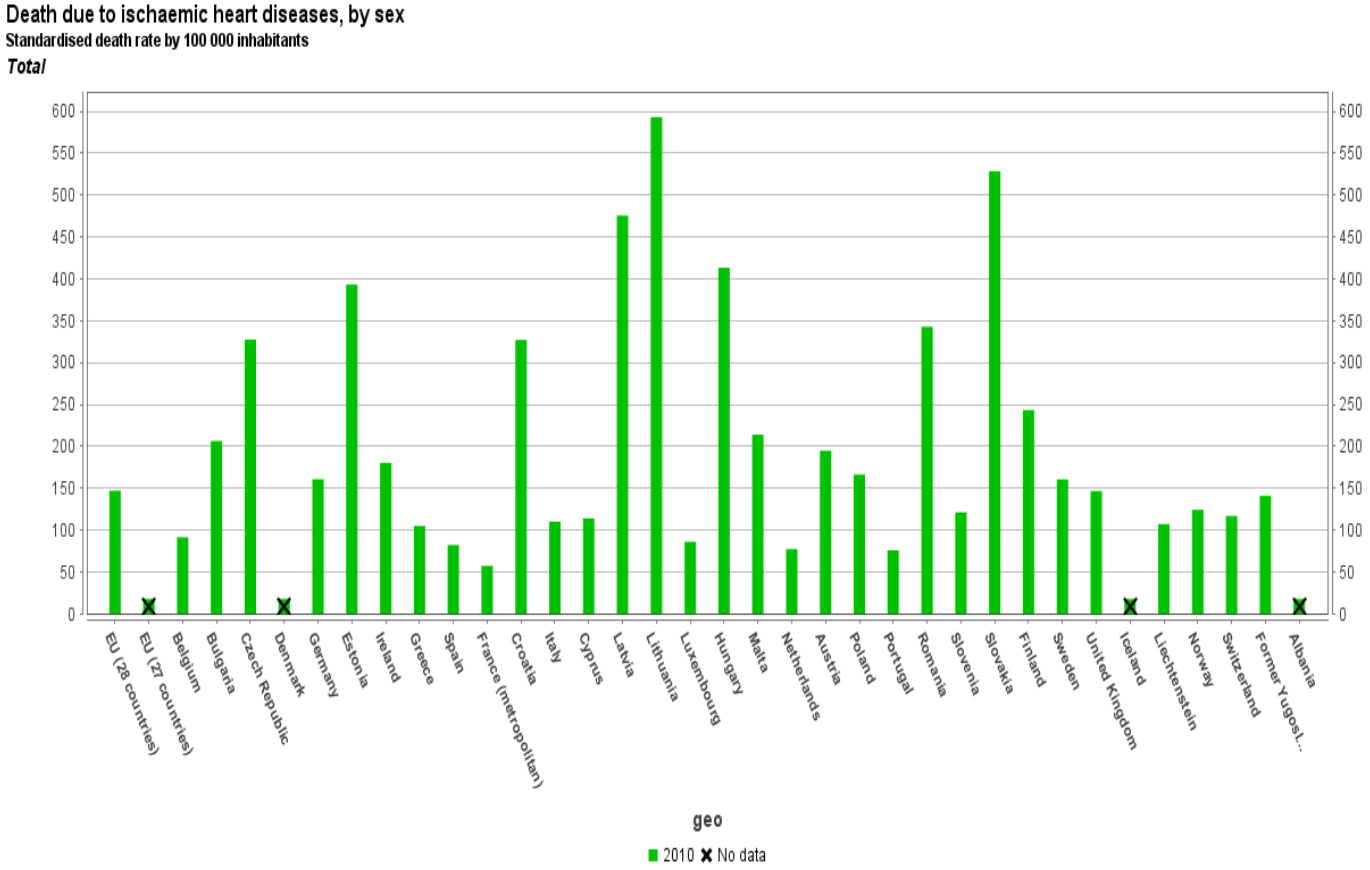
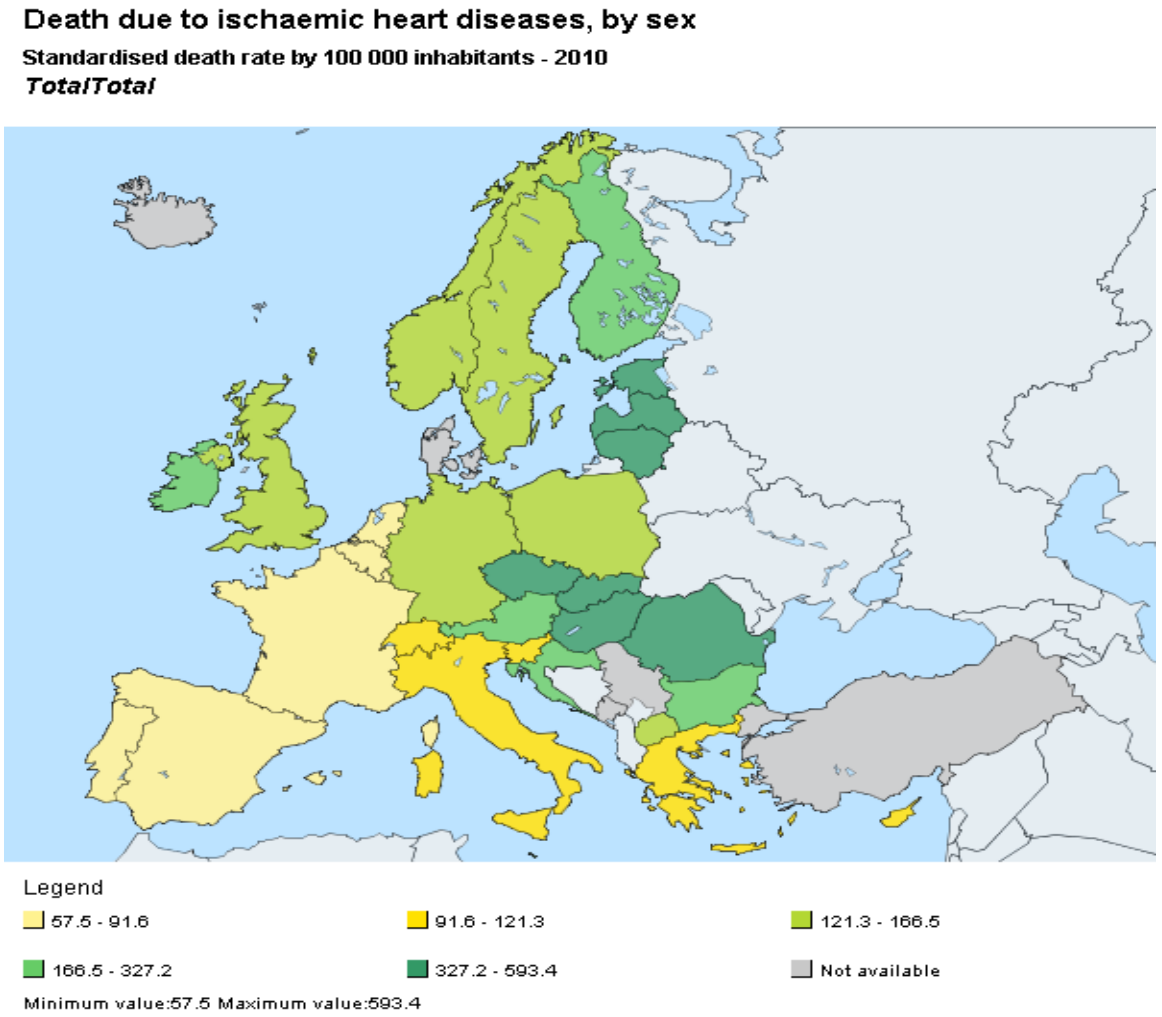
Graphic 2: Death rate due to chronic diseases in UE



Source: Eurostat.
http://epp.eurostat.ec.europa.eu/tgm/graph.do?pcode=tsdph210&language=en

Figure 2: Death rate due to chronic diseases in UE



Source: Eurostat.
http://epp.eurostat.ec.europa.eu/tgm/mapToolClosed.do?tab=map&init=1&plugin=1&language=en&pcode=tsdph210&toolbox=legend

Table 4: Deaths due to chronic conditions in Spain

	65 - 69 years old	70 - 74 years old	75 - 79 years old	80 - 84 years old	85 - 89 years old	90 - 94 years old	95 years old (and older)
Tumors	11.854	12.492	17.774	18.784	14.196	6.262	1.753
Tiroid diseases	10	5	19	53	76	50	26
Diabetes	415	660	1.397	2.264	2.482	1.561	629
Dementia	38	85	271	584	899	725	349
Depression	0	0	0	1	3	0	0
Hypertension	96	160	396	645	910	903	594
Isquemic heart disease	2.109	2.636	4.716	6.920	7.350	4.577	1.898
Acute myocardial infarction	1.228	1.473	2.502	3.435	3.389	1.986	764
Chronic heart disease	781	1.038	1.946	3.029	3.473	2.270	1.007
Chronic heart failure	51	97	249	572	892	717	369
Stroke	23	33	94	162	236	176	73
Stroke Consequences	12	43	85	117	165	130	52
Chronic Pulmonary Obstructive Disease	319	508	1.153	1.618	1.584	961	347
Arthropathy	31	43	114	112	110	47	38
Osteoporosis	1	1	1	6	10	12	5
Chronic Renal Failure	138	211	508	938	1.088	721	287
Fall (any cause)	0	0	0	0	0	0	0

Source: INE (Spanish Statistic National Institute

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v. Older people and health care systems

At present, some authors agree about the availability of three theories for describing future trends of population aging. The first one is "Compression of morbidity" (Fries et al. 2011), mentioned previously, which argued that, at present, life expectancy was is the greatest ever, and that future improvements in medical care and health behaviours would delay morbidity but not mortality, and would lead to a reduction in the number of unhealthy years lived as a proportion of life expectancy (Rechel et al. 2013); the second theory is "Expansion of morbidity" (Gruenberg 2005; Kramer 1980) which affirmed that those medical advances would lead in the maintenance of frailty and unhealthy older people, reducing healthy life years. Nevertheless, there is another theory not as negative and extreme as the previous ones: "Dynamic equilibrium". This third point of view (Manton 1982) proclaimed a dynamic equilibrium, in which increased survival is offset by better control of chronic diseases, keeping the proportion of life lived in good health more or less constant.

The reality is that more people will be afflicted with disorders that are common in older people, such as cancer, fractured hips, strokes, diabetes and dementia, which implies an increment in the complexity of health problems. More people will have several comorbidities and chronic diseases and be taking various drugs that potentially interact. People with multimorbidities typically have a higher risk of mortality, use health-care facilities more, and have less quality of life than do

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people with a single disease. This high risk of mortality in people with comorbidities makes health care complex, leads to long stays in hospitals, and increases the need for organisation of multidisciplinary care for patients both within and outside hospitals (Rechel et al. 2013). However, much of this care is provided at home, often for free, by caregivers, both familiar and non-familiar.

It is necessary to point up that to obtain the highest benefit, prevention programs for older people should not be based on single disease models, but rather should include a global approach by preventive interventions (Rechel et al. 2013).

In summary, improvements in quality of life through enhancements in self-care, combined with an appropriate coordination between health care providers, social services, innovative resources (such as telemonitoring) and long-term care, preferably at home, seem to be crucial in the reduction of health costs derived from hospital admissions due to an acute episode (as falls or acute heart failure) and also, in the length of stay in this kind of settings (Rechel et al. 2013)(Steering Group 2011). All those elements are included in the Strategic Implementation Plan for the European Innovation Partnership on Active and Healthy Ageing (2011) (Steering Group 2011). They defined three main objectives:

1. Prevention, screening and early diagnosis.
2. Care and cure.

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3. Active ageing and independent living.

'Active and healthy ageing' is the process of optimizing opportunities for health, participation and security in order to enhance quality of life as people age. It applies to both individuals and population groups. 'Health' refers to physical, mental and social well-being (Steering Group 2011). 'Active' refers to continuing participation in social, economic, cultural, spiritual and civic affairs, not just the simple ability to be physically active or to participate in the labor force. Key elements to achieve the "Dynamic equilibrium" theory seems to be linked with promotion of healthy lifestyles, focusing on improvements of diet, eliminating alcohol and smoking consumption, and reducing sedentary habits (Rechel et al. 2013; OECD 2011).

Those objectives are mainly based on integrated care, establishing individualized multi-component, multi-morbidity and remote monitoring programs through comprehensive case management, giving patients the opportunity of being an active part in the care process, are critical to prevent unnecessary hospitalization of older people with chronic conditions. Therefore, the effective implementation of integrated care programs and chronic disease management models should finally contribute to the improved efficiency of health systems (Goodwin, N. et al. 2014).

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A major challenge will be to delegate tasks and responsibilities to the type of health worker most accessible to patients and consistent with the achievement of excellent quality and outcomes. This will require a careful reconsideration of sharing or redistributing tasks between different occupations, in particular between doctors and nurses in more advanced roles (OECD 2011). In this sense, the nursing profession is in an ideal position to provide holistic and integrative care, treating elderly patients with multiple coexisting conditions, as a whole more than specializing in just one body system.

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vi. Advanced Practice Nursing: Concept, antecedents, description and characteristics

The International Council of Nurses defines the Advance Practice Nurse (APN) as a registered nurse who has acquired the expert knowledge base, complex decision-making skills and clinical competencies for expanded practice, the characteristics of which are shaped by the context and/or country in which s/he is credentialed to practice. A Master degree is recommended for entry level (International Council of Nurses 2002). The APN's features can be grouped according to educational characteristics and clinical practice: high level postgraduate training through structured and accredited programs, regulatory systems supported on certification, and registration or credentials renewal.

According to the Association des Infirmiers et Infirmieres of Canada (AIIC), "Advanced practice nursing, as a global expression, describes an advanced level of nursing practice that maximizes the use of specialized skills and nursing knowledge in order to respond to the customers' needs in health's sphere". This practice uses a nursing care model that rests on theoretical and empirical knowledge and expertise in order to provide holistic, comprehensive, and complete care. Practice based on evidence is the central element of the APN's skills (Association des Infirmières et Infirmiers du Canada 2008).

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Their practice can be distinguished from basic practice through specialization, advancement and expansion (Dowling et al. 2013). It often integrates research, training, practice, and management. They tend to possess a high degree of professional autonomy involving a portfolio of patients, and they have advanced skills for health status assessment, making decisions and diagnostic reasoning while acting as consultants for different health providers (Mantzoukas & Watkinson 2007). Leadership and professional autonomy are key to effective performance of APN role, and its development (Dowling et al. 2013).

Professional leadership is directly related with clinical inquiry, formation and research. Sharing and dissemination of acquired knowledge through investigation, coaching and practice is fundamental to inform policymakers, care managers, other health professionals and the general population about the effectiveness and the need of implementation of APN in Health systems as a core part of it (Mantzoukas & Watkinson 2007; Dowling et al. 2013; Delamaire & Lafortune 2010). All of this contributes to role expansion, integrating additional skills and responsibilities to the specialist role, which seems to be essential for APNs autonomy (Dowling et al. 2013).

Another attribute to the role is expertise. The way to obtain the optimum degree of expertise seems to be related with evidence

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based knowledge, clinical skills and professional leadership. There is a tendency to define advance practice as a synonymous of 'expertise' (Fitzgerald et al. 2012; Dowling et al. 2013).

Essential antecedents to advance practice that could be extracted from the literature, could be classified under inherent and non-inherent to the profession.

On the one hand, APN emerged as a response to the need of improving access to care in a context of growing demand for different types of health services and a limited supply of doctors (Delamaire & Lafortune 2010). APN were initially introduced to fulfill gaps both in services traditionally carried by physicians, in order to improve access to care particularly in under-served services and contexts by doctors (Delamaire & Lafortune 2010), and also as a consequence to the reduction of physicians' and resident doctors hours internationally (Dowling et al. 2013; Olson & Chioffi 2005; Por 2008). Additionally, the development of advanced practices is generally viewed as a way to improve access to care and to enhance the continuity of care across different health care settings (Delamaire & Lafortune 2010).

On the other hand, several countries (e.g., Poland, Cyprus, Ireland, Czech Republic) are using the developing of APN posts as a way to recruit professionals, making nursing more attractive, and increasing retention rates due to the career options that it offers. Changes in the range on skills for nursing roles have been defined by terms of (Daly & Carnwell 2003; Dowling et al. 2013):

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1. Role extension, which usually refers to the inclusion of a particular skill or area of practice responsibility that was not previously associated with the nurse's role. These skills or areas of practice tended to be associated with another professional domain, as in the cases of intravenous injections and the medical domain.

2. Role expansion, representative of the Clinical Nurse Specialist, which implies that additional skills and areas of practice are encompassed within a specialist role that involves greater responsibility, accountability and autonomy for broader aspects of the management of specialized care. It requires the acquisition of a Masters' degree.

3. Role Development, which also involves higher levels of clinical autonomy to improve patients' quality of life that is supported with abilities in case management and resources management. Although this may often involve the acquisition of knowledge and skills associated with other health domain, these should be used in a manner that enriches the holistic quality of nursing practice, patients' health care experience and health care provision generally. Preparation for role should link both clinical expertise, by acquisition of knowledge and extended practice experience, and accreditation at a higher academic level with a Master degree or doctorate.

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In the last 20 years, there has been a globally significant increase in the number of nurses with advanced features. In the 80s, in the UK, there were only 353 nurses classified as advanced practice, while ten years later there were 1,016 nurses officially recognized with these functions (Morales Asencio JM et al. 2006). However, nations are at different stages in implementing new APN roles. The United States, United Kingdom, and Canada, have been the first countries to experiment with APN roles, although more countries now are piloting or developing projects in chronic and primary health care (Delamaire & Lafortune, 2010; Fagerström & Glasberg, 2011). Presently, eight advanced role titles are identified: Clinical Nurse Specialist, Advanced Nurse Practitioner, Advanced Practice Registered Nurses, Nurse Practitioner, Higher Level Practitioner, Nurse Consultant, Specialist Practitioner, Nurse Therapist and Physician's Assistant)(Daly & Carnwell 2003).

Other denominations found in the literature include advanced Midwife Practitioner, Nurse Clinician, Advanced Practice Nurses and Clinical Nurse Consultant. Nevertheless, only four APN roles have been officially designated by the American Association of Nursing and include nurse practitioner, clinical nurse specialist, nurse anaesthetist and nurse midwife, with six population foci identified: namely family/individual across the lifespan, adult/gerontology, neonatal, paediatrics, women's health/gender, and psychiatric-mental health (Daly & Carnwell 2003; Dowling et al. 2013; Begley et al. 2007;

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Bonsall & Cheater 2008) (Figure 2). Thus, for the American Nurses Association (ANA), APN training lays on three axis (ANA 1992): specialization, development and progress. The specialization defines the central domain of nursing care, development is linked to the acquisition of new knowledge and skills to legitimize the role of autonomy and, finally, progress refers to the integration of theoretical knowledge, acquired through academic training and research based on clinical practice, into nursing care. All this characteristics are directed to provide high-quality healthcare in different populations and care contexts (Fitzgerald et al. 2012).

Models of APN have been developed in many fields, including acute inpatient care (Cowan et al. 2006), gatekeeping in primary health care (Laurant et al. 2005), and in accident and emergency units (Carter & Chochinov, 2007). Within these fields, there have been remarkable outcomes in terms of effectiveness. APN has been widely developed in the care of the older people population (Oeseburg et al. 2009), (Low et al. 2011). For example, APNs' proactive monitoring and telephone follow-ups produce active patient participation and decrease readmissions in cardiac rehabilitation programs (Carroll et al. 2007), even if done at home (Clark et al. 2010). Similarly, APNs have had positive effects on the mental health older people in the community (Thompson et al. 2008), even for those with severe dementia (Callahan et al. 2006). APNs have been

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utilised in health care for acute problems, improving the quality of life of older people with low incomes (Counsell et al. 2007).

In the field of nursing homes, the variety and quantity of APN models' experience is particularly promising. Residents attended by APN versus traditional care show positive effects on incontinence, pressure ulcer rates, aggressive behaviour and affective relationship in patients with cognitive impairment (Krichbaum et al. 2005) as well as on a major problem in these contexts, such as falls (Rask et al. 2007). In a key area such as the evaluation of complex nutritional problems that affect the institutionalized, APN participation in multidisciplinary teams has revealed capacity to improve biochemical parameters and depressive disorders that often accompanies the process of malnutrition (Crogan et al. 2006). In difficult issues to address in institutionalized older (as depression (Tsai et al. 2008), sleep disorders (Sloane et al. 2007), or stress transfer (Bellantonio et al. 2008), results have also appeared linked to the intervention of these nurses.

In Spain, there are experiences of APN through case management (Morales-Asencio et al. 2008) and at this stage of aging, chronicity and increasing dependence, it is faced with the situation of having to develop interventions that respond to many of these challenges, expanding objectives and contexts of care that could potentially incorporate the known evidence in this area.

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Figure 3: APNs' roles

vii. Conceptual framework

Despite the fact that Advanced Nurse Practice (APN) programs emerged in the 60s, the term "advanced practice" remains ambiguous because it has been dominated by the context and prevailing health policies (Gardner et al. 2007). The conceptual framework of the present work is fundamentally based on two approaches: the Reimanis (Reimanis et al. 2001) and Manley's (Manley 1997) conceptual framework, as well as the Nursing Intervention Classification (Bulecheck GM et al. 2008), to translate

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the APNs interventions found in the Systematic Review (SR) into Standarized Nursing Language (SNL).

Reimanis et al. (2001) carried out an evidence-based literature review that was pursued to examine provider and patient satisfaction associated with nurse case managers in acute and community care practice delivery settings. This review resulted in the extraction of variables that could define their role in a holistic, comprehensive and complete way. Those variables were related to provider satisfaction, autonomy, multidisciplinary collaboration, patient satisfaction, nurse case management's effect upon staff nurses, professional status, job stress, and role conflict. These elements were considered as:

Autonomy: The job attribute of providing freedom, independence, and individual decision making in meeting expected outcomes.

Collaboration: The process of nurse and multidisciplinary interactions that facilitate common, positive patient care outcomes.

Control Over Nursing Practice (CONP): The perceived freedom to exercise authority in one's individual practice while maintaining responsibility in meeting role outcomes.

Job Satisfaction: A global outcome that reflects the overall perception an employee has about his or her job. This construct can include satisfaction with specific work attributes including pay or reward, organizational structure, professional status, and interaction with colleagues.

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Job Stress: A condition created when one or more factors interact to disrupt psychological or physiological homeostasis of the employee. Over time, the accumulation of job stress leads to burnout.

Patient Satisfaction: An outcome that reflects the patient's experience and assessment of healthcare received and attributed to SNs or NCMs.

Professional Status: A role perception that involves a specialized knowledge base with a collective or service orientation, and autonomy in defining and organizing work.

Role Conflict: A conflict experienced in carrying out role expectations that can be derived internally/personally or externally/from another profession.

Effect upon Staff Nurses (SN): The perceived outcome experienced by SNs after a change or modification in their process of delivering nursing care has been initiated.

On the other hand, Manleys' (Manley 1997) model is more centred in the skills and competencies that the APN should have to develop completely for their performance. Those skills are classified under three groups. Firstly, primary criteria for accessing to the degree were: having a master or a doctorate degree, an extensive client-based practice, and also a certification of expertise in practice. Secondly, defined subroles that should be integrated were: expert practitioner, educator, researcher and consultant. Finally, the skills

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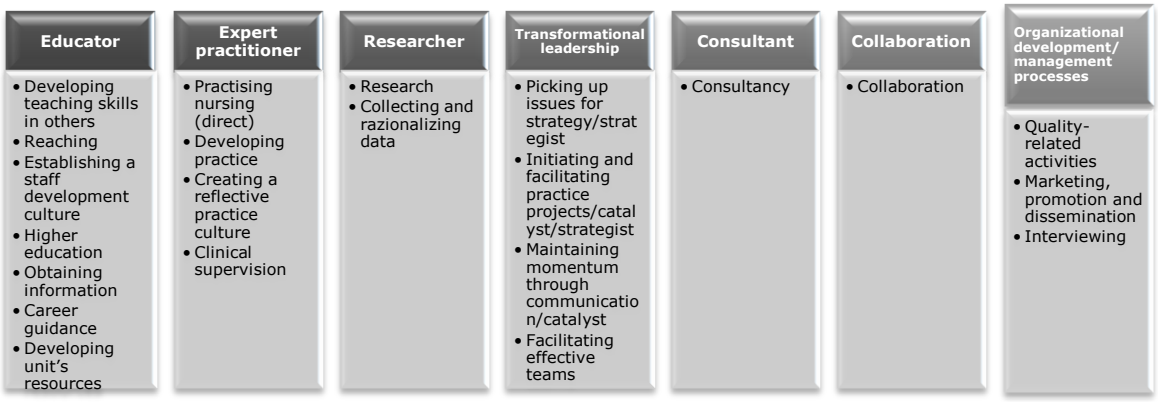
and competencies previously mentioned were: being a change agent, a collaborator, a clinical leader, a role model and a patient advocate.

In addition, the author also found 22 different work activities, classified under the categories previously mentioned. Figure 3 and Figure 4 reflect those categories and the conceptual framework developed.

Figure 3: : Categories and themes of an APN



Source: Manley, K., 1997. A conceptual framework for advanced practice: an action research project operationalizing an advanced practitioner/consultant nurse role. *Journal of Clinical Nursing*, 6(3), pp.179-190.

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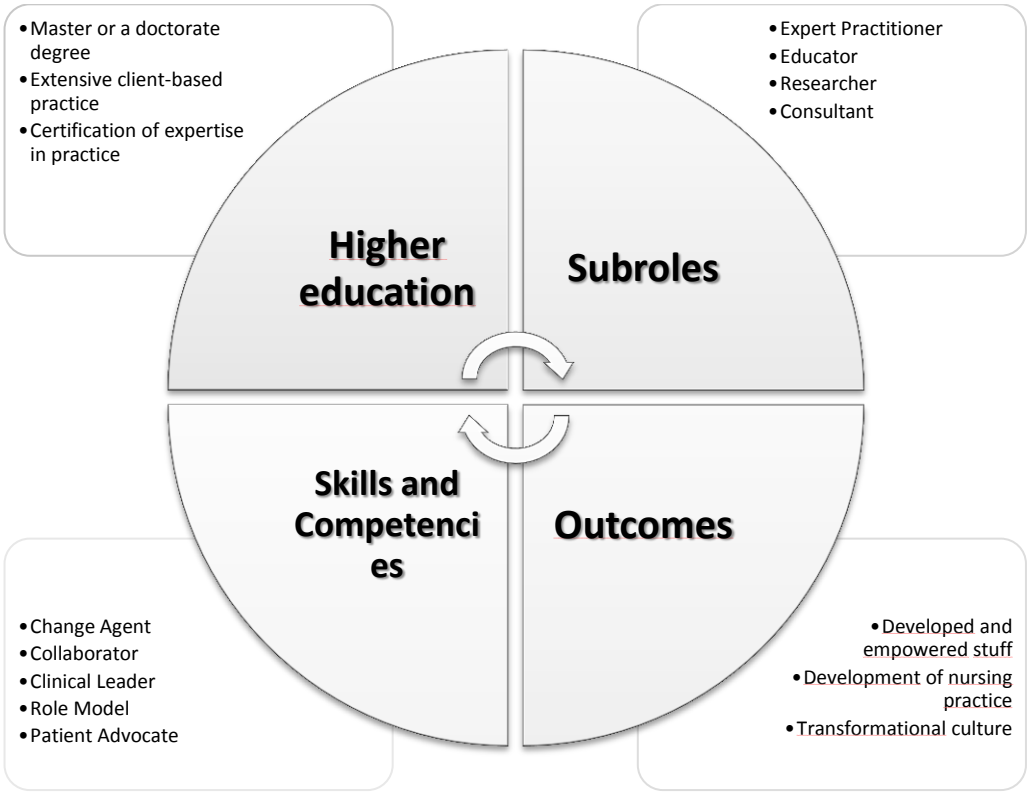
Figure 4: Advancing nursing practice: a conceptual framework for the advanced practitioner/consultant nurse



Source: Manley, K., 1997. A conceptual framework for advanced practice: an action research project operationalizing an advanced practitioner/consultant nurse role. *Journal of Clinical Nursing*, 6(3), pp.179-190.

Nursing has been traditionally described, from a mechanistic and naïve approach, as a list of tasks which requires certain skills (Thoroddsen 2005). Nursing language plays an important role in describing, communicating, organizing and defining nursing as well as formalizing or shaping nursing knowledge and practice. A uniform and controlled language needs to reflect all nursing aspects, to allow the description and definition of services offered by nurses: sick and healthy people, all age groups, families and communities. It is also thought to improve practice, research, administration, education, evaluation of nursing effectiveness and interdisciplinary

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communication (Thorodsen 2005), and make distinctions with other health-care providers (Lee & Lee 2006).

Standardized Language Systems in the nursing discipline such as the North American Nursing Diagnosis Association (Hughes et al. 2008), Nursing Interventions Classification (Bulecheck GM et al. 2008) and the Nursing Outcomes Classification (Moorhead, S et al. 2009) have generated an ideal framework to support nursing practice and their development around the world has meant their inclusion in the information systems of different Health Services (Hyun & Park 2002). All of them are integrated in the nursing process which was first developed in the United States and later introduced in the United Kingdom and the rest of Europe in the mid-1970s. Nursing process is defined as a problem solving approach to nursing (Hughes et al. 2008) and its aim is the creation of an individualized and holistic care plan to fulfil patients' needs. It is composed by 6 steps: Assessment, diagnosis, identification of objectives, selection of interventions, development of a care plan, implementation of the care plan, and evaluation of the progresses obtained. In case that after the final evaluation of the plan, the nurse finds new problems, the whole process will start again, defining new diagnoses, objectives and interventions (Figure 5) (Figure 6).

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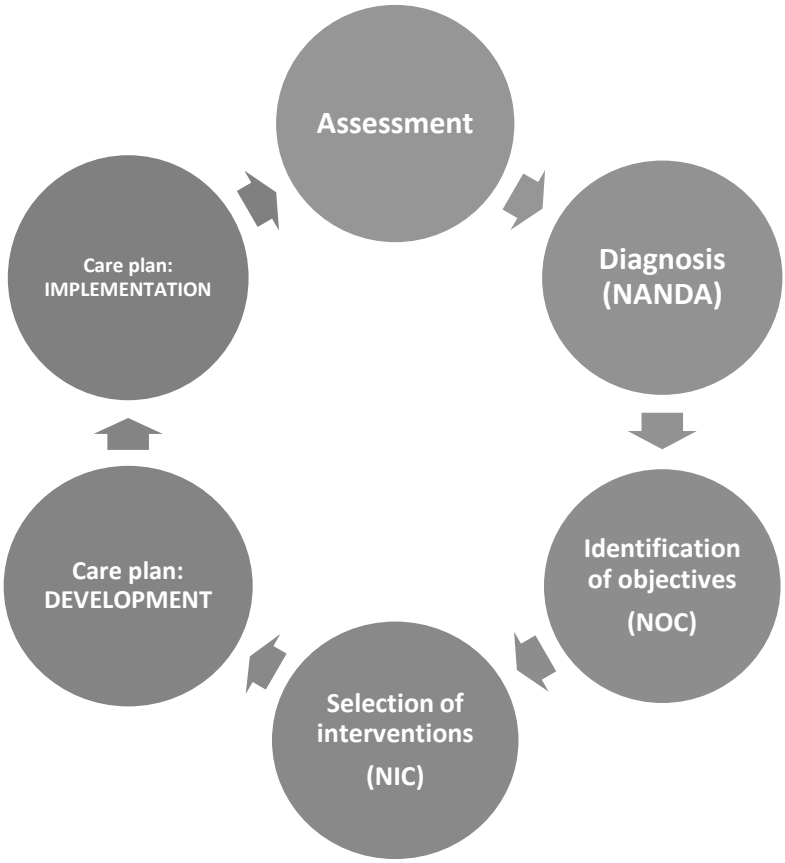
Figure 5: Nursing Process



The Nursing Interventions Classification (NIC) is a comprehensive, standardized classification of interventions that nurses perform in their daily journal, recognized by the American Nurses' Association (ANA). It is based on research since 1987 and has used multiple methods for its developing, being structured with a taxonomic structure that has been tested on clinical and educational settings. It was generated with an inductive approach from pre-existing care information, health systems of care, expert committees clinical sources and is provided with a taxonomic structure built with a simple, clear language and clinical significance and translated into

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10 languages (Bulechek et al., 2008). It allows the description of nurse competencies along multiple clinical scenarios, specialties (from paediatrics and obstetrics to cardiology and gerontology). Moreover, it facilitates the comparability between different contexts (from Intensive Care Units (ICU) to home care, geriatric care and primary care).

Unlike nursing diagnosis or patient outcome, focused on patients, the main interest in nursing interventions are the nurse's conducts and decisions, i.e. everything that nurses make to help the patient to move toward a desired outcome.

An intervention is defined as "any treatment, based upon clinical judgment and knowledge that a nurse performs to promote the expected outcomes of the patient/client. Nursing interventions include all interventions executed by nurses, in both direct and indirect care, targeting individuals, families or the community, no matter if treatments were initiated by nurses, doctors or other professionals' (Bulecheck GM et al. 2008, p.xxiii). Each NIC intervention consists of a label, a definition, a set of activities that indicate actions and thoughts that lead to intervention (deeper behaviors made by nurses on behalf of the client) (Haugsdal & Scherb 2003), and a brief background readings. The label and the definition of the intervention are the content of the intervention that is standardized and should not be changed when the NIC is used to document care. However, they can be individualized by the election

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of the different activities. From a list of about 10 to 30 activities per intervention, the nurse chooses the most appropriate for a particular individual or family. If necessary, new activities could be added, but all modifications and additions should be consistent with the definition of the intervention.

The classification is continuously updated. In the present work, it was used the 5th edition, which consists of 542 interventions, with more than 12000 of activities, grouped into 30 classes and 7 domains for ease of use. The 7 domains are: Physiological: Basic, Physiological: Complex, Behavioral, Safety, Family, Health System, and Community (Table 5). They cover the full range of nursing practice, both independent and collaborative interventions and direct or indirect care. Each intervention has a unique code (CNC) with five digits.

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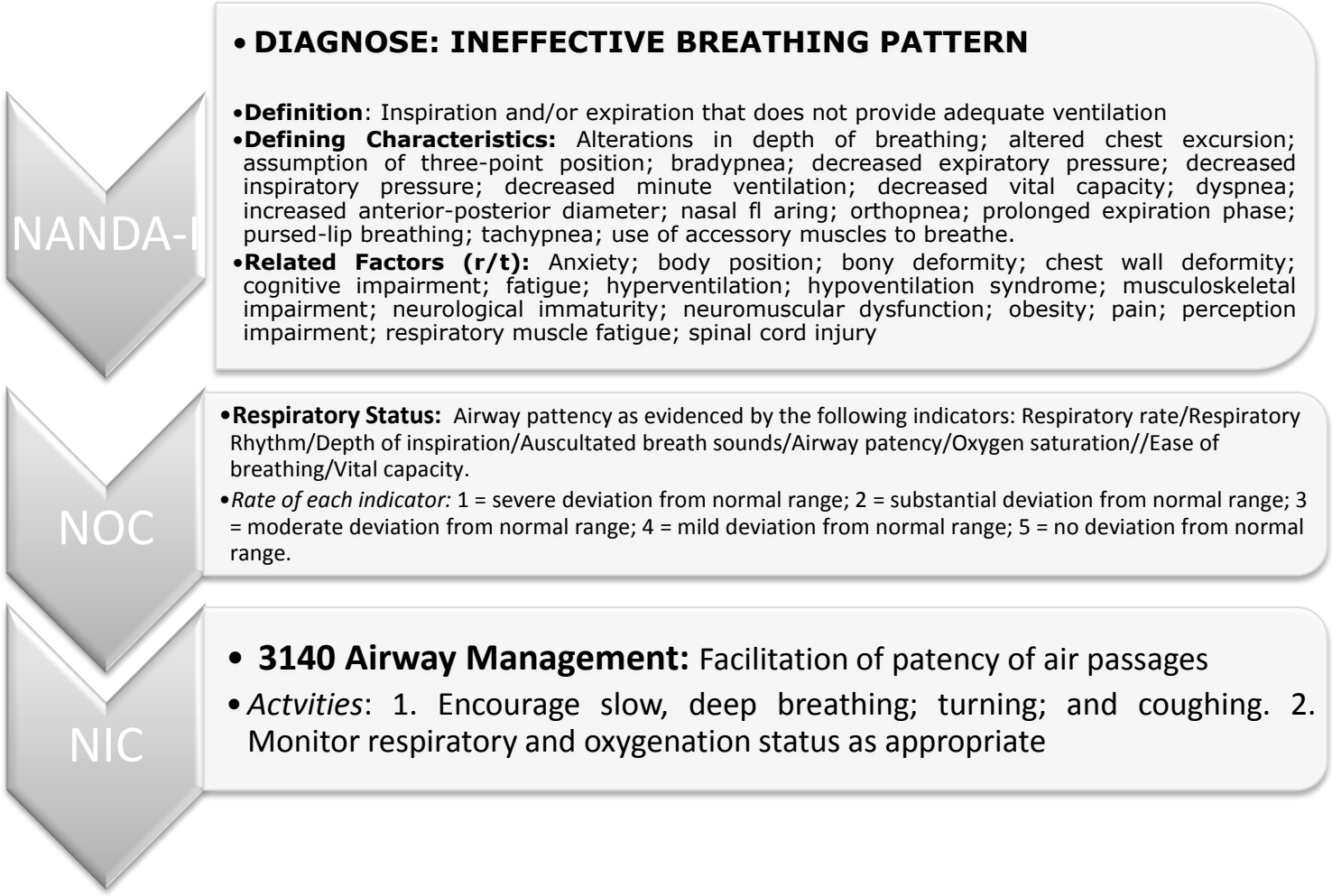
Table 5: NIC Domains and classes

DOMAINS	1. Physiological: Basic Care that supports physical functioning		2. Physiological: Complex Care that supports homeostatic regulation		3. Behavioral Care that supports psychosocial functioning and facilitates lifestyle changes		4. Safety Care that supports protection against harm		5. Family Care that supports the family		6. Health System Care that supports effective use of the health care delivery system		7. Community Care that supports the health of the community	
CLASSES	**A**	Activity & Exercise Management: Interventions to organize or assist with physical activity and energy conservation and expenditure	**G**	Electrolyte & Acid-Base Management: Interventions to regulate electrolyte/acid base balance and prevent complications	**O**	Behavior Therapy: Interventions to reinforce or promote desirable behaviors or alter undesirable behaviors or alter undesirable behaviors	**U**	Crisis Management: Interventions to provide immediate short-term help in both psychological and physiological crises	**W**	Childbearing Care: Interventions to assist in the preparation of childbirth and management of the psychological and physiological changes before, during, and immediately following childbirth	**Y**	Health System Mediation: Interventions to facilitate the interface between patient / family and the health care system	**Yc**	Community Health Promotion: Interventions that promote the health of the whole community
	B	Elimination Management: Interventions to establish and maintain regular bowel and urinary elimination patterns and manage complications due to altered patterns	**H**	Drug Management: Interventions to facilitate desired effects of pharmacologic agents	**P**	Cognitive Therapy: Interventions to reinforce or promote desirable cognitive functioning or alter undesirable cognitive functioning	**V**	Risk Management: Interventions to initiate risk reduction activities and continue monitoring risks over time.	**Z**	Childrearing Care: Interventions to assist in raising children	**Ya**	Health System Management: Interventions to provide and enhance support service for the delivery of care	**Yd**	Community Risk Management.: Interventions that assist in detecting or preventing health risks to the whole community

	C	Immobility Management: Interventions to manage restricted body movement and the sequelae	**I**	Neurological Management: Interventions to optimize neurologic function	**Q**	Communication Enhancement: Interventions to facilitate delivering and receiving verbal and nonverbal messages		**X**	Lifespan Care: Interventions to facilitate family unit functioning and promote the health and welfare of family members throughout the lifespan	**Yb**	Information Management Interventions to facilitate communication about health care	
	D	Nutrition Support: Interventions to modify or maintain nutritional status	**J**	Perioperative Care: Interventions to provide care prior to, during, and immediately after surgery	**R**	Coping Assistance: Interventions to assist another to build on own strengths, to adapt to a change in function, or achieve a higher level of function						
	E	Physical Comfort Promotion: Interventions to promote comfort using physical techniques	**K**	Respiratory Management: Interventions to promote airway patency and gas exchange	**S**	Patient Education: Interventions to facilitate learning						
	F	Self-Care Facilitation: Interventions to provide or assist with routine activities of daily living	**L**	Skin/Wound Mgt.: Interventions to maintain or restore tissue integrity	**T**	Psychological Comfort Promotion: Interventions to promote comfort using psychological techniques						
			M	Thermoregulation: Interventions to maintain body temperature within a normal range								
			N	Tissue Perfusion Management: Interventions to optimize circulation of blood and fluids to the tissue								

Figure 6: Care plan with NANDA-I, NOC and NIC



Although the classification describes the nursing discipline, some interventions may be provided by other disciplines. Healthcare providers, not nursing professionals, are also welcome to use the NIC to describe their treatments.

The book of the classification and many other publications cited in it, documented the years of research dedicated to develop and testing the classification and its taxonomic structure. The NIC interventions have been linked to the North American Nursing Diagnosis Association (NANDA) diagnoses, Omaha System, the Resident Assessment Instrument used in nursing-homes, OASIS assessment categories (Outcome and Assessment Information Set) for home care, and the Nursing Outcomes Classification (NOC). The NIC has been translated into nine languages. In Spain, these taxonomies, since 1998, have been progressively incorporated into usual clinical practice and Computerized Clinical Records (Cárdenas-Valladolid et al. 2012).

The work between editions of the NIC and other major publications that improve the use of the classification are available in the Center for Nursing Classification and Clinical Effectiveness at the University of Iowa, College of Nursing, Iowa City, LA.

Effectiveness of interventions from the NIC has been widely described in the literature, in different contexts and with different purposes. Planning care by using NIC interventions has demonstrated, for example, to be as effective as psycho-

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pharmaceutical interventions in sleep satisfaction and insomnia (Laguna-Parras et al. 2013) and in reducing diastolic blood pressure in Type 2 Diabetes Mellitus' patients (Cárdenas-Valladolid et al. 2012). Moreover, using SNL such as the NIC, allows to nurses all over the world to communicate about nursing with precision and also to create referral networks, enabling the description of nursing discipline through different contexts of care and specialities (Wallace et al. 2005; Scherb et al. 2011; Thoroddsen 2005), different diseases (Minthorn & Lunney 2012; Schneider & Slowik 2009), different population groups (Davide Ausili 2012), different nursing roles and categories (Haugsdal & Scherb 2003), information and computerized systems (Van den Heede et al. 2009; Conrad et al. 2012; Hyun & Park 2002), and even the comparison between nursing practices in different countries (Lee & Lee 2006) and Parrish nursing (Solari-Twadell & Hackbarth 2010). Apart from that, NIC could be used by nurses as a way to grow in the nursing profession: staff education, certification and licensing exams, competency evaluation and, consequently, as a tool for the development of educational curricula for nursing students.

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IV. JUSTIFICATION

Advanced practice is contemplated as a way to improve access to care and to enhance the continuity and promotion of quality care across different care settings. Aged population usually linked with multiple chronic diseases and co-morbidities are increasing the demand for care in different settings. In particular, the development of home care, as a way to reduce hospitalisations (OECD 2011), provides new opportunities to develop APN roles. Patients suffering from one or more chronic diseases generally need more frequent visits at home or in other settings (long-term care institutions) for follow-up and monitoring to prevent further complications, as well as advice on self-care management and lifestyle changes.

There exists a broad range of APN modalities, as well as a lack of conceptual frameworks to categorize the scope of interventions and services by APNs in the elderly population (Morales Asencio 2010). Many of the interventions have little conceptual substrate and act upon local schemes aiming to address current problems with immediate but not always sustainable solutions. For instance, the selection criteria for the target population extend from those using age as a strict classificatory element to those that use functional criteria or comorbidity. On the other hand, interventions usually have a multicomponent nature, which implies some methodological difficulties that are not always resolved successfully. Today,

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conceptual developments that help to isolate complex interventions are available, but scarcely used (Campbell et al. 2007).

Thus, outcome criteria and 'endpoints' used in many studies often lack quality due to excessive use of intermediate and proxy variables as well as variables that are barely indicative of the intended purpose. A clear illustration of this problem is the case of using the variable 'institutionalisation' as the 'endpoint' of functional decline, when in many cases, institutionalisation might result from families' inability to cope with the situation (Godfrey, 2001). Nonetheless, one of the main problems is that the APN figure is usually embedded within other organisational interventions, and it is difficult to discern which outputs are attributable to the APN.

Clearly, much research has been done about APNs and many of these studies have had older people as target population. However, the research varies, and there is little consensus about best practices, making it difficult to obtain an adequate overview of the different models experienced, their specific components, and their specific outcomes (Morales-Asencio 2010). Therefore, a systematic review would contribute to clearing up some of these uncertainties.

Furthermore, international comparisons frequently face difficulties due to the lack of conceptualisation and interpretation of the developed interventions. In this sense, the availability of a standardized language to describe nursing interventions (Nursing Intervention Classification, NIC) (Bulechek et al. 2008) can provide

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an additional resource for classifying the components of different models. It also may facilitate the description of APN in a universal language, available in the vast majority of health care record systems around the world.

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V. OBJECTIVES

1. To identify, assess and summarise available scientific evidence about the effect of interventions deployed by APNs when providing care to older people in different settings (hospital, home, outpatient, residential).

2. To describe the roles and components of the interventions developed by APNs in the contexts mentioned before.

3. To identify the interventions provided by APNs to older people in different contexts (acute and long-term care) with a Standardized Nursing Language, in the studies included in the Systematic Review.

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VI. METHODS

viii. Design

The present study was divided in two parts: firstly, a systematic review, and secondly, a qualitative study. For a better understanding of the methodology, each phase will be detailed separately. This approach will be also used for the description of the results.

Systematic review

The systematic review was designed to accomplish the first two objectives of the study, in order to identify, assess and summarise available scientific evidence about the effect of interventions deployed by APNs when providing care to older people in different settings (hospital, home, outpatient, residential) and to describe the roles and components of the interventions developed by APNs in the contexts mentioned before.

Inclusion criteria

Types of studies

Randomized controlled trials, quasi-experimental, and interrupted time series including a longitudinal analysis of the results with at least three observations before and after the intervention. Studies published before 1990 were excluded.

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Types of participants

Included health professionals were mainly APNs, but physicians and nurses were also included because in many studies they could be part of the multifaceted intervention. Reimanis et al. (2001) and Manley's (1997) criteria were applied to identify this role in the different studies. Other professionals were social workers, community workers, physiotherapists, rehabilitation therapists, occupational therapists, podiatrists, and nutritionists. These staff members were included only if they were associated with the APN intervention.

Patients

Older people aged over 65 years receiving hospital services for acute or chronic conditions or as outpatients for diverse health problems, in home care programs, or in residential care.

Types of interventions

Studies which included any type of service involved in the roles of nurses with advanced practice (own patients' portfolio, advanced skills in health assessment, reasoning, diagnosis, prescription, test ordering, referral, consultancy for other professionals, or case management).

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Types of outcome measures

Patients' outcomes include morbidity, mortality, mobility, cognitive status, quality of life, satisfaction, social and/or family support and adverse events (drug adverse events, falls, failure to rescue).

Results of service delivered include resources used by professionals (tests and analysis, referrals, prescriptions, length of stay), by patients (readmissions, consultations, number of home visits) and economic outcomes (costs of care, cost-benefit, cost-utility or cost-effectiveness analyses).

Exclusion criteria

Studies with patients admitted to acute psychiatric units, or patients sent to specialized and/or community mental health units or published before 1990 were excluded. Also, other exclusion criteria were studies that, even though classified as APN interventions in elderly population, if the mean age, combined with the Standard Deviation (SD), were less than 65, and results were not divided by age groups (i.e. <65, 65-80, 80>), the article was discarded.

Search strategy

The databases included in the search were: MEDLINE, CINAHL, EMBASE, Web of Science, PsychINFO, SCOPUS, COCHRANE, Cochrane Controlled Trials Register-CCTR, Joanna Briggs Institute, Centre for

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Review and Dissemination, HEN (EuroWHO), EMI, CUIDEN, ENFISPO, DIALNET, and SCIELO. The research also included reviews, papers, and evaluations from the following research health services centres and assessment Health Technology Agencies: INAHTA, Agency for Health Care Research and Quality (AHRQ), Centre for Health Economics and Policy Analysis at the University of McMaster, and the King's Fund. Google Scholar also was searched along with documents from the International Council of Nurses, OECD reports and the American Academy of Nurse Practitioners. Concatenated searches were conducted on the references of the studies found.

The languages of papers were English, Spanish, and French. The search, analysis and selection of the included studies took place between March and September 2011. Studies published before 2009 were excluded.

The search was carried out by the use of specific methodological filters developed by the Health Information Research Unit at McMaster University for randomized controlled trials and SRs. Table 6 shows the data bases consulted and the total amount of references found in each one, after eliminating duplicates.

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Table 6: Consulted databases

DATA BASE CONSULTED	REFERENCES FOUND
CINALH	22
EMBASE	133
IME	2
Psychinfo	12
PubMed	619
SCOPUS	40
Web of Science	337
CHEPA	4
Cochrane	548
DARE	68
HEN	9

Selection of studies

In the first stage of the review, a detailed assessment of titles and abstracts was performed to determine whether each item met the pre-determined requirements for inclusion. If this step was not clear, the full text of the article was evaluated. To ensure the quality of the process, two independent reviewers performed a double blinded evaluation of the records obtained.

All the references identified as potentially eligible were evaluated to assess whether they met the inclusion criteria for review by two blinded reviewers. Discrepancies were resolved by discussion and the intervention of a third evaluator if necessary. Additionally, a pilot test was developed with 15 papers randomly selected, to test the reviewers' accuracy in applying the inclusion/exclusion criteria and the interobserver reliability.

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Data Gathering and Extraction

An electronic form was used to introduce the basic results of the included studies. Their assessment was supported by the application RevMan 5, which includes the following items: methods, interventions, participants, results under consideration and the reviewer's annotation. When the original studies failed to provide necessary data for extraction, the authors were contacted for clarification or requesting them the original data if possible.

In parallel, a more comprehensive database was developed with the information of each included study, according to an adaptation of the criteria of the Cochrane COPD Group (Grimshaw et al. 2001). This methodological approach was chosen due to the nature of the study area, which involves the reorganisation of care for the APN's model implementation. It specifically focused on assessing the effectiveness of interventions in health services, including a 'review of roles' or 'changes in the mixture of providers' skills', which would cover many studies in this review:

a. Study designs: Randomised controlled trial, Quasi-experimental study and temporal series.

b. Interventions: On professionals, economic-financial, organisational, or regulatory.

c. Controls.

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d. Characteristics of interventions: Purpose, nature of the change sought by the intervention, format, source, supported by clinical guidelines or systematic reviews, recipients, timing, environment, funding and ethical approval.

e. Participants:

   i. Characteristics of providers (professional degree, level of training, expertise, age, clinical experience).

   ii. Patient characteristics: Clinical problems, number of subjects in the study, episodes of care, care environment and socio-demographic characteristics.

f. Environment: Payment system, context of care and centre's academic status.

g. Methods: Allocation unit, unit of analysis, power of the study and methodological quality.

h. Identifying potential barriers to the implementation of the APN in the environment studied.

i. Outcome criteria: Type, length of follow up, possible ceiling effect.

j. Results: Baseline and post-intervention in intervention and control groups, including statistical significance,

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indicating whether the units of allocation and analysis differed.

Quality appraisal of studies

Two reviewers conducted this process independently. The methodological quality was evaluated using RevMan 5 checklist of bias, together with the methodological quality criteria of the Cochrane COPD group (Cochrane Effective Practice and Organisation of Care Group 2010; Higgins, J & Green, S 2011). The biases assessed were: random sequence generation, allocation concealment, blinding of participants and personnel, blinding of outcome assessment, attrition bias, selective reporting and other bias. In the case that the reviewers did not agree, which finally did not occur, a third appraiser would assess the study with the CONSORT, extended CONSORT and TREND publication standards.

Each criteria could determine a high, low or unclear risk. High risk was scored with two points, unclear risk with one point and low risk means zero points. Included studies were those with a punctuation of three or less. This process of data extraction and methodological quality assessment was recorded electronically on a web formulary with password-protected access for each reviewer. A data entry control system was used to minimize errors in the quality of the information entered.

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Synthesis of data

It was considered the performance of a meta-analysis but, due to the heterogeneity of the included studies this possibility was discarded. The heterogeneity was due to differences in follow-up periods and outcomes among studies and, consequently, an integrative review was carried out.

Qualitative phase

Design

The design of this phase was qualitative with mixed methods (Barnett-Page & Thomas 2009): firstly a content analysis was carried out, followed by a Delphi technique. As methodological guidance, Hasson's (Hasson et al. 2000) criteria were considered. The source of data were the 11 selected studies belonging to the systematic review and, additionally, 25 extra studies that did not meet the inclusion criteria of the systematic review in terms of methodology, because we considered that, although those articles were not as reliable in terms of methodology, this would not affect to the interventions performed by the advanced practice nurses. Nevertheless, those extra 25 studies fulfilled the previously mentioned inclusion criteria.

Data collection

The content analysis phase was carried out by incorporating into PDF (portable document format) the text of the selected papers

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into the qualitative data analysis software Atlas.ti 6.2 (ATLAS.ti Scientific Software Development GmbH) as primary documents of an hermeneutic unit. The list of NIC interventions in native language and contexts of care (residential, hospital, home, and transitional care) were used as codes (deductive coding). The selected papers constituted the main unit of analysis.

Results of the codification yielded a list with the interventions isolated in each study linked to their respective quotes and classified by type of health care context. This process started in 2012, and finished in the firsts months of 2013.

Data Analysis

For the content analysis, the meaning units were conceived as those constellation of words, sentences, paragraphs or statements that related to a same central meaning (Graneheim & Lundman 2004), in this case, an intervention provided by an APN. The analysis of the text was developed trying to interpret the underlying meaning of the interventions described by the original authors (latent content) (Kondracki et al. 2002). Two independent reviewers coded the primary documents for quotes that might be represented by NIC interventions, dividing the text into meaning units. Berelson (1984) criteria were used to formulate inferences and identifying

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systematically specific characteristics within the text. Categories were generated grouping interventions by NIC domains.

The results of the content analysis were undergone to an expert consensus analysis, for strengthening the credibility of the codification process. This expert consensus was carried out by a Delphi technique.

The five external experts were selected among nurses with more than 10 years of clinical practice in advanced roles, such as case management, and a high knowledge and expertise in the use of nursing taxonomies, who have agreed to participate and maintain involved until the process was completed. They were asked to state on the relevance of the associations between papers and NIC interventions previously established by the research team, using a Likert scale with range 1-9, through a web platform. The ranges of values of the responses were grouped into three groups: 1 to 3, 4 to 6 and 7 to 9, in ascending order of pertinence for the proposed codification. The level of agreement was measured by percentiles and interquartile range: agreement (scores over third percentile), partial agreement (scores between first and their percentile) and disagreement (scores under the first percentile). Regarding the interquartile range, if it was lower than 2, it was considered a situation aim of great homogeneity among experts, acceptable if it was 3 and wide disparity when values were over 3. Two rounds were employed to obtain consensus. Delphi phase was supported with the

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on-line platform LimeSurvey (Carsten Schmitz & Jason Cleeland) and the analysis of the data was carried out using SPSS 20 (Java 2011).

ix. Ethical considerations

This study operated with secondary data from primary research studies and therefore no form of consent was necessary.

In the Systematic Review, reviewers made an explicit declaration of conflict of interest with any of the studies included or excluded from the review.

In the Qualitative Study, selected experts made an explicit declaration of conflict of interest with any of the analyzed studies in the present research. Approval from the Ethics and Reseach Committee of the District of Primary Health Care Of Málaga was obtained in July 2010 and funding was obtained in March 2011.

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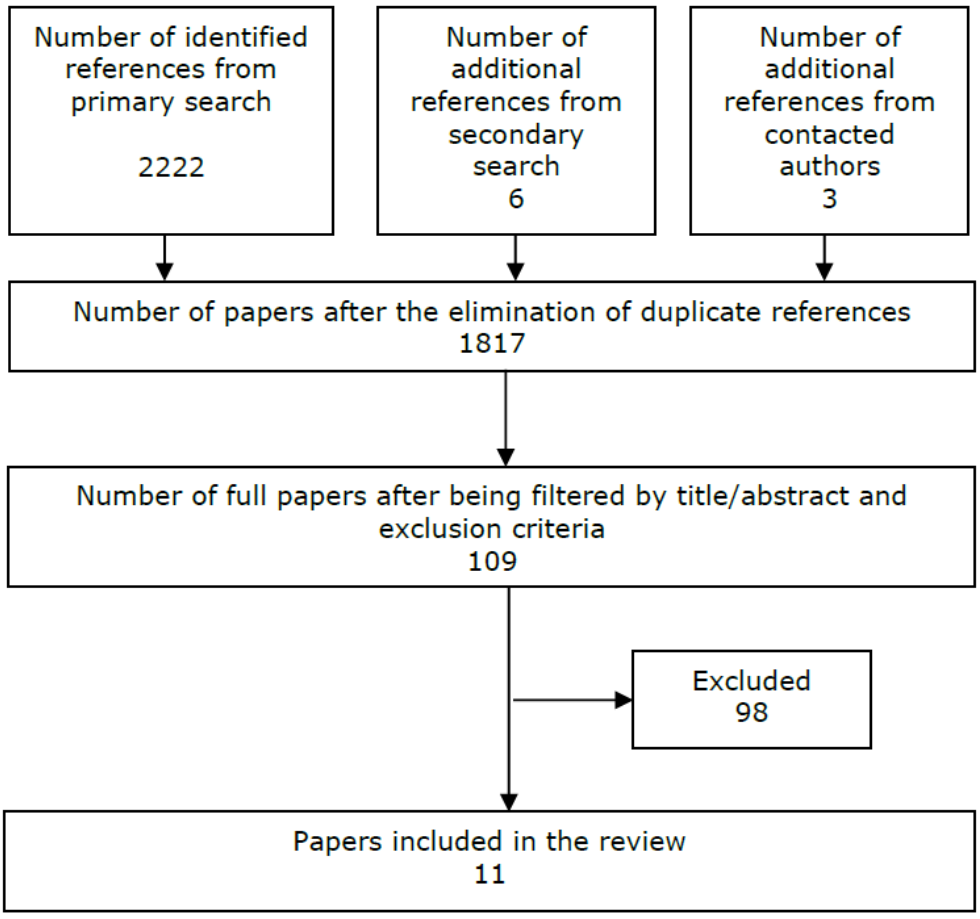
VII. RESULTS

x. Systematic review

The search produced 2,222 papers, including duplicates. Figure 6 reflects the study selection process. After removing duplicates and peer review, 1688 studies were eliminated, due to exclusion criteria (Adelman *et al.* 1992), language (Wakayama *et al.* 2008), and date of publication (Cockcroft *et al.* 1987). Finally, eleven studies met the inclusion and quality criteria.

Figure 7: Reference Flowchart



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General characteristics of included studies

The eleven studies were published between 1999 and 2010. Countries where the studies took place were USA (Callahan et al. 2006; Mion et al. 2003; Naylor et al. 2004; Naylor et al. 1999), New Zealand (Elley et al. 2008), UK (P. Griffiths et al. 2001), Denmark (Hordam et al. 2010), China (Huang & Liang 2005), Sweden (Strömberg et al. 2003) and Switzerland (Stuck et al. 2000; STUCK et al. 1995). All of them were randomized controlled trials and carried out by multidisciplinary care teams, excepting one (Hordam *et al.* 2010). Patients' age ranged from 65 to 86 years old. Health conditions more frequently reported were: dementia, hip fractures, chronic heart disease and people with multi-morbidity.

Studies were classified according to the following criteria: composition of the care team, contexts where the intervention was developed and type of diseases. The characteristics of the included studies are described in Table 8. Additionally, included studies were assessed using the TIDieR checklist and guide (Hoffmann et al. 2014). Results of the process can be found in table 7.

The main outcomes analysed in the studies were: acute care admission, rate of falls, quality of life, hospital admission, mortality and institutionalization.

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Table 7: TIDieR checklist and guide

	TIDieR checklist											
	Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8	Item 9	Item 10	Item 11	Item 12
Callahan 2006	☑	☑	☑	☑	☑	☑	☑	☑	☑	⊗	☑	☑
Elley 2008	☑	☑	☑	☑	☑	☑	☑	☑	☑	⊗	☑	☑
Griffiths 2001	☑	☑	⊗	☑	⊗	☑	☑	☑	☑	⊗	☑	☑
Hordam 2010	☑	☑	☑	☑	☑	☑	☑	☑	☑	⊗	☑	☑
Huang 2005	☑	☑	☑	☑	☑	☑	☑	☑	☑	⊗	☑	☑
Mion 2003	☑	☑	☑	☑	☑	☑	☑	☑	☑	⊗	☑	☑
Naylor 1995	☑	☑	☑	☑	☑	☑	☑	☑	☑	⊗	☑	☑
Naylor 2004	☑	☑	☑	☑	☑	☑	☑	☑	☑	⊗	☑	☑
Strömberg 2003	☑	☑	⊗	☑	☑	☑	☑	☑	☑	⊗	☑	☑
Stuck 1995	☑	☑	⊗	☑	☑	☑	☑	☑	☑	⊗	☑	☑
Stuck 2000	☑	☑	☑	☑	☑	☑	☑	☑	☑	⊗	☑	☑

Item 1. Brief name: Provide the name or a phrase that describes the intervention

Item 2. Why: Describe any rationale, theory, or goal of the elements essential to the intervention

Item 3. What (materials): Describe any physical or informational materials used in the intervention, including those provided to participants or used in intervention delivery or in training of intervention providers. Provide information on where the materials can be accessed (for example, online appendix, URL)

Item 4. What (procedures): Describe each of the procedures, activities, and/or processes used in the intervention, including any enabling or support activities

Item 5. Who provided: For each category of intervention provider (for example, psychologist, nursing assistant), describe their expertise, background and any specific training given

Item 6. How: Describe the modes of delivery (such as face to face or by some other mechanism, such as internet or telephone) of the intervention and whether it was provided individually or in a group

Item 7. Where: Describe the type(s) of location(s) where the intervention occurred, including any necessary infrastructure or relevant features

Item 8. When and how much: Describe the number of times the intervention was delivered and over what period of time including the number of sessions, their schedule, and their duration, intensity or dose

Item 9. Tailoring: If the intervention was planned to be personalised, titrated or adapted, then describe what, why, when, and how

Item 10. Modifications: If the intervention was modified during the course of the study, describe the changes (what, why, when, and how)

Item 11. How well (planned): If intervention adherence or fidelity was assessed, describe how and by whom, and if any strategies were used to maintain or improve fidelity, describe them

Item 12: How well (actual): If intervention adherence or fidelity was assessed, describe the extent to which the intervention was delivered as planned

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Table 8: Included studies' characteristics

STUDY	YEAR OF PUBLICATION	HEALTH CARE TYPE	PARTICIPANT'S AGE	MAIN OUTCOMES	DESIGN	CONTEXT	PARTICIPANTS INTERVENTION GROUP/TOTAL STUDY	DISEASE
CALLAHAN	2006	M	77.7 (5.7)	ACUTE CARE ADMISSION	RCT	AMBULATORY HEALTH CARE	84/153	DEMENTIA
ELLEY	2008	M	80.4 (4.8)	-RATE OF FALLS. -ACUTE CARE ADMISSION	RCT	DOMICILIARY HEALTH CARE	155/312	RISK OF FALL
GRIFFITHS	2001	M	77.6 (10.7)	QoL	RCT	HOSPITALARY HEALTH CARE	89/175	PLURIPATHOLOGY
HORDAM	2010	U	75 (65-88)	QoL	R CLINICAL TRIAL	TRANSITIONAL HEALTH CARE	82/175	HIP FRACTURE
HUANG	2005	M	76.9 (7.6)	HOSPITAL ADMISSION	R CLINICAL TRIAL	TRANSITIONAL HEALTH CARE	63/126	HIP FRACTURE
MION	2003	M	74.4 (6.5)	-HOSPITAL ADMISSION - QoL -MORTALITY	R CLINICAL TRIAL	TRANSITIONAL HEALTH CARE	326/650	PLURIPATHOLOGY
NAYLOR	1999	M	75.5 (6.3)	-HOSPITAL ADMISSION - QoL -ACUTE CARE ADMISSION	R CLINICAL TRIAL	TRANSITIONAL HEALTH CARE	177/363	PLURIPATHOLOGY
NAYLOR	2004	M	76.4 (6.9)	-HOSPITAL ADMISSION -ACUTE CARE ADMISSION	RCT	TRANSITIONAL HEALTH CARE	118/239	ICC
STRÖMBERG	2003	M	77 (7)	-HOSPITAL ADMISSION -MORTALITY	RCT	AMBULATORY HEALTH CARE	52/106	ICC
STUCK	2000	M	82 (4.7)	-INSTITUTIONALIZATION -MORTALITY -QoL	RCT	DOMICILIARY HEALTH CARE	264/791	PLURIPATHOLOGY
STUCK	1995	M	81 (3.9)	QoL	RCT	DOMICILIARY HEALTH CARE	215/414	PLURIPATHOLOGY

M: MULTIDISCIPLINARY HEALTH CARE
U: UNIDISCIPLINARY HEALTH CARE

Risk of bias of included studies

The 11 chosen studies, excepting Hordam *et al.* (2010), had a score of 2 (due to the 'High Risk' obtained in 'Blinding of Participants and Personnel'), excepting Griffiths *et al.* (2001) and Callahan *et al.* (2006) Callahan, with 3 points, which were assessed as 'Unclear Risk' in 'Blinding of Outcome Assessment'. Hordam *et al.* (2010) also obtained 3 point in the risk of bias assessment, showing 'Unclear Risk' in 'Blinding of Outcome Assessment', 'Blinding of Participants and Personnel' and 'Selective Reporting' (Table 9).

Table 9: Quality appraisal of included studies

REFERENCE	RANDOM SEQUENCE GENERATION	ALLOCATION CONCEALMENT	BLINDING OF PARTICIPANTS AND PERSONNEL	BLINDING OF OUTCOME ASSESSMENT	INCOMPLETE OUTCOME DATA	SELECTIVE REPORTING	OTHER BIAS	TOTAL SCORE	SELLECTED
Elley 2008	0	0	2	0	0	0		2	X
Blue 2001	0	0	2	2	0	0		4	
Rondinini 2008	2	2	2	2	0	0		8	
Ryden 2000	2	2	2	0	0	0		6	
Schraeder 2009	1	1	2	2	1	1		8	
Strömberg 2003	0	0	2	0	0	0		2	X
Stuck 2000	0	0	2	0	0	0		2	X
Stuck 1995	0	0	2	0	0	0		2	X
Trief 2009	2	2	2	2	2	2		12	
Goodwin 2003	1	1	2	0	0	0		4	
Griffiths 2001	0	0	2	1	0	0		3	X
Harris 2005	0	0	2	1	1	0	1	4	

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Hordam 2010	0	0	1	1	0	1		3	X
Huang 2005	0	0	2	0	0	0		2	X
Leung 2004	1	1	2	2	1	1	2	10	
Bellantonio 2008	0	2	2	2	1	1	1	9	
Berg 2004	2	2	2	2	1	2	2	13	
Bouman 2008	1	2	2	2	2	1		10	
Brand 2004	2	2	2	1	0	1		8	
Callahan 2006	0	0	2	1	0	0		3	X
Caplan 2004	0	2	2	2	1	1	1	9	
Carroll 2006	0	2	2	2	1	2		9	
Carroll 2007	1	2	2	2	1	0		8	
Cline 2008	0	1	2	2	0	0		5	
Coleman 2004	2	2	2	2	1	1		10	
Duffy 2010	1	2	2	2	1	2	2	12	
Leung 2004	2	2	2	2	1	1		10	
Leveille 1998	1	0	2	1	1	1		6	
McCorkle 2000	1	0	1	1	1	1		5	
McCusker 2003	0	1	2	1	0	1		5	
Stuck 1995	0	2	2	0	0	0		4	
Melis 2009	0	1	2	1	2	0		6	
Mion 2003	0	0	2	0	0	0		2	X
Naylor 1999b	0	0	2	0	0	0		2	X
Naylor 2004	0	0	0	0	0	1		1	X
Newcomer 2004	1	1	2	2	1	1		8	
Phelan 2004	1	1	2	1	0	1		6	

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Role of Advanced Practice Nurses in the studies

APN's functions were not detailed extensively. It was found that APNs had mostly a differentiating educational level, such as postgraduate education (master, specialist or PhD), and a high evidence-based approach in their practise. The main reported interventions were patients' education and training; relationship with families; physical, social and psychological comprehensive assessment; interdisciplinary care management during a defined period of time; direct clinical interventions and counseling.

APNs were inserted in multidisciplinary teams, having an active role as consultants and collaborating with other health professionals to develop individualized evidence-based care plans after an initial assessment. All those characteristics increased APN autonomy in the care process (Table 10).

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Table 10: Adapted Reimanis' criteria

Authors	Autonomy	Professional Status	NCM and MD Collaboration	NCM and Other Health Professionals Collaboration	Patient/Caregiver Satisfaction	Job Stress
Callahan 2006	X	X	X	X	X	-
Elley 2002	X	X	X	X	-	-
Griffiths 2001	X	X	X	-	-	X
Hordam 2010	X	X	-	-	-	-
Huang 2005	X	X	X	X	-	-
Mion 2003	X	X	X	X	X	-
Naylor 1999	X	X	X	X	X	-
Naylor 2004	X	X	X	X	X	-
Strömberg 2003	X	X	X	X	-	-
Stuck 1995	X	X	X	X	X	-
Stuck 2000	X	X	X	X	X	-

Results by contexts of provision of services

Long-term settings

Eight studies were included in this category, three of home care and five of transitional care. The main differences between those contexts were the initial point of the intervention (hospital in transitional care and patient's home in home care) and the type of follow-up, mostly with domiciliary visits in home care, and mostly with Information and Communication Technologies (ICT) in transitional care.

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Home care

Two different approaches were found in this environment, depending on the scope of the APNs services: focused on patients with a specific disease or on multimorbid patients.

In all the studies included in this category, the APN belonged to a multidisciplinary team. Mortality and institutionalization due to any cause was measured in Stuck *et al.,* 2000. Quality of life was measured in Stuck *et al.,* 2000 and Stuck *et al.,* 1995. Eventually, outcomes in Elley *et al.,* 2008 were related to the specific condition 'risk of falling': rate of falls and admission in acute care settings due to falling. Follow-up periods ranged from 12 to 36 months.

Interventions in all of the studies had the same provision scheme: firstly, the nurse performed a complex geriatric assessment, in which patients were assessed by their physical and cognitional status. After being identified potential needs and risks, the nurse, within a multidisciplinary team, developed an individualized care plan which included, if necessary, referrals to other health professionals. Nurses also followed-up subjects periodically by telephone and managed the use of additional economical or health resources (Tables 10 – 11).

Specific diseases approach:

This group included those patients who have been discharged from hospital due to a specific care problem. In the two studies included in this category, APNs developed specific interventions

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directed to those diseases. Elley *et al.* (2008) interventions were focused in fall prevention. However, those interventions did not reduce the falls rate. Data about the effectiveness of the program can be found in Table 11.

Multimorbid approach:

The two articles included in this category followed similar schemes. The main outcome was the improvement in functional status, in order to avoid patient's admission in hospital or in nursing-homes. Stuck *et al.* (2000) also measured institutionalizations and mortality. Patients underwent a comprehensive assessment. With the obtained data, and in collaboration with the geriatrician, the APNs developed an individualized care plan, based on patient's needs.

Both authors found that a program of comprehensive in-home geriatric assessment, with special importance in health education, giving patients and caregivers skills to promote self-care, always supported by APN, resulted in a significant improvement in functionality, institutionalization and a reduction in mortality (Table 11).

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Table 11 Outcome measures

HOME CARE						
	HOSPITAL ADMISSION	**ACUTE CARE ADMISSION**	**INSTITUTIONAL IZATION**	**FALLS**	**MORTALITY**	**QUALITY OF LIFE**
Elley et al., 2008		Readmission due to cardiac diseases at 6 weeks and 3, 6 and 12 months of follow up		Falls rate in 12 months of follow up.		
Stuck et al., 2000			Permanent nursing home admission in 3 years of follow-up.		Mortality in 3 years of follow-up	Support in the performance of ADL in 3 years of follow-up.
Stuck et al., 1995						Functional status: Dependency level in the performance of ADL and IADL in 3 years of follow up.

TRANSITIONAL CARE					
Hordam et al. 2010					General health status (SF-36) after total hip replacement. Physical status. Emotional Status. Pain. Vitality. Social function. Mental health
Huang et al. 2005	Hospital admission in 3 months of follow up.				
Mion et al. 2003	Hospital admission.			Mortality in 3 years of follow-up	Support in the performance of ADL in 3 years of follow-up.
Naylor et al. 1999b	Hospital readmission in the 24 weeks after discharge.	Admission in acute care wards in the 24 weeks after discharge.			Functional status: Dependency level in the performance of ADL and IADL in 3 years of follow up.
Naylor et al. 2004	Hospital readmission in the 52 weeks after discharge.	Admission in acute care wards in the 52 weeks after			

		discharge.		
AMBULATORY HEALTH CARE				
Callahan et al. 2006		Admission rate in acute care.		
Strömberg et al., 2003	Hospital admission due to any case in 12 months of follow up.		Number of deaths in 3 and 12 months of follow up.	
HOSPITAL HEALTH CARE				
Griffiths et al. 2001				Dependency level -measured with Barthel test- after discharge.

Transitional care

The key points in this type of health care are the discharge planning and the continuity of care, which allows to patients and nurses to develop a confident based relationship. It is more comfortable for patients that cannot move from his home to the care center.

APNs acted as links between patients, community resources and health system. Discharge planning is a process of assessing hospitalized patients and planning for their leaving the hospital and may include screening, psychosocial assessment, provision of counseling and education, coordination of an interdisciplinary team of providers, activation of community services, follow-up and evaluation (Huang & Acton 2004). This model of care has shown a reduction in health costs due to a reduction in readmissions (Caplan et al. 2004; Huang & Acton 2004; Naylor et al. 2004).

Subjects' health problems differed between studies: those in Mion *et al.,* 2003 a Naylor 1999 had different chronic diseases; those in Naylor *et al.,* 2004 had chronic heart disease and, finally, patients in Hordam *et al.,* 2010 and Huang *et al.,* 2005 suffered of hip problems (total hip replacement and hip fracture, respectively).

In all of the studies included into this category, excepting Hordam *et al.,* 2010, which was unidisciplinary, the APN was inserted in a multidisciplinary team. Again, all excepting Hordam *et al.,* 2010,

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used the outcome `hospital admission'. Other outcomes measured were quality of life (Hordam *et al.,* 2010, Mion *et al.,* 2003 and Naylor 1999) and mortality (Mion *et al.,* 2003) (Table 12).

In all articles included, excepting in Naylor et al. (2004), APNs used phone calls to contact with patients during the follow-up period. Those contacts had two objectives: Consultation, in the case that patients or caregivers needed any kind of support related with their health condition; and Follow-up, to make sure that the program was correctly followed by both patients and caregivers.

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Table 12: Health Outcomes

		PLURIPATHOLOGY		SPECIFIC DISEASE		
		DOMICILIARY CARE				
		Stuck 1995	Stuck 2000	Elley 2008(RoF)		
Quality of life	Independence to perform IADL	OR (95% CI): 3.0 (0.6-5.4) P=0.02				
	Health Status		2.3 IG vs 0.5 CG, p=0.01 *			
Admission in long-term settings (no. persons admitted)		OR (95% CI): 0.4 (0.2-0.9) P=0.02	OR (95% CI): 2.1 (1.1-3.8) P=0.02			
Number of falls				285 IG vs 299 CG ** Mean (95% CI): 1.91 (1.70–2.16) IG vs 2.01 (1.79–2.25) CG		
Falls per person-year during study, mean (95% CI)				1.91 (1.70–2.16) IG vs 2.01 (1.79–2.25) CG (12 months)		
		TRANSITIONAL CARE				
		Mion 2003	Naylor 1999	Naylor 2004 (CHD)	Hordam 2010 (THR)	Huang 2005 (HF)
Admission in long-term settings (no. persons admitted)		0.7% IG vs 3.0% CG; OR (95% CI): 0.21 (0.05 to 0.99)	20.3% IG vs 37.1% CG; p>0.001	39% IG vs 61% CG (P<0.047)		
Patient's satisfaction		3.41 IG vs 3.03 CG; MD (95% CI) 0.37 (0.13-0.62)		n (Mean ± SD): 92 (83.1± 9.6) IG vs 91 (77.8± 11.2) CG P< 0.001 (6 weeks)		
Quality of life				n (Mean ± SD): 89 (3.2± 1.5) IG vs 100 (2.7± 1.5) CG P< 0.05 (3 months)	52.8 vs 60.6*** P< 0.007	

Rehospitalization			47.5% IG vs 61.2% CG, P<0.01		Mean (SD): 2.91 (0.05) IG vs 2.67 (0.09) CG P<0.02
Dropouts				11 (16.4%) IG vs 28 (30.1%), P<0.031	
	AMBULATORY CARE				
			Callahan 2006 (Dementia)		**Stromberg 2003 (CHD)**
Patient's Behaviour (measured with Patient Neuropsychiatric Inventory tool)			Mean (SD) CG:16.1 (19.4) vs Mean (SD) IG: 8.0 (12.0) P: 0.01 (12 months) Mean (SD) CG: 16.2 (18.7) vs Mean (SD) IG: 8.4 (10.2) P: 0.01 (18 months)		
Caregivers' Stress (measured with Patient Neuropsychiatric Inventory tool)			Mean (SD) CG:16.1 (19.4) vs Mean (SD) IG: 8.0 (12.0) P: 0.03 (12 months)		
Caregivers' Health Status (measured with Caregivers' Patient Health Questionnaire-9 scores tool)			Mean (SD) CG: 7.7 5.2 (5.3) vs Mean (SD) IG: 3.1 (4.5) P: 0.02 (18 months)		
Quality of life: Health status					2.3 IG vs 0.5 CG, p=0.01 *
Admission in long-term settings (no. persons admitted)					350 IG vs 592 CG, p=0.045
Mortality					3 IG vs 13 CG, p=0.009

	HOSPITAL CARE	
	Griffiths 2001	
Total Length of stay	Mean (SD) CG:26.0 (29.0) vs Mean (SD) IG: 36.9 (26.2) (*P*= 0.036)	

MD: mean difference; IG: Intervention Group; CG: Control Group; CHD: Chronic heart disease; THR: Total hip replacement; HF:Hip fracture; RoF: Risk of falling *The intervention group had significantly higher self-care scores with 2.3 scores higher than baseline compared to the control group, with 0.5 scores higher than baseline (Measured with the *Heart Failure Self-Care Behaviour Scale)*. **Number of falls in 12 month.***Differences in test score in the IG from baseline until 9 months of follow-up.

Specific diseases approach:

Three studies were included in this category: one focused on hip fracture, and the other one on heart failure. The process started at hospital, where the APN made an evidence-based discharge plan in collaboration with patients, caregivers and other clinicians. Later on, at patient's home, APNs evaluated the environment in order to reduce the risk of adverse events like fallings. APNs also gave information and educated patients and caregivers about the disease, medications, nutritional advice (e.g. reducing sodium intake) and psychological support, and developed an evidence-based care plan, including expected health outcomes, that had been previously accorded with both patients and caregivers. In some cases, a brochure with information and videotapes were given to patients and caregivers. APNs were available by telephone, and followed-up patients and caregivers by telephone and home visits. They also were in contact with the General Practitioner (GP) and the health team to inform them about patients' progress and to make changes in the care plan, if necessary.

This care was directed to reducing readmission in acute care units due to a specific disease. Because of that the nurse should have expert knowledge and training of the health problem to attend patients' needs, and also to prevent adverse situations. APNs in Hordam *et al.* (2010) performed interventions to reduce falls and

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increase quality of life. Naylor *et al.* (2004) measured readmissions in hospital and acute settings. APNs interventions were focused on education, but also in monitoring patients' health status and improving cardiac function, which reduced rehospitalizations. It is important to highlight that patient satisfaction, assessed only through 6 weeks, was also enhanced. Results showed improvements in general: except for the rate of repeated falls, all the outcomes were significantly better for patients in the intervention group (Table 11).

Multimorbid aproach:

The outcomes measured in the two articles included into this category were improvements in functional status, hospital readmission and mortality. APNs interventions were focused on patient's health education, caregiver's support, development of health promoting programs and case management.

The follow-up was initiated in the hospital, where APNs interviewed patients to assess their specific needs. With the data obtained, and the recommendations of other health staff members, the nurse designed a discharge plan that included caregivers' needs. The APN also managed community resources and health agencies if necessary. In the first home visit after discharge, APNs gave information to patients and caregivers about their health problem, and accorded with the patient which should be the outcomes that

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they would achieve. Follow-up was performed with telephone and home visits, and the APN was also available by telephone.

Mion *et al.* (2003) found significant differences between groups in patient's satisfaction and in the admission rates to nursing home and no differences in health costs, whereas in Naylor *et al.* (1999), APNs reduced hospital readmissions, lengthened the time until the first readmission, and decreased the cost of care ($1 238 928 CG vs $642 595 IG [*P*=.001]). (Table 11)

Short-term settings

Hospital care

Professional activity for APNs extended beyond patient care and included consultation, education and research activities.

The APN interviews the patient within the admission, and designed a care plan with a multidisciplinary health team, to make sure that patient's needs in his hospital stay are covered. During this period of time, the APN keeps in close contact with patient, caregiver or relatives, and also with the health staff teams to make changes in the care plan if necessary. Before discharge, the nurse interviews the patient and talks with clinicians, physiotherapists, occupational therapists and other health members to elaborate a discharge plan according to patient needs. In summary, the activities that the APN develops in this setting are comprehensive admission assessment with history and physical exam, coordination and implementation of

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care by ordering and interpreting diagnostics, and evaluating interventions. Consequently, the APN becomes a leader and a reference to other health staff.

In Griffiths *et al.* (2001) study, patients with different conditions were admitted into a nurse-led inpatient unit. Interventions developed by APNs were case management, health assessment and discharge planning. Outcome measures were those related with patients' quality of life (Table 10). No negative results were found (Table 11).

Ambulatory care

Usually, it is in this kind of health care that, according to its specialty, the nurse carries his/her own caseload, so she is able to develop advanced skills as a case manager. These skills may include comprehensive assessment with an initial history and physical, prescribing the treatment, monitoring and interpreting diagnostic tests, and making referrals, if necessary, with other health providers.

The two studies included in this context fill the characteristics of the "specific disease" approach. In the case of Callahan *et al.* (2006), patients suffered of dementia disease. They were followed-up in a primary care clinic by the APN. The main outcome measure was acute care readmission. Interventions performed by APNs in this context were focused not only on patients' education and direct care, but also on caregivers' wellbeing (Table 10). The interventions showed

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behavioral improvements in patients, and also revealed lower stress in patients and caregivers due to dementia behavioral symptoms (Table 12). In Strömberg *et al.* (2003), patients suffered of chronic heart failure (CHF). Consequently, APNs interventions were aimed to preventing cardiac events. They obtained positive results in terms of mortality, readmissions and self-care behaviour.

xi. Qualitative Phase

Delphi phase:

Five expert panelists were invited to respond the first Delphi round. It was finished and completed in eight weeks. For the second Delphi round, the same 5 panelists were invited again, and all of them accepted.

In the first round, 468 quotes were analyzed. Panelists reported 15 duplicated quotes, and discrepancies in 100 quotes. It was needed a second round to assess those remained quotes with partial agreement. Finally, after eliminating duplicates, full agreement was obtained between the 453 quotes and their correspondent NIC interventions.

Qualitative analysis

The evaluated interventions were distributed by health contexts to carry out an analysis of the density of these interventions in each of the five health contexts.

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A total of 36 studies, with 73 extracted interventions codified with the NIC, were analyzed (Table 12). Home care (60 interventions, 12.57%), followed by transitional care (51 interventions, 29.14%) were the contexts of care where more NIC interventions were isolated. Residential, ambulatory and hospital care did not exceeded 20% of total interventions detected in the studies (Table 13).

Behavioral (27.40%) and Health Care System (24.66%) domains were the more frequent categories detected along studies. Subsequently, domains for Physiological (simple 13.7% and complex 13.7%), Safety (12.33%), Family (4.11%) and Community (4.11%) interventions were less frequent (Table 13).

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Table 13: Studies included in the review and NIC interventions detected in each of them

Home		Residential		Transitional		Ambulatory		Hospital	
Study	NIC interventions	Study	NIC interventions	Study	NIC interventions	Study	NIC interventions	Study	NIC interventions
Elley, 2008	12	Leveille, 1998	17	Cline 2008	15	Callahan 2003	16	Griffiths 2001	6
Stuck, 2000	11	Ryden 2000	4	McCusker 2003	5	Schraeder 2009	9	Harris 2005	7
Stuck, 1995	21	Bellantonio 2008	8	Hordam 2010	17	Stromberg 2003	20		
Blue L 2001	14			Huang 2005	18				
Rondinini 2008	21			Mion 2003	11				
Schein 2005	1			Naylor 1999	16				
Schraeder 2009	9			Naylor 2004	18				
Trief 2009	5			Newcomer 2004	25				
Leung 2004	7			Coleman 2004	13				
Bouman 2008	6			Caplan 2004	6				
Carrol 2006	9			Brand 2004	8				
Carrol 2007	9			Goodwin 2003	12				
Duffy 2010	9								
Leung 2004	7								
McCorkle 2000	6								
Melis 2009	7								

Table 13: Interventions described in each study, by NIC domains and contexts of care

DOMAIN: PHYSIOLOGICAL: BASIC					
	CONTEXT OF CARE n (%)				
NIC (n=10; 13.70%)	HOME 8 (80)	TRANSITIONAL 3 (30)	RESIDENTIAL 2 (20)	AMBULATORY 3 (30)	HOSPITAL 1 (10)
1650 Eye Care	X				
1720 Oral Health Promotion	X				
1850 Sleep Enhancement	X				
1400 Pain Management			X		
1100 Nutrition Management	X			X	
1710 Oral Health Maintenance	X				X
1160 Nutritional Monitoring	X		X		
1800 Self-Care Assistance	X		X		
5246 Nutritional Counseling		X		X	
200 Exercise Promotion	X	X		X	

DOMAIN: PHYSIOLOGICAL: COMPLEX					
	CONTEXT OF CARE n (%)				
NIC (n=10; 13.70%)	HOME 7 (70)	TRANSITIONAL 8 (80)	RESIDENTIAL 1 (10)	AMBULATORY 4 (40)	HOSPITAL 1 (10)
3520 Pressure Ulcer Care	X				
2000 Electrolyte Management		X			
4044 Cardiac Care: Acute		X			
4130 Fluid Monitoring				X	X
2390 Medication Prescribing	X	X			
4046 Cardiac Care: Rehabilitative	X	X			
4050 Vital Signs Monitoring	X	X			
2080 Fluid/Electrolyte Management	X	X	X	X	
2380 Medication Management	X	X		X	

24040 Cardiac Care	X	X		X	

DOMAIN: BEHAVIORAL					
	CONTEXT OF CARE n (%)				
NIC (n=20; 27.40%)	HOME 17 (85)	TRANSITIONAL 17 (85)	RESIDENTIAL 7 (35)	AMBULATORY 7 (35)	HOSPITAL 1 (5)
5350 Relocation Stress Reduction	X				
5440 Support System Enhancement	X				
4360 Behavior Modification		X			
4350 Behavior Management	X	X			
5270 Emotional Support	X	X			
5430 Support Group	X	X			
5520 Learning Facilitation	X	X		X	
5540 Learning Readiness Enhancement	X	X			
5602 Teaching: Disease Process	X	X		X	
5614 Teaching: Prescribed Diet	X	X			
5618 Teaching: Procedure/Treatment	X	X			
4920 Active Listening		X	X		
5230 Coping Enhancement		X	X		
5616 Teaching: Prescribed Medication	X	X			X
4490 Smoking Cessation Assistance	X	X	X	X	
5240 Counseling	X	X	X	X	
5612 Teaching: Prescribed Activity/Exercise	X	X	X	X	
5390 Self-Awareness Enhancement	X	X	X	X	
5250 Decision-Making Support	X				
5510 Health Education	X	X	X	X	

DOMAIN: SAFETY					
	CONTEXT OF CARE n (%)				
NIC (n=9; 12.33%)	HOME 9 (100)	TRANSITIONAL 6 (66,67)	RESIDENTIAL 2 (22,22)	AMBULATORY 2 (22,22)	HOSPITAL 2 (22,22)
6404 Abuse Protection Support: Elder	X				
6680 Vital Signs Monitoring	X				
6480 Environmental Management	X	X			
6485 Environmental Management: Home Preparation	X	X			
6486 Environmental Management: Safety	X	X			
6490 Fall Prevention	X	X			
6530 Immunization/Vaccination Management	X			X	
6610 Risk Identification	X	X	X		X
6520 Health Screening	X	X	X	X	X

DOMAIN: FAMILY					
	CONTEXT OF CARE n (%)				
NIC (n=3; 4.11%)	HOME 2 (66,67)	TRANSITIONAL 2 (66,67)	RESIDENTIAL 0 (0)	AMBULATORY 2 (66,67)	HOSPITAL 0 (0)
7180 Home Maintenance Assistance	X				
7140 Family Support		X		X	
7040 Caregiver Support	X	X		X	

DOMAIN: HEALTH CARE SYSTEM					
	CONTEXT OF CARE n (%)				
NIC (n=18; 24.66%)	HOME 14 (77,78)	TRANSITIONAL 13 (72,22)	RESIDENTIAL 9 (50)	AMBULATORY 11 (61,11)	HOSPITAL 5 (27,78)
7700 Peer Review	X				
7850 Staff Development				X	
8140 Shift Report	X				
7690 Laboratory Data Interpretation		X			
8120 Research Data Collection		X			
7650 Delegation	X			X	X
7830 Staff Supervision				X	X
7710 Physician Support	X	X			
7800 Quality Monitoring	X	X			
7370 Discharge Planning	X	X	X		X
7910 Consultation	X	X	X	X	
7920 Documentation	X	X	X	X	
7960 Health Care Information Exchange	X	X	X	X	
8100 Referral	X	X	X	X	
8180 Telephone Consultation	X	X	X	X	
8190 Telephone Follow-up	X	X	X	X	
7320 Case Management	X	X	X	X	X
8020 Multidisciplinary Care Conference	X	X	X	X	X

DOMAIN: COMMUNITY					
	CONTEXT OF CARE n (%)				
NIC (n=3; 4.11%)	HOME 3 (100)	TRANSITIONAL 2 (66,67)	RESIDENTIAL 1 (33,33)	AMBULATORY 2 (66,67)	HOSPITAL 1 (33,33)
6484 Environmental Management: Community	X				
8700 Program Development	X	X	X	X	
8500 Community Health Development	X	X		X	X

Home care

The 16 studies included in this category were those in which patients received APN services at home. Countries where those studies were carried out were New Zealand (Elley et al. 2008), USA (Stuck et al. 2000; Stuck et al. 1995; Schraeder et al. 2009; Trief et al. 2009; Carroll 2007; Carroll & Rankin 2006; Duffy et al. 2010; McCorkle et al. 2000), UK (Blue et al. 2001; Leung et al. 2004), Italy (Rondinini et al. 2008), Canada (Schein et al. 2005), Netherlands (Bouman et al. 2008; Melis et al. 2009) and China (A. C.-T. Leung et al. 2004). 60 interventions, repeated 167 times, were extracted from those studies (Table 12). Some examples of quotations and their correspondent NICs interventions can be found in Table 3. The density of the interventions varied from 1 to 10. Most repeated NICs codes in this context were: Exercise Promotion, Teaching: Prescribed Activity/Exercise, Case Management, Multidisciplinary Care Conference, Health Care Information Exchange, Telephone Follow-up (7 repetitions), Documentation (8 repetitions), Program Development (8 repetitions), Health Education (10 repetitions), Health Screening (10 repetitions).

Interventions only found in this context were: Eye Care, Oral Health Promotion, Sleep Enhancement, Pressure Ulcer Care, Decision-Making Support, Relocation Stress Reduction, Support System Enhancement, Abuse Protection Support: Elder, Environmental

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Management: Community, Vital Signs Monitoring, Home Maintenance Assistance, Peer Review, and Shift Report. Table 14 shows examples of home care text quotes with their correspondent NIC interventions.

Table 14: Home care NIC interventions/Text quotes

HOME CARE		
Stuck 1995	7960 Health Care Information Exchange	*"The nurse practitioners **discussed each case with the study geriatricians**, developed rank-ordered recommendations, and conducted in-home follow-up visits every three months to monitor the implementation of the recommendations, make additional recommendations"*
Stuck 1995	8700 Program Development	*"The nurse practitioners discussed each case with the study geriatricians, **developed rank-ordered recommendations**, and conducted in-home follow-up visits every three months to monitor the implementation of the recommendations, make additional recommendations"*
Blue 2001	8190 Telephone Follow-up	*"Essentially, it consisted of a number of planned home visits of decreasing frequency, supplemented by telephone contact as needed."*
Elley 2008	5510 Health Education	*"A falls-and-fracture nurse coordinator with substantial gerontological experience was trained by the clinical investigators and at an established community-based fall-prevention program in Australia (2 days). She visited intervention participants at home and used a standardized health assessment and an evidence-based algorithm to assess risk of falls and refer participants to their family physician, an optometrist, podiatrist, physical therapist, or occupational*

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		therapist and to receive a home-based exercise program to address identified risks: 1. Health assessment: history of circumstances of the fall, medications, previous cardiovascular or neurological illness, continence, vision, postural blood pressure, balance and gait, cardiovascular screen (syncope, arrhythmia). 2. Home hazards assessment: an audit for environmental safety. 3. Bone health assessment: a brief osteoporosis risk screen, recommendation for family physician assessment to consider vitamin and calcium supplementation, dual energy X-ray absorptiometry (DEXA) measurement of bone density, and bisphosphonates where indicated. 4. The Otago Exercise Programme delivered by a trained health practitioner or physical therapist for 1 year during home visits at Weeks 1, 2, 4, and 8 and after 6 months. Participants were given monthly calendars to fill in and return to researchers recording daily adherence to exercises and a walking plan. Exclusion criteria for the Otago Exercise Programme were a Timed Up and Go Test score longer than 30 seconds or marked neurological impairment. The falls-and-fracture nurse coordinator could refer those excluded to a community physical therapist who tailored an alternative exercise program."
Trief 2009	5602 Teaching: Disease	*"Discussion included diabetes education, nutrition and activity counselling, and collaborative goal*

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	Process	*setting. The patients and CDE collaboratively formulated a plan to address patient concerns, especially about BG, BP and lipid control."*
Stuck 1995	8180 Telephone Consultation	*"If additional contact was considered necessary, the nurse practitioner telephoned the participant or was available by telephone."*

Transitional Care

The 12 studies included in this category were those in which the APN made at least one visit while the patient was admitted to the hospital, where data for the development of a care plan at discharge were obtained. Later, that same nurse was responsible to follow-up the patient, at home and also with regular phone calls. Countries where those studies were carried out were Sweden (Cline et al. 1998), Canada (McCusker et al. 2003), Denmark (Hordam et al. 2010), China (Huang & Liang 2005), USA (Mion et al. 2003; Naylor et al. 2004; Naylor et al. 1999; Newcomer et al. 2004; Coleman et al. 2004; Goodwin et al. 2003) and Australia (Caplan et al. 2004; Brand et al. 2004). 51 interventions were extracted, mentioned 160 times in these studies (Table 13). The density of the interventions varied from 1 to 9, which implies that there were no common interventions at 12 studies. Interventions most repeated in this context were: Caregiver Support, Documentation, Telephone Consultation, Telephone Follow-up (6 repetitions), Referral, Teaching: Disease Process (7

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repetitions), Health Education (8 repetitions), Health Screening (8 repetitions), Program Development (9 repetitions).

Specific interventions in this context were: Pain Management, Electrolyte Management, Cardiac Care: Acute, Behavior Modification, Laboratory Data Interpretation and Research Data Collection. Table 15 shows examples of home care text quotes with their correspondent NIC interventions.

Table 15: Transitional care NIC interventions/Text quotes

TRANSITIONAL CARE		
Naylor 2004	4044 Cardiac Care: Acute	*"APNs participated in a 2-month orientation and training program focused on developing their competencies related to early recognition and treatment of acute episodes of heart failure in elders, with particular attention to how it complicates and is complicated by common comorbid conditions such as diabetes mellitus or depression."*
Hordam 2010	8190 Telephone Follow-up	*"All patients received the standard postoperative procedure in the hospital, which means discharge after 5–7 days and a clinical control in the outpatient department after 3 months. But the intervention group also received telephone support and counselling 2 and 10 weeks after surgery"*
Goodwin 2003	5510 Health Education	*"Fully informed of her options and that the surgeon and other providers were aware of all matters relevant to ensuring a successful outcome."*
Mion 2003	7040 Caregiver Support	*"If the primary informal caregiver was*

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		present in the ED (Emergency Department), he or she was also assessed to determine his or her knowledge, skills, and stress level"
McCusker 2003	8100 Referral	*"After completing the assessment, the study nurses consulted with hospital ED and geriatric staff and made referrals, as needed, to the local community health center, the primary physician, the geriatric outpatient clinic, or other community services"*

Residential care

The studies included in this context were those in which patients received APN services in nursing homes. All studies were carried out in the USA. Only three studies were obtained (Leveille et al. 1998; Ryden et al. 2000; Bellantonio et al. 2008), with a total of 22 interventions mentioned 28 times (Table 13). Specific quotes with their correspondent NICs interventions can be found in Table 16. In this case, common interventions were found: Coping Enhancement, Health Education, Documentation, Case Management, Health Care Information Exchange and Referral. No specific interventions were found in this care context.

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Table 16: Residential care NIC interventions/Text quotes

RESIDENTIAL CARE		
Bellantonio 2008	6520 Health Screening	*"The geriatrician and geriatrics advanced practice nurse conducted medical and cognitive evaluations"*
Ryden 2000	4350 Behavior Management	*"Aggressive behavior in residents at all three facilities was document"*
Leveille 1998	7920 Documentation	*"The GNP contacted each intervention participant's primary care physician to obtain information about the patient's current health problems and the provider's goals for the patient"*

Ambulatory care

The studies included in this context were those in which patients received APN services in an outpatient consultation (no overnight stay). Only two studies from the USA were obtained (Callahan et al. 2006; Schraeder et al. 2009), and one from Sweden (Strömberg et al. 2003) with a total of 31 interventions mentioned 38 times (Table 13). Some examples of quotations and their correspondent NICs interventions can be found in Table 17. As in the previous case, common interventions were found: Counseling, and Case Management.

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Table 17: Ambulatory care NIC interventions/Text quotes

AMBULATORY CARE		
Schraeder 2009	5270 Emotional Support	*"This support includes providing individualized assessment, care planning, education, coordination, and psychosocial support"*
Callahan 2006	5520 Learning Facilitation	*[…] "patient exercise guidelines with a guidebook and videotape; and a caregiver guide provided by the local chapter of the Alzheimer's Association".*
Callahan 2006	5616 Teaching: Prescribed Medication	*"If the nonpharmacological approach failed, the care manager then collaborated with the primary care physician to institute drug therapy for depression, agitation, sleep disturbance, or delusions".*

Hospital Care

The studies included in this context were those in which patients received APN services at the hospital (with overnight stay). Two studies, from the UK (Griffiths et al. 2001; Harris et al. 2005), were included in this context, with a total of 11 interventions mentioned 13 times (Table 13). Specific quotes in this setting and their correspondent NICs interventions can be found in Table 18. Common interventions were: Health Screening and Multidisciplinary Care Conference.

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Table 18: Hospital care NIC interventions/Text quotes

HOSPITAL CARE		
Griffiths 2001	7650 Delegation 7830 Staff Supervision	*"Patient care is managed by one of three nurse practitioners (F-grade). Nurses lead the multi-disciplinary clinical team."*
Harris 2005	8020 Multidisciplinary Care Conference 8700 Program Development	*"Patient care on the NLIU was managed by one of three nurse practitioners (F grade) responsible for the planning and delivery of nursing care, discharge planning and coordination and leadership of the multidisciplinary team including referral for medical input when required".*

Common interventions in all the contexts

There were 3 common interventions identified in the five studied contexts: Health Screening, Case Management, and Multidisciplinary Care Conference (Table 19).

Table 19: Most common NIC interventions/health context

6610 Risk Identification	4/5 (D-H-T-R)
4490 Smoking Cessation Assistance	4/5 (D-R-T-A)
5240 Counseling	4/5 (D-R-T-A)
5612 Teaching: Prescribed Activity/Exercise	4/5 (D-R-T-A)
7370 Discharge Planning	4/5 (D-T-H-R)
5390 Self-Awareness Enhancement	4/5 (D-T-R-A)
5510 Health Education	4/5 (D-T-R-A)
7910 Consultation	4/5 (D-T-R-A)
7920 Documentation	4/5 (D-T-R-A)
7960 Health Care Information Exchange	4/5 (D-T-R-A)
8100 Referral	4/5 (D-T-R-A)

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8180 Telephone Consultation	4/5 (D-T-R-A)
8190 Telephone Follow-up	4/5 (D-T-R-A)
8700 Program Development	4/5 (D-T-R-A)
2080 Fluid/Electrolyte Management	4/5 (D-T-R-A)
8500 Community Health Development	4/5 (H-D-T-A)
6520 Health Screening	5/5
7320 Case Management	5/5
8020 Multidisciplinary Care Conference	5/5

D: Domiciliary health care; R: Residential health care; T: Transitional health care; A: Ambulatory health care; H:Hospital health care

In the case of long-term settings (domiciliary, residential and transitional care), the main components of those three interventions could be summarized as the followings: firstly, the nurse performed a complex geriatric assessment, in which patients were assessed by their physical and cognitional status. After being identified potential needs and risks, the nurse, inserted in a multidisciplinary team, developed an individualized care plan, with all the collected data form the interview, which included, if necessary, referrals to other health professionals. Nurses also followed-up subjects periodically by telephone and managed the use of additional economical or health resources, if needed (Tables 20, 21, 22).

On the other hand, we classified ambulatory and hospital care under short-term care, even though their scope of services is completely different. In ambulatory care, the APN usually manage resources, being the link between the patient/caregiver and other health professionals and services (Tables 20, 21, 22). In hospital care, APNs' scope of services is more limited. Nevertheless, they are

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responsible of the discharge planning, being leaders of the multidisciplinary team (Tables 20, 21, 22).

Table 20: Quotes of NIC intervention Health Screening in diverse health contexts of care

6520 HEALTH SCREENING	
HOME CARE	
Stuck 2000	*"They performed a comprehensive geriatric assessment by evaluating subjects for hearing, vision, nutritional status, oral health, appropriateness of medication use, safety in the home, ease of access to the external environment, and social support"*
Stuck 1995	*"The subjects were also evaluated for functional status, oral health, mental status (presence or absence of depression and cognitive status, gait and balance, medications, percentage of ideal body weight, vision, hearing, extensiveness of social network, quality of social support"*
Duffy 2010	*"Baseline patient descriptors were obtained from the Outcomes and Assessment Information Set (OASIS) Start of Care form. Hospital readmission, reasons for hospitalization and emergent care, length of stay."*
TRANSITIONAL CARE	
Goodwin 2003	*"The case manager also employed a number of standard assessment instruments, including activity of daily living scale, instrumental activity of daily living scale, Mini-Mental State Examination, Geriatric Depression Scale, short form, Comprehensive Functional Assessment, and a Home Safety Checklist. These assessments were usually completed during the first two encounters with the patient."*
McCusker 2003	*"The assessment checklist, adapted from those used in other programs, included physical and mental function, medical status, and relevant social factors"*
Naylor 2004	*"Patients' and caregivers' goals; nature, duration, and severity of heart failure and comorbid conditions; physical, cognitive, and emotional weeks"*

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Hordam 2010	*"The intervention was performed by the same nurse using a structured interview guide to identify the patients' perceptions of their current situations and need for further support and counselling of importance to their health status."*
AMBULATORY CARE	
Schraeder 2009	*"Patient, NCM (nurse case manager), and physician decision supports include having access to appropriate blood tests, trended laboratory test results and other health measures, and disease-specific, evidence-based medical and nursing guidelines maintained by a board of MCCD medical directors."*
RESIDENTIAL CARE	
Leveille 1998	*"Risk factors were identified initially from the baseline health assessment at the time of study enrolment"*
Bellantonio 2008	*"The geriatrician and geriatrics advanced practice nurse conducted medical and cognitive evaluations"*
HOSPITAL CARE	
Griffiths 2001	*"The Barthel index score improved by a mean of 3.1 points during the study"*

Table 21: Quotes of NIC intervention Case Management in diverse health contexts of care

7320 CASE MANAGEMENT	
HOME CARE	
Melis 2009	*"The problems targeted concerned cognition, nutrition, behaviour, mood or mobility, and required nursing assessment, coordination of care, therapeutic monitoring or case management"*
Stuck 1995	*"The nurse practitioners discussed each case with the study geriatricians, developed rank-ordered recommendations, and conducted in-home follow-up visits every three months to monitor the implementation of the recommendations, make additional recommendations"*
TRANSITIONAL CARE	
Goodwin 2003	*"The case manager then contacted participants by telephone or by meeting the patient during a regular*

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	physician visit and then scheduled a home visit, usually within 24 hours of the initial contact, to conduct an initial assessment, problem identification, and goal setting"
Strömberg 2003	*"The patients in the intervention group were followed up at a nurse-led heart failure clinic staffed by specially educated and experienced cardiac nurses, delegated the responsibility for making protocol-led changes in medications. The first visit was scheduled 2–3 weeks after discharge. All visits lasted for 1 h and the nurse evaluated the status and if the heart failure treatment was optimised, gave education about heart failure and social support to the patient and his family"*
Naylor 1999	*"The APNs assumed responsibility for discharge planning while the patient was hospitalized"*
Naylor 2004	*"Use of care management strategies foundational to the Quality-Cost Model of APN Transitional Care"*
AMBULATORY CARE	
Schraeder 2009	*"The Carle MCCD intervention contains the core components of the CCM, including a delivery system providing a combination of case management and disease management services by primary care teams."*
Callahan 2003	*"Intervention patients and their caregivers received collaborative care management for a maximum of 12 months by a team led by their primary care physician and a geriatric nurse practitioner who served as the care manager."*
RESIDENTIAL CARE	
Ryden 2000	*"In addition, APNs made their own assessments related to the presence or absence of each of the four clinical problems (urinary incontinence, pressure ulcers, depression, and aggression), the level of severity of the problem, and the residents who were at risk for each problem"*
HOSPITAL CARE	
Harris 2005	*"Patient care on the NLIU (*Nursing-Led Inpatient Units) *was managed by one of three nurse practitioners (F grade) responsible for the planning*

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	and delivery of nursing care, discharge planning and coordination and leadership of the multidisciplinary team including referral for medical input when required"

Table 22: Quotes of NIC intervention Multidisciplinary Care Conference in diverse health contexts of care

8020 MULTIDISCIPLINARY CARE CONFERENCE	
HOME CARE	
Rondinini 2008	*"Once a week, a meeting was held between the nurses and the cardiologists of the HFC* (Heart Failure Clinic) *in which the clinical situation, laboratory examinations, and recent variations of therapy were discussed"*
Elley 2008	*"A falls-and-fracture nurse coordinator with substantial gerontological experience was trained by the clinical investigators and at an established community-based fall-prevention program in Australia (2 days). She visited intervention participants at home and used a standardized health assessment and an evidence-based algorithm to assess risk of falls and refer participants to their family physician, an optometrist, podiatrist, physical therapist, or occupational therapist and to receive a home-based exercise program to address identified risks: 1. Health assessment: history of circumstances of the fall, medications, previous cardiovascular or neurological illness, continence, vision, postural blood pressure, balance and gait, cardiovascular screen (syncope, arrhythmia). 2. Home hazards assessment: an audit for environmental safety. 3. Bone health assessment: a brief osteoporosis risk screen, recommendation for family physician assessment to consider vitamin and calcium supplementation, dual energy X-ray absorptiometry (DEXA) measurement of bone density, and bisphosphonates where indicated. 4. The Otago Exercise Programme delivered by a trained health practitioner or physical therapist for 1 year during home visits at Weeks 1, 2, 4, and 8 and after 6 months. Participants were given monthly*

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	calendars to fill in and return to researchers recording daily adherence to exercises and a walking plan. Exclusion criteria for the Otago Exercise Programme were a Timed Up and Go Test score longer than 30 seconds or marked neurological impairment. The falls-and-fracture nurse coordinator could refer those excluded to a community physical therapist who tailored an alternative exercise program."
Leung 2004	*"Linking of elderly care recipients with formal health and social services in an integrated care approach"*
TRANSITIONAL CARE	
Naylor 2004	*"A standardized orientation and training program guided by a multidisciplinary team of heart failure experts (composed of a geropsychiatric clinical nurse specialist, pharmacist, nutritionist, social worker, physical therapist, and board-certified cardiologist specializing in the treatment of heart failure) to prepare APNs to address the unique needs of older adults and their caregivers throughout an acute episode of heart failure;"*
Caplan 2004	*"Present the patient's history at a weekly interdisciplinary team meeting attended by a geriatrician or a geriatric registrar, nurses, physiotherapists, and occupational therapists, at which further interventions or referrals could be ordered"*
Naylor 1999	*"APNs collaborated with the patient, physician, caregiver, and other team members in designing an individualized discharge plan."*
Mion 2003	*"On the basis of the information from the assessment, the advanced practice nurse collaborated with the participant (and caregiver if available), the emergency physician, nursing personnel, and an ED social worker to design a discharge plan to address unmet needs"*
AMBULATORY CARE	
Schraeder 2009	*"The Carle MCCD intervention contains the core components of the CCM, including a delivery system providing a combination of case management and*

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	disease management services by primary care teams."
Callahan 2003	*"First, the care manager had weekly meetings with a support team comprised of a geriatrician, geriatric psychiatrist, and a psychologist who reviewed the care of new and active patients and monitored adherence to the standard protocols"*
RESIDENTIAL CARE	
Bellantonio 2008	*"The physical therapist evaluated physical function, gait, and balance and assessed the need for ongoing physical therapy and assistive devices. The dietitian evaluated nutritional status and provided dietary recommendations. The medical social worker assessed guardianship issues, long-term planning, and the psychosocial adjustment of the residents and families"*
HOSPITAL CARE	
Harris 2005	*"Patient care on the NLIU was managed by one of three nurse practitioners (F grade) responsible for the planning and delivery of nursing care, discharge planning and coordination and leadership of the multidisciplinary team including referral for medical input when required"*

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VIII. DISCUSSION

The present study had three main objectives:

a. To identify, assess and summarise available scientific evidence about the effect of interventions deployed by APNs when providing care to older people in different settings (hospital, home, outpatient, residential).
b. To describe the roles and components of the interventions developed by APNs in the contexts mentioned before.
c. To identify the interventions provided by APNs to older people in different contexts (acute and long-term care) with a Standardized Nursing Language in the included studies.

To answer to the 2 firsts objectives (a and b), a systematic review was carried out. As a result, we included 11 articles: 3 of them were classified under home care, and 5 in transitional care, two in ambulatory care and only one article in hospital care. In addition, to answer to the last objective, a qualitative study was developed. In this case, we obtained 16 articles in domiciliary care, 12 in transitional care, 3 in residential care, 3 in outpatient care and 2 in hospital care, with a total of 170 repeated NIC interventions. In total 73 different interventions were extracted from the five contexts, with a clear predominance of interventions related to the behavioural and health care system domains.

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Differences in both phases in terms of both quantity of studies, and in contexts of care, can be explained because of two reasons: firstly, although we obtained 36 potentially eligible studies for the systematic review, those were reduced to the final 11 after assessing their quality appraisal. The main cause of this reduction was the importance that was given to the methodological quality of the included references. As it has been described in the methodology chapter, the methodological quality was evaluated using methodological quality criteria of the Cochrane EPOC group (Cochrane Effective Practice and Organisation of Care Group 2010; Higgins, J & Green, S 2011). The biases assessed were: random sequence generation, allocation concealment, blinding of participants and personnel, blinding of outcome assessment, attrition bias, selective reporting and other bias. Each criteria could be high, low or unclear risk. High risk was scored with two points, unclear risk with one point and low risk means zero points. Included studies in the systematic review were those with a punctuation of three or less. The 12 included studies were the only ones that had this punctuation. However, for the qualitative phase, we considered that, due to the main objective of it, which was the translation into NIC of the interventions carried out by the APNs, it was not necessary to be as critical with the methodological criteria as we were in the systematic review.

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And, secondly, differences in the number of studies found in each care context could be explained because of the difficulties to assess whether the outcomes registered in patients attended in hospital or ambulatory care were attributable to the APNs' interventions or to other health professionals interventions. This problem was a limitation in Donald *et al.* (2013), whose authors did not include in their systematic review any article with multidisciplinary care, in order to extract the outcomes obtained only by APNs interventions, without the influence of other clinicians. As a result of that, only 4 studies where included in their systematic review. We decided to include articles with multidisciplinary care because we considered that being inserted in a multidisciplinary team was one of the main requisites that an APN should have to fully develop this role. Advantages of multidisciplinary teams approach in are supported by several authors. It requires teams to value each individual contribution to the team and for leaders to allow members to express opinions, evenly though these opinions might lead to conflict. Hence, teams need a common purpose on which members are agreed (Atwal & Caldwell 2006). It should improve communication, coordination, decision making between health-care team members and patients (Fleissig et al. 2006), patient satisfaction and self-management, development of a community support network, patient follow-up, use of protocols and other tools, use of computerized information systems, and outcome evaluations

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(Codispoti et al. 2004). In addition, there is an increasing number of authors who stated that giving patients the possibility to be actively or collaboratively involved in making treatment decisions, leads in an increment in patients' satisfaction (Ellis 2012; Tariman et al. 2010; Loh et al. 2007). Newhouse *et al.* (2011), concluded that a collaborative approach between APNs with physicians and other providers lead to higher quality of care and better health care systems. Benefits of multidisciplinary care have been studied in diverse contexts, diseases and ages. Examples could be found in different rehabilitative care programs (Momsen et al. 2012), diabetes (Tapp et al. 2012; Codispoti et al. 2004), cancer (Jefferies & Chan 2004; Fleissig et al. 2006) and heart failure (Piepoli et al. 2006; Philbin 1999; Leventhal 2011; Riegel et al. 2000) management.

All studies, excepting Naylor et al. (2004) had concerns on blinding of participants and personnel. The reason of this weakness is due to the nature of the interventions that made impossible to blind the personnel in the performance of the different activities. Nevertheless, although it is often impossible to blind study participants and intervention agents in nursing research, the blinding of data collectors, data analysts, and staff should be practiced, as well as the description of the possible limitations derived from this issue (Polit *et al.* 2011).

The main features identified in the systematic review concerning APNs role in all contexts were a high level of professional

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autonomy, case management, advanced skills in assessment, diagnose and decision making processes, consultancy to other team members or institutions, development of health programs, and transitional care management. Dowling et al. (2013) summarized those features in four attributes: clinical expertise, leadership, autonomy and role development. Both leadership and autonomy, are considered central to effective performance of advance practice roles, and seemed to be determined by the concepts role extension (introduction of activities usually attributable to other health professional) and expansion (the acquisition of new skills through formation and clinical expertise to increase professionals' autonomy) (Fitzgerald et al. 2012; Mantzoukas & Watkinson 2007; Dowling et al. 2013).

Those attributes were common with some key concepts of NCM roles in Reimanis' model (Reimanis et al. 2001): autonomy, collaboration, patients satisfaction, and professional status. We have found evidence of those qualities in both the quantitative and the qualitative phase, as it will be showed in the following paragraphs. The other concepts suggested by Reimanis et al. 2001, were not found themselves, because they are more related with perceptions and feelings of the APNs upon other clinicians and the consequences of their role, which were not measured in the present dissertation. Those concepts were: Role Conflict, Effect upon Staff Nurses, Job Satisfaction and Job Stress. However, some evidences were found in

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APNs' effect upon Staff Nurses, as will be explained in a few paragraphs. In addition, the four subroles identified by Manley 1997, were also found: expert practitioner (through direct and indirect care), educator, researcher and consultant. The educator role refers to teaching both other health professionals and patients. According to our results, in the elderly population there is a direct relation between being informed about their diseases and the satisfaction that they express to the APN about her role, which suppose a link between the two mentioned models.

In most countries, motivation on the developing of more advanced roles for nurses rests on the need of improving access to care in a context of a limited supply of doctors, promoting higher quality of care, by creating new posts to provide more intensive follow-up and counselling for patients with chronic illness in primary care or the creation of advanced nursing posts in hospitals to oversee quality improvement initiatives. Also, by delegating certain tasks from more expensive doctors to less expensive advanced nurses, and by improving quality of care, it may be possible to deliver the same (or more) services at a lower cost, avoiding complications and unnecessary hospitalizations (Delamaire & Lafortune 2010; Schober & Affara 2009).

To answer the third objective (c), it was carried out a qualitative study. This phase, although showing different NIC interventions between contexts, it also yielded three repeated APNs'

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interventions through the five care contexts, all of them being part of the Health System Domain of the NIC (Health Screening, Case Management and Multidisciplinary Care Conference). Therefore, despite the variability in types of health care, a common ground has been detected regardless the context of care. Not surprisingly, the definition of these 3 interventions match closely with some characteristics of the APN role (Ackerman et al. 1996; Moloney-Harmon 1999). Health Screening is defined in the NIC as "the ability of detecting health risks or problems by means of history, examination, and other procedures"; Case Management is defined as "coordinating care and advocating for specified individuals and patient populations across settings to reduce cost, reduce resource use, improve quality of health care, and achieve desired outcomes"; and Multidisciplinary Care Conference as "planning and evaluating patient care with health professionals from other disciplines" (Bulecheck GM et al. 2008; Thoroddsen 2005). To perform these activities, the APN needs a high degree of autonomy, to acquire expert knowledge, based both on research and practice, and to lead initiatives among the members of the health care team. This could mean that it is possible to define specific roles of nurses specialized in different fields with the NIC, as suggested by Solari-Twadell & Hackbarth (2010).

Accordingly to our results, attending to its frequency in reported studies, core elements of the APN role would be the detection of health risks or problems by means of history, examination, and other

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procedures, coordination of care and advocating for specified individuals and patient populations across settings to achieve desired outcomes, through a continuous interaction with a multidisciplinary health care team. To successfully achieve those competencies, APN need as requisites personal characteristics, clinical experience and education (Jokiniemi et al. 2012). Higher education, mostly with a Master degree that includes skills in organization and communication is essential to work with a multidisciplinary team. Those skills will be also needed to communicate effectively with patients and families/caregivers. It should be taken in account that, in the elderly population, cognitive impairments are common, and that being a caregiver, depending of the disease and dependency level of the care person, could lead in stress and frustration. Hence, abilities in communication should be considered in the training of APNs in the elderly population.

Managing resources must be also an essential part of the APN training. The accomplishment of any care program directed to the elderly population is going to be directly related with the correct management of available resources, and will be linked to satisfaction of patients and caregiver with the process (Delamaire & Lafortune 2010; Goodwin, N. et al. 2014).

Another characteristic that, although being codified in the NIC, has only appeared in ambulatory care, should be taken in account when describing APNs role. 'Staff Development', defined in the NIC as

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'Developing, maintaining, and monitoring competence of staff', must be also considered a core competency, because it support leadership of APNs in the care context (Williamson et al. 2012; Jokiniemi et al. 2012). However, the reduced appearance of this intervention in the qualitative phase does not necessary means that this competency was not present in the included studies. In fact, there is other NIC intervention that is present in 4 of the 5 care settings studied (excepting hospital care), 'Consultation', which in its definition are included staff development and research: 'Using expert knowledge to work with those who seek help in problem solving to enable individuals, families, groups, or agencies to achieve identified goals'.

On the other hand, only three specifics NIC interventions of the Family domain were extracted from the included studies, in home, transitional and ambulatory care. This does not necessary means that the APN does not take in consideration caregivers' or family's needs. In fact, we also found NIC interventions which, even not being part of the family domain, included in their definition to patients' families and caregivers. That was the case of 'Counseling' and 'Health education' repeated in 4 contexts, and 'Support Group' repeated in 2 contexts. All of them belonged to the Behavioural domain.

In the literature, NIC interventions in the elderly population vary between contexts of care. In general, those interventions belonged to Health Care System, Behavioral and both Physiological Simple and Complex (Haugsdal & Scherb 2003). Nevertheless,

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assessing the same type of patients, suffering of heart failure, could lead in the use of different interventions, depending on the context in which they are develop: in short-term settings, as hospital care, most prevalent interventions are those that belong to the Physiological domain, centred in the individual, not in their family (Scherb et al. 2011); on the other hand, in long-term settings, as home care, although Physiological domain interventions are present, their prevalence is similar than those belonging to the Behavioural domain, highlighting educational interventions, followed by Health Care System and Family domains (Schneider & Slowik 2009). Moreover, in the case of Type 2 Diabetes Mellitus, that like heart failure trends to chronicity and, consequently, favours the establishment of long term relationships between patients, caregivers and nurses, NIC interventions seem to be more focused in patients and families education, fitting in the Behavioural domain (Cárdenas-Valladolid et al. 2012). Similarly, in dementia patients, whose families suffer in a very intensive way their disease, APNs design strategies to reduce the stress induced by changes of personality, behaviours and memory loss (Merrilees & Ketelle 2010).

However, APNs are qualified to offer patients and their relatives and/or caregivers an integrative, proactive and holistic care, not only in long-term, but also in short-term settings. In hospital environment, APNs have a crucial role as a lynchpin between patients and other health professionals and resources. They anticipate to what would be

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needed and actively try to improve the speed at which tests and investigations are expedited and referrals acted upon to improve patient care and reduce length of patient stay. They anticipate patient discharge and ensure that prescriptions are ordered and ready, and if necessary, social services are alerted and verify that care homes are able to accept patients back (Williamson et al. 2012).

In addition, APNs have an important role in reducing the distance between nursing and medical staff during informal interviews. ANPs share responsibility for patients with junior doctors, playing an active part in consultant's ward rounds and, because they were ward based, provided a continuity that junior doctors could not (Williamson et al. 2012). Their clinical judgment, technical skills and specialist knowledge is respected, and their sustained presence on the ward enabled a detailed understanding of each patient's history and circumstances, which was used to expedite early discharge. Moreover, nurses generally find ANPs less intimidating and more approachable than doctors.

Long-term settings

Two care contexts were included in this category in the systematic review: domiciliary and transitional care. General results were reduction of mortality and short and long term settings admission, improvements in patients' self-care and general quality of life and the increase in patients' and caregivers' satisfaction.

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Long-term settings allows the APN to establish a longitudinal relationship with patients and caregivers, which give them the opportunity not only of creating an evidence-based care plan, but also of evaluating its effectiveness in patients' health status, and make changes if necessary. As a result, the APN could develop and fulfil all the expected outcomes related with her role in a complete way.

Eklund & Wilhelmson (2009) highlighted the importance of including caregivers in patients' care process, not only as resources of care, but also taking in account their own health needs. In this sense, we found two articles that showed positive results in terms of patients' and caregivers' satisfaction (Mion et al. 2003; Naylor et al. 2004). This approach, although non-significative in some studies (Lin *et al.* 2009), has shown higher degrees of satisfaction with care among older people who received case management with home follow-ups, versus those receiving usual care (Morales-Asencio *et al.* 2008; Hébert *et al.* 2010).

APNs are respected by other heath colleagues because of their specialist knowledge, technical skills and clinical judgment (Williamson *et al.* 2012). In long-term settings, the APN is the link between health system and patients, and also between them and external care services providers, having also an active part as consultants, as they provide a continuity of care that other clinicians could not. The NIC intervention 'Referral', defined as 'Arrangement

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for services by another care provider or agency', means that APNs act as links between patients, community resources and health care system, and has to exert leadership to make competent decisions in this area, being APNs not only a main part in the multidisciplinary team, but an unquestionable leader in patient's care management.

In the present study, the population selected in the included studies were over 65 years and with chronic conditions. The high volume of interventions found in the Behavioural domain, followed by the Health Care System domain could be due to the need of improving the psychosocial functioning and self-care of these patients to lead them to preserve their quality of life. McBride et al. (2004) results in stroke patients, were similar in terms of nursing NIC interventions identified, although were more focused in reducing the gap between patients, caregivers and the health system, which increased the interventions belonging to the Health Care System domain.

Demographic changes, with an increase in the population of adults older than 65 years old, have implied changes in health policies and, consequently, in the nursing profession. In addition, because of their age, elderly people are predisposed to undergo chronic illnesses that increase care complexity. The need of an appropriate professional education to cover the special needs of this population is fundamental. Berglund et al. (2013) stated that a comprehensive continuum of care intervention has impact on the

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older people's views of care planning and knowledge of whom to contact about care/service needs. To communicate effectively with physicians, patients and caregivers, to receive continuous feed-back, to assure that the program is being follow-up by patients, and that they get the accorded results, are key elements for the continuity of patient care (Callahan *et al.,* 2006; Schraeder *et al.,* 2009).

We also found results related to the provision of continuous/transitional care, through hospital admissions, discharge planning, home monitoring after discharge and telephone follow-up, in the qualitative phase. In seven articles included in the systematic review, telephone follow-up was the eligible way to maintain the continuum of care in this kind of settings. The APN used telephone to follow-up patient progress and adherence to their individualized care plan in home care (Elley *et al.* 2008; Stuck *et al.* 2000) and transitional care (Hordam *et al.* 2010; Huang & S. H. Liang 2005; Mion *et al.* 2003; Naylor *et al.* 1999)**.** Moreover, we also found in 4 of the five contexts studied in the qualitative phase (home, ambulatory, transitional and residential care) (Table 15), NIC interventions that support this finding: 'Telephone Consultation', 'Telephone follow-up' and 'Discharge Planning'. APN used the telephone to follow-up patients and caregivers, and to act as a consultant, being available by telephone for patients and caregivers in order to solve any doubt or health problem that they could have. Both, 'Telephone Consultation' and 'Telephone follow-up' seemed to improve quality of life and a

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reduction in readmission (Hordam et al. 2010; Carroll et al. 2007). This was also suggested in Stamp *et al.* (2013). However, although Hordam *et al.* (2010) found that the quality of life was improved in the intervention group at three months of follow-up, it is difficult to discern if those positive outcomes are related to this intervention, or to further actions developed by the APN.

Specific diseases approach

When APNs interventions are focused on a specific population, generally determined by a condition, interventions usually are more targeted to concrete areas. In the SR, studies included in this category were those that evaluated APN interventions in CHF (Naylor et al., 2004) and in risk of falling patients (Hordam et al., 2010; Huang; Elley et al., 2008).

In patients with CHF, it was obtained positive outcomes in terms of mortality, readmissions and self-care behaviour. It was carried out a patient-centred evidence-based plan, with educational interventions. Strömberg et al. (2003) suggests that this kind of care, supported with telephone follow-up, enhances self-management and self-behaviour by patients, as well as Shao et al. (2013), in their study with older Taiwanese outpatients with heart failure, and has shown positive effects on mortality and readmissions. Same results have been found in several studies (Ahmed 2002; Chen et al. 2010; Del Sindaco et al. 2007; Riegel et al. 2000), including a Cochrane

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review (Takeda et al. 2012), which stated that case management type interventions led by a heart failure specialist nurse reduces chronic heart failure related readmissions after 12 months follow up, all cause readmissions and all-cause mortality. Stewart et al. 2012 carried out a multicentre randomized trial to assess benefits in CHF in home care compared with those patients followed-up in a clinic. The interventions were developed by a multidisciplinary team that included a specialist CHF nurse, who acted as case manager, and performed at least one comprehensive home visits. Although results of this study did not show differences in terms of re-hospitalizations and mortality in both types of care, home-based interventions with telephone follow-ups were associated with significantly lower healthcare costs, attributable to fewer days of hospitalization. Cost-effectiveness' positive outcomes of similar domiciliary interventions that included telephone follow-up, led by a nurse specialist care-manager, were found in by other authors (Konstam & Desai 2012; Chen et al. 2010; Del Sindaco et al. 2007; Inglis et al. 2006). Quality of life seems be also improved with this type of care (Konstam & Desai 2012). Another Cochrane review (Inglis et al. 2010) about telephone support or tele-monitoring programs in CHF concluded that structured telephone support and tele-monitoring are effective in reducing the risk of all-cause mortality and CHF-related hospitalizations in patients with CHF; they improve quality of life, reduce costs, and evidence-based prescribing.

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Structured programmes of heart failure care result in significant benefits to patients in terms of improved quality of life and education, individualized care and appropriate medication (Grange 2005). Adequate formative programs for nurses based on the previous criteria are necessary to improve specific CHF health outcomes, as well as investments in tele-monitoring and telephone support.

The same case occurs for prevention of falls in older people (Elley et al. (2008); Hordam *et al.,* 2010; Huang & Acton (2004), that concentrate interventions aimed at preventing falls and assessing risks, which could be translated into NIC interventions 'Fall Prevention', 'Environmental Management', 'Environmental Management: Home Preparation' and 'Risk Identification', with impact on hospital admission, functionality, length of hospital stay and mortality. However, although three articles included in the systematic review shared the outcome "rate of falls" (Hordam et al. 2010; Huang & Acton 2004; Elley et al. 2008), this was not improved. Systematics reviews (Gillespie *et al.* 2012) and studies (Tinetti *et al.* 1994; Vassallo *et al.* 2004) suggest that a multifactorial integrating assessment with individualised intervention, usually involving a multi-professional team, are effective in reducing rate of falls but not risk of falling (Gillespie *et al.* 2012). The success of this approach could be explained by the fact that, in the event of falling, there are many causative factors other than age that include clinical complexity, co-morbidity, illness severity, reduced functional ability and lower quality

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of care (Long *et al.* 2013) which should be treated in the holistic approach given in multifactorial interventions.

Multimorbid approach

In the recent years, it has been introduced the concept of 'chronic patient at a complexity situation' which is linked to the concept of frailty and determined by a chronicity condition. The most differential characteristics of this group of people are the presence of several chronic diseases concurrently (Contel et al. 2012; Ward et al. 2011; WHO 2002; Smith et al. 2012), multiple admissions in hospital emergency services in the same year, the presence of certain diseases such as heart failure or COPD, poly-pharmacy and reduced personal autonomy. In addition, there are additional factors such as older age, living alone or not having enough family support, loss of physical functioning, being in risk of falling, having poorer quality of life, multiple medication, being more likely to suffer from depression, and consequently having difficulties with adherence, among others (Contel et al. 2012; Smith et al. 2012). Individuals with multimorbidity are more likely to die prematurely, be admitted to hospital, and have longer hospital stays (Smith et al. 2012).

The World Health Organization has emphasized the importance of organizing healthcare delivery systems to improve health outcomes and have stressed the importance of building integrated healthcare systems that can address chronic disease management through organizational, patient centred, professional, financial and regulatory

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interventions (WHO 2002). Patient centred interventions should improve self-management, enable patients to manage their conditions more effectively and seek appropriate health care. In this sense, the nurse is in an ideal position to cover the necessities of this population group. An educational program designed to equip clinicians with skills in managing these patients thus improving their healthcare delivery, focused on Case management (Smith et al. 2012) and tele-monitoring could be essential to the success in the developing of individualized care plans to improve chronic patients' health status (Contel et al. 2012).

In the systematic review, four studies were included in this approach: Mion *et al.* (2003), Naylor *et al.* (1999) Stuck *et al.* (2000), Stuck *et al.* (1995) in home care. The main outcomes were prevention and promotion to maintain a proper level of independence that avoid patient's admission in hospital or in nursing-homes. As a result, we found that APNs interventions should be holistic, with special importance in health education, giving patients and caregivers skills to promotion self-care, always supported by APN. Huss *et al.* (2008) demonstrated that a multidimensional preventive approach, with a complete and exhaustive geriatric assessment that includes home visits, could reduce disability burden among older adults that address multiple coexisting risk factors.

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Eklund & Wilhelmson (2009) suggested that, due to the heterogeneity and the wide variety of co-morbidities and impairments that characterized to the frail elderly population, it is difficult to detect the interventions effects, as they need an intervention with many different components.

Nevertheless, the results obtained in our SR revealed that, although Mion *et al.* (2003) only found significant differences between groups in patient's satisfaction and in the admission rates to nursing home, which contrasted with the negative results in terms of nursing home admission in Huss *et al.* (2008), and no differences in health costs, in Naylor *et al.* (1999), APNs reduced hospital readmissions, lengthened the time until the first readmission, and decreased the cost of care. Those differences could be explained by the fact that APNs in Naylor *et al.* (1999) carried out a wider range of educational interventions among patients and caregivers ('Health Education', 'Teaching: Disease Process', 'Teaching: Prescribed Medication', 'Teaching: Procedure/Treatment', 'Teaching: Prescribed Activity/Exercise' and 'Teaching: Prescribed Diet')than the APNs that worked in Mion *et al.* (2003) ('Health Education', 'Teaching: Prescribed Activity/Exercise' and 'Teaching: Prescribed Diet').

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Short-term settings

Only three articles met the inclusion criteria for our systematic review in short-term care: one in hospital care (Griffiths et al. 2001) and two in ambulatory care (Callahan et al. 2006; Strömberg et al. 2003) and just five in the qualitative study. Common NIC interventions in this kind of settings were 'Smoking Cessation Assistance', 'Counseling', 'Nutritional Counseling', 'Self-Awareness Enhancement', 'Health Education', 'Teaching: Prescribed Activity/Exercise', 'Health Screening', 'Case Management', 'Consultation', 'Documentation', 'Health Care Information Exchange', 'Multidisciplinary Care Conference', 'Referral', 'Telephone Consultation' and 'Telephone Follow-up'.

These interventions are mainly focused in health education, case management and follow-up, as well as the importance of the intervention in the care team, through the interventions Multidisciplinary Care Conference, Referral and Health Care Information Exchange, which means that, although the representativeness of studies in short-terms settings in the current study is scarce, main features of the APNs role are also present in this kind of settings.

To communicate effectively with physicians, patients and caregivers, Strömberg et al. 2003 used telephone follow-up. Thus, Callahan *et al.* (2006) suggests using a web-based program. It

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appears to be a key element to receive continuous feed-back, to assure that the program is being follow-up by patients, and to check whether the accorded results with patients and caregivers have beem achieved. This method was also developed by Schraeder *et al.* (2009).

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IX. LIMITATIONS

Although our intention was to describe models of care among multiple environments, based on the interventions developed by APNs in different health settings, due to the reduced amount of articles in hospital and ambulatory care (one and two in each setting respectively), it was only possible to illustrate thoroughly APNs models of care in home care and transitional care. Nevertheless, this could be explained by the rigorous criteria employed in terms of quality appraisal for the studies included in the review. As a result, the eleven studies could be considered as "low risk of bias". The heterogeneity of the included studies prevented the performance of meta-analysis.

The details of APN interventions are usually poorly described and consequently, international comparisons frequently face difficulties due to the lack of conceptualization and interpretation of the developed interventions. In this sense, the availability of a standardized language to describe nursing interventions (Bulecheck GM et al. 2008) could provide an additional resource for classifying the components of different models and would facilitate the description of APN in a universal language.

With regards to the qualitative study, the sources of data were studies included in the systematic review, and other that were not

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included due to their methodological quality. Nevertheless, those studies, despite not having enough methodological quality, have some relevant descriptions of interventions developed by APNs. Again, as in the quantitative phase, we found an inferior quantity of articles in residential, ambulatory and hospital care, than in home and transitional care. The reason for the differences in the quantity of articles between contexts could be explained because of the difficulties to assess whether the outcomes registered in patients attended in hospital, residential or ambulatory care were attributable to the APNs' interventions or to other health professionals interventions. We decided to include articles with multidisciplinary care because we considered that being inserted in a multidisciplinary team was one of the main requisites that an APN should have to fully develop this role. This is supported in Newhouse et al., (2011), whose authors concluded that a collaborative approach between APNs with physicians and other providers lead to higher quality of care and better health care systems. Nevertheless, the representativeness of the different context of care for older people was sufficiently guaranteed.

Some authors have warned that findings of qualitative research could be distinct from the data upon they are based (Sandelowski, 2004). Consequently, coders could have analysed what authors wrote about the interventions, which could not be exactly what providers performed. Even with this limitation, the studies included were those

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which obtained the best quality after critical appraisal and the description of the intervention was one of the criteria to select them.

Though we performed a consensus technique to improve credibility of results, some authors have reported concerns about triangulation of codes during content analysis (Sandelowski, 1998), we consider that when analysis is centred on latent content this issue acquires more relevancy, because subjective interpretations based on the coders' mental schema need to be shared intersubjectively, so that the meaning therefore is also likely to reach out to readers of the results (Potter and Levine-Donnerstein, 1999).

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X. CONCLUSIONS

1. Advance Practice Nursing seems to be a key element to improve the health status of elderly people, which main characteristic is to bear with chronic diseases, in almost every care context.

2. We have found two ways to implement APN en different care contexts: in one hand, a specialized model focused on concrete health problems that use the best knowledge to control risks; on the other hand, a generalist model focused in improve the autonomy in patients with multiple conditions.

3. Integrative, multi-component and continuous APNs' care for older people, leads in a reduction of short and long term settings admission, in improvements in patients' self-care and general quality of life and increased patients' and caregivers' satisfaction.

4. APN interventions could be considered as complex, but with the use of standardized nursing languages as the NIC, they can be better described, reported and analysed along different contexts.

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5. Core elements of the Advances Practices Nurses roles can be identified through the Nursing Intervention Classification and they could be used for delineating or remodelling health services.

6. Further studies analysing the replication of NIC interventions used purposefully in the design of APN services for older people among different contexts of care are necessary to confirm these results.
7. Additional investigations will be needed to confirm that APNs programs decreases health costs, to compare their effectiveness in both the generalist and the specific model and to analyze pertinence of a mixed model.
8. Researching about APN advantages on increasing patient's satisfaction will support the idea that giving nurses the opportunity to get an excellence level, both with experience in care and academic expertise, to have a leading role in the sanitary system, is fundamental.

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XII. APPENDIX

Appendix 1: Published Protocol in the Journal of Advanced Nursing

Morilla-Herrera, J. C., Morales-Asencio, J. M., Martín-Santos, F. J., Garcia-Mayor, S., Rodríguez-Bouza, M., & González-Posadas, F. (2012). Effectiveness of advanced practice nursing interventions in older people: protocol for a systematic review and qualitative study. *Journal of Advanced Nursing*. doi:10.1111/jan.12030

JAN JOURNAL OF ADVANCED NURSING

RESEARCH PROTOCOL

Effectiveness of advanced practice nursing interventions in older people: protocol for a systematic review and qualitative study

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Abstract

Aims. This protocol outlines a review and qualitative study to determine the models and effectiveness of Advanced Practice Nursing developed for the health care of people over 65 years in different settings (hospital care, home care, outpatients' care, and nursing homes) and to identify the ingredients of the interventions developed by Advanced Practice Nursing in the field of geriatric care.

Background. Numbers of nurses in advanced roles have increased internationally in conjunction with research to determine their effectiveness. Nevertheless, in older people, evidence of advanced practice roles remains scattered, and there is little synthesis of evidence, and therefore it is not easy to visualize the different practice models, their components, and their impact.

Design. Study protocol with two phases: a systematic review and a qualitative study.

Methods. First phase: Depending on comparability of studies, meta-analysis will be undertaken. If so, results will be summarized in relative and absolute measures or mean difference, depending on the type of outcome. Sensitivity and heterogeneity analyses will be performed. Second phase: a content analysis will be carried out of the interventions identified in the systematic review, and they will be contrasted with the contents of the Nursing Interventions Classification. Finally, this matching will be submitted to expert consensus using a Delphi technique. Approval from the Ethics Committee was obtained in July 2010 and funding was obtained in March 2011.

Conclusion. The identification of components of Advanced Practice Nursing models and evidence of their effectiveness will contribute to designing more grounded nursing services for older people. Additionally, the categorization of Advanced Practice Nursing interventions through Nursing Interventions Classification would permit comparisons to be made between settings or between healthcare systems.

Keywords: advanced practice nursing, geriatric nursing, health services for the older, nursing interventions, professional role, systematic review

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Introduction

Although Advanced Practice Nursing (APN) programmes emerged in the 1960s, the term 'advanced practice' remains ambiguous because it has been dominated by context and prevailing health policies (Gardner *et al.* 2007). The International Council of Nurses defines the APN as a registered nurse who has acquired the expert knowledge base, complex decision-making skills and clinical competencies for expanded practice, the characteristics of which are shaped by the context and/or country where s/he is accredited to practice; a Masters degree is recommended for entry level (International Council of Nurses 2002). The APN's features can be grouped according to educational characteristics and clinical practice: high-level postgraduate training through structured and accredited programmes, regulatory systems supported on certification, and registration or credentials renewal.

Background

APN practice often integrates research, training, practice, and management. They tend to possess a high degree of professional autonomy involving a portfolio of patients, and they have advanced skills for health status assessment, making decisions and diagnostic reasoning while acting as consultants for different health providers (Mantzoukas & Watkinson 2007).

In the last 20 years, there has been a globally significant increase in the number of nurses with advanced features, but nations are at different stages in implementing new APN roles. The USA, UK, and Canada have been the first countries to experiment with APN roles, although more countries now are piloting or developing projects in chronic and primary health care (Delamaire & Lafortune 2010, Fagerström & Glasberg 2011).

According to the Association des Infirmiers et Infirmieres of Canada (AIIC), 'Advanced practice nursing, as a global expression, describes an advanced level of nursing practice that maximizes the use of specialized skills and nursing knowledge to respond to the customers' needs in health's sphere'. This practice uses a nursing care model that rests on theoretical and empirical knowledge and expertise to provide a holistic, comprehensive, and complete care. Practice based on evidence is the central element of the APN's skills (Association des Infirmières et Infirmiers du Canada 2008).

Models of APN have been developed in many fields, including acute inpatient care (Cowan *et al.* 2006), gatekeeping in primary health care (Laurant *et al.* 2005), and in accident and emergency units (Carter & Chochinov 2007). In these fields, there have been remarkable outcomes in terms of effectiveness. APN has been widely developed in the care of the older people population (Oeseburg *et al.* 2009), (Low *et al.* 2011). For example, APNs' proactive monitoring and telephone follow-ups produce active patient participation and decrease readmissions in cardiac rehabilitation programmes (Carroll *et al.* 2007), even if conducted at home (Clark *et al.* 2010). Similarly, APNs have had positive effects on the mental health of older people in the community (Thompson *et al.* 2008), and even on those with severe dementia (Callahan *et al.* 2006). APNs have been used in health care for acute problems, improving the quality of life of older people with low incomes (Counsell *et al.* 2007).

In the field of nursing homes, the variety and quantity of APN models are particularly promising. Residents attended by APNs in comparison with traditional care show improvements in incontinence, pressure ulcer rates, aggressive behaviour, and affective relationships in patients with cognitive impairment (Krichbaum *et al.* 2005). Positive effects also have been demonstrated on accidental falls (Rask *et al.* 2007).

However, many of these interventions have little conceptual substrate and act on local schemes aiming to address current problems with immediate, but not always sustainable, solutions. Consequently, there exist a broad range of modalities and a lack of conceptual frameworks to categorize the scope of interventions and services by APNs in this population group (Morales Asencio 2010). For instance, the selection criteria for the target population extend from those using age as a strict classificatory element to those that use functional criteria or comorbidity.

On the other hand, interventions usually have a multicomponent nature, which implies some methodological difficulties that are not always resolved successfully. Today, conceptual developments that help isolate complex interventions are available, but scarcely used (Campbell *et al.* 2007).

Moreover, outcome criteria and 'endpoints' used in many studies often lack quality due to excessive use of intermediate and proxy variables and variables that are barely indicative of the intended purpose. A clear illustration of this problem is the case of using the variable 'institutionalization' as the 'endpoint' of functional decline, when in many cases, institutionalization might result from families' inability to cope with the situation (Godfrey 2001). Nonetheless, one of the main problems is that the APN figure is usually embedded in other organizational interventions, and it is difficult to discern which outputs are attributable to the APN.

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Clearly, much research has been carried out on APNs. However, the research studies vary, and there is little consensus about the best practices, making it difficult to obtain an adequate overview of the different models experienced, their specific components, and their specific outcomes. Therefore, a systematic review would contribute to clearing up some of these uncertainties.

However, international comparisons frequently face difficulties due to the lack of conceptualization and interpretation of the developed interventions. In this sense, the availability of a standardized language to describe nursing interventions (Nursing Intervention Classification, NIC) (Bulechek *et al.* 2008) can provide an additional resource for classifying the components of different models. It also may facilitate the description of APN in a universal language, available in the vast majority of healthcare record systems around the world.

The study

Aims

This study primarily aimed to answer the question: What are the interventions developed by advanced practice nurses for the health care of older people over 65 years in different settings and how effective are they?

Objectives

- To determine the models and effectiveness of APN developed for the care of older people aged over 65 years in different settings (hospital, home, outpatient, residential) in terms of types of treated patients, deployed interventions, and results achieved.
- To identify the components of the interventions developed by APNs in providing care to older people.
- To translate the interventions of these APN models into the NIC.
- To identify possible interventions deployed in these models of APN that are not detailed in the NIC.

Methodology

Study design

The study has two phases:

- The first step consists of a systematic review and meta-analysis (if applicable) using Cochrane EPOC guidelines (Grimshaw *et al.* 2001).
- The second step uses qualitative techniques to identify the ingredients of the interventions before translating them into the NIC, using content analysis combined with expert consensus through a Delphi technique.

Phase I: systematic review. Criteria for study selection

Types of studies

Randomized controlled trials, quasi-experimental studies, and interrupted time series including a longitudinal analysis of the results with at least three observations before and after the intervention.

Types of participants

Health professionals will include doctors, practice nurses, and advanced practice nurses. Reimanis *et al.* (2001) and Manley's (1997) criteria will be applied to identify this role in the different studies.

Other professionals will include social workers, community workers, physiotherapists, rehabilitation therapists, occupational therapists, podiatrists, and nutritionists. These staff members will be included only if they are associated with the APN intervention.

Patients

Patients include older people aged over 65 years receiving hospital services for acute or chronic conditions, or as outpatients for various health problems, in home care programmes, or in residential care. Studies will be excluded if they include patients admitted to acute psychiatric unit, or patients sent to specialized and/or community mental health units.

Types of interventions

Studies which include any type of service involved in the roles of nurses with advanced practice (own patients' portfolio, advanced skills in health assessment, reasoning, diagnosis, prescription, test ordering, referral, consultancy for other professionals, or case management).

Types of outcome measures

Patients' outcomes include morbidity, mortality, mobility, cognitive status, quality of life, satisfaction, social and/or family support and adverse events (drug adverse events, falls, failure to rescue).

Results of service delivered include resources used by professionals (tests and analysis, referrals, prescriptions, length of stay), by patients (readmissions, consultations, number of home visits) and economic outcomes (costs of care, cost–benefit, cost–utility, or cost-effectiveness analyses).

Search strategy for identification of studies

The following databases will be searched: MEDLINE, CINAHL, EMBASE, Web of Science, PsychINFO, SCOPUS, COCHRANE, Cochrane Controlled Trials Register-CCTR,

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Joanna Briggs Institute, Centre for Review and Dissemination, HEN (EuroWHO), EMI, CUIDEN, ENFISPO, DIALNET, and SCIELO. The research also will include reviews, papers, and evaluations from the following research health services centres and assessment Health Technology Agencies: INAHTA, Agency for Health Care Research and Quality (AHRQ), Centre for Health Economics and Policy Analysis at the University of McMaster, and the King's Fund. Google Scholar also will be searched along with documents from the International Council of Nurses, OECD reports and the American Academy of Nurse Practitioners. Concatenated searches will be conducted on the references of the studies found. The languages of papers will be English, Spanish, and French.

The search will use specific methodological filters developed by the Health Information Research Unit at McMaster University for randomized controlled trials and systematic reviews. The search terms for APN have been agreed on by two experts in the field and have been compared with MeSH terms from PubMed and CINAHL Subject Headings.

Review methods

The first stage of the review will include a detailed assessment of titles and abstracts to determine whether each item meets the pre-determined requirements for inclusion. If this step is not clear, the full text of the article will be evaluated to determine whether it fulfils the study requirements. To ensure the quality of the process, there will be a double-blinded evaluation of the records obtained by two independent reviewers.

After this first stage, all references identified as potentially eligible will be evaluated to assess whether they meet the inclusion criteria for review. This process will be held in parallel by two blinded reviewers. Discrepancies that may arise in the process will be resolved by discussion between the two reviewers and the intervention of a third evaluator if necessary. Additionally, a pilot test will be developed with 15 papers randomly selected, to verify the reviewers' adequacy in applying the inclusion/exclusion criteria.

Data gathering and extraction

An electronic form will be used to introduce the basic results of the studies included and evaluated, supported by the application RevMan 5 that includes the following items: methods, interventions, participants, results under consideration, and the reviewer's annotation. When the original studies fail to provide necessary data for extraction, the authors will be contacted for clarification or these data will be obtained from them directly, if possible.

In parallel, a more comprehensive database will be built with detailed information of each included study, structured according to an adaptation of the criteria of the Cochrane Group EPOC (Grimshaw *et al.* 2001). This methodological approach has been chosen due to the nature of the study area, which involves the reorganization of care for the APN's model implementation. It is specifically focused on assessing the effectiveness of interventions in health services, including a 'review of roles' or 'changes in the mixture of providers' skills', which would cover many studies in this review:

- Study designs: randomized controlled trial, quasi-experimental study, and temporal series.
- Interventions: on professionals, economic-financial, organizational, or regulatory.
- Controls.
- Characteristics of interventions: purpose, nature of the change sought by the intervention, format, source, supported by clinical guidelines or systematic reviews, recipients, timing, environment, funding, and ethical approval.
- Participants: characteristics of providers (professional degree, level of training, expertise, age, clinical experience). Patient characteristics: clinical problems, number of subjects in the study, episodes of care, care environment, and socio-demographic characteristics.
- Environment: payment system, context of care, and centre's academic status.
- Methods: allocation unit, unit of analysis, power of the study, and methodological quality.
- Identifying potential barriers to the implementation of the APN in the environment studied.
- Outcome criteria: type, length of follow-up, possible ceiling effect.
- Results: baseline and postintervention in intervention and control groups, including statistical significance, indicating whether the units of allocation and analysis differed.

Quality appraisal of studies

Two reviewers will conduct this process independently. The checklist evaluation of bias included in the RevMan 5 application for assessing the quality of intervention studies, together with the methodological quality criteria of the Cochrane EPOC group will be used (Cochrane Effective Practice & Organisation of Care Group 2010, Higgins & Green 2011). Methodological criteria relate to the following: Allocation concealment, monitoring of professionals involved in the intervention, monitoring of patients and episodes of care, blinding of primary outcome (avoiding of detection bias), baseline measurement, reliability of primary outcomes measurement, and protection of contamination

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between groups. If the reviewers do not agree, a third appraiser will assess the study, and the CONSORT, extended CONSORT, and TREND publication standards will be used.

Under these criteria, studies will be classified as follows: All quality criteria met (low risk of bias), one or more of the quality criteria partly met (moderate risk of bias) and one or more criteria were not met (high risk of bias). This process of data extraction and methodological quality assessment will be recorded electronically on a web formulary with password-protected access for each reviewer. A data-entry control system will be used to minimize errors in the quality of the information entered.

Synthesis

Depending on heterogeneity and comparability of studies, a meta-analysis will be developed. Otherwise, an integrative review will be carried out. Calculations will be made from a random-effects model, which offers a more conservative approach with wider confidence intervals. Homogeneity will be tested with the I^2 statistic, and heterogeneity will be classified with the Higgins criteria (Higgins *et al.* 2003): $I^2 < 25\%$, low; 25–50%, moderate; and >50%, high.

Results will be summarized through relative and absolute effect measures (relative risk, odds ratio, absolute risk reduction, and number needed to treat), or through weighted or standardized mean differences, depending on the nature of the outcomes variables, with the DerSimonian Laird method and 95% confidence intervals.

Sensitivity analyses will be carried out repeating the primary analysis and substituting ranges of values for decisions in the original studies that were unclear or arbitrary. The number of sensitivity analyses will depend on the irregular values or decisions that could be identified. Publication bias will be analysed through funnel plots. All the procedures will be completed with RevMan 5 software.

Phase 2: qualitative study. Sample/participants

There will be two sub-phases. The first phase will consist of a content analysis (Krippendorff 1990) of the lists of interventions resulting from the review and a comparison with the Nursing Interventions Classification (NIC) to identify semantically related terms. Subsequently, the identified associations will be subjected to expert consensus using the Delphi technique. For the first process, the sample will include a list of interventions extracted, and for the second one, experts will compose the sample in nursing care for older people and/or in standardized nursing languages.

Data collection

For the content analysis, the list of interventions extracted during the systematic review will be matched against the 542 interventions in the NIC. Sampling units will include the two lists of interventions, digitally processed; recording units will correspond to specific segments of texts in the interventions wording that act as indicators of their meaning. Context units will be the complete NIC intervention and definition as well as the material and methods passages where interventions were described on research papers selected for the review. This process will yield associations among interventions from the review and NIC.

For the Delphi technique, experts will be asked to judge the appropriateness of the proposed associations using a Likert scale with a 1–9 range through a web survey platform (Lime Survey) in an anonymous fashion, and it will take place over a series of rounds until consensus is achieved (Villiers *et al.* 2005).

Data analysis

In the content analysis, the coding system will be managed according to presence and frequency. Analogous thematic categories will be grouped in both lists and those with similarities will be matched by two independent reviewers through a blinded process. At the end of this process, those interventions described in studies that are not represented in the NIC, will be isolated.

For the Delphi technique, the range of values will be stratified into three groups in ascending order of agreement with the pertinence of the association proposed: from 1–3, 4 to 6, and 7–9. The consensus level will be measured through percentiles: agreement will correspond to scores over percentile 75th, partial agreement with scores between the 25th and 75th percentile and discrepancy of scores below 25th percentile. The interquartile range will be calculated to estimate the level of homogeneity in responses. All these analyses will be carried out with Atlas Ti. 5·6 software, Lime Survey and PASW 18·0.

Ethical considerations

The first phase of this study operates with secondary data from primary research studies and therefore no form of consent is necessary. Reviewers will have to make an explicit declaration of conflict of interest with any of the studies included or excluded from the review. For the expert consensus phase, consent for participation will be requested from panellists and confidentiality of information will be guaranteed. Approval from the Ethics Committee was obtained in July 2010 and funding was obtained in March 2011.

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What is already known about this topic

- Advanced practice nursing is getting an expanding presence around the world in many different settings and modalities.
- Older people are one of the most frequent target populations for these interventions.
- There is a profusion of research about Advanced Practice Nursing models and effectiveness, but it is scattered and interventions are not always well-categorized.

What this paper adds

- A systematic review about models and effectiveness of Advanced Practice Nursing for older people in acute, long-term, and residential care.
- A description of different interventions deployed with the Nursing Interventions Classification.

Implications for practice and/or policy

- The results of the systematic review will contribute to highlight effective interventions for the care of older people developed by advanced practice nurses in the international context.
- The determination of ingredients of the interventions, through the qualitative phase, will help design more grounded nursing services for older people.
- The translation of interventions into the Nursing Interventions Classification will facilitate international comparisons among settings or among healthcare systems.

Validity and reliability/rigour

During the systematic review, several measures will be taken to enhance validity and rigour:

- Search: the search will use specific methodological filters and experts will agree on search terms in APN compared with MeSH terms from PubMed and CINAHL Subject Headings. The language will not be restricted to English only. An extensive spectrum of databases and sources will be included.
- Selection of studies: a pilot test will verify the reviewers' adequacy in applying inclusion/exclusion criteria.
- Quality appraisal: two quality checklists will be used for each study (RevMan items and Cochrane EPOC Group) and in case of doubt, standardized reporting tools (CONSORT and TREND) will be employed.
- Data extraction: an electronic form will be use to introduce results, including a data-entry control system to minimize errors. When the original data are unclear, authors will be contacted directly.
- Analysis: homogeneity tests, sensitivity analyses, and funnel plots will be carried out.

For the qualitative phase, content analysis will be carried out with qualitative data software. Matching of interventions will be completed by two separate reviewers through a blinded process.

Limitations

Although there is great interest in discerning the potential contribution of APNs to health outcomes, it is very likely that the studies included in this review cannot contribute greatly because of the general poor quality in design and/or execution. Additionally, in many studies, conceptualization of APN is not always assured, and a poor description of interventions could limit the scope of this review. Nevertheless, direct contact with authors will help mediate this potential limitation.

Conclusions

APN models often are used to achieve outcomes in the care of older people, therefore, a thorough knowledge is needed for these models, their components, and the common skills that contribute to their success. This understanding can be used to guide training and evidence-based practice in the development of services aimed at this population. Additionally, the categorization of APN interventions through NIC will facilitate comparative effectiveness research among settings or healthcare systems. It also will contribute to improving research methods in this area. Further studies using this approach will have to be developed in the future.

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Conflict of interest

No conflict of interest has been declared by the authors.

Author contributions

All authors meet at least one of the following criteria (recommended by the ICMJE: http://www.icmje.org/ethical_1author.html) and have agreed on the final version:

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- substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data.
- drafting the article or revising it critically for important intellectual content.

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Appendix 2:

JUNTA DE ANDALUCIA CONSEJERÍA DE SALUD

SUBVENCIONES PARA LA FINANCIACION DE LA INVESTIGACIÓN BIOMÉDICA Y EN CIENCIAS DE LA SALUD EN ANDALUCÍA

PROYECTOS DE INVESTIGACIÓN

MEMORIA CIENTÍFICO-TÉCNICA Y ECONÓMICA

RESOLUCIÓN de 1 de junio de 2010 (BOJA nº 114 de 11 de junio de 2010)

INVESTIGADOR PRINCIPAL	
APELLIDOS Morilla Herrera	NOMBRE Juan Carlos

TÍTULO DEL PROYECTO

MODELOS DE INTERVENCIÓN DE ENFERMERÍA DE PRÁCTICA AVANZADA EN POBLACIÓN MAYOR Y SU DESCRIPCIÓN A TRAVÉS DE LA CLASIFICACIÓN DE INTERVENCIONES DE ENFERMERÍA. REVISIÓN SISTEMÁTICA Y ESTUDIO CUALITATIVO. Estudio MIDE-PACIE

PALABRAS CLAVE

nursing roles and functions; advanced practice nursing; geriatrics; health services for aged people;

RESUMEN

(Máximo 250 palabras)

Introducción: La Práctica enfermera avanzada (EPA) es un término difícil de precisar por estar determinado al contexto y a las políticas imperantes en cada momento. La EPA se desarrolla por enfermeras con formación de postgrado, acreditadas que integran en su práctica la investigación, la formación y la gestión con gran autonomía profesional. El número de enfermeras con funciones avanzadas ha crecido a nivel internacional y paralelamente han aumentado las pruebas de su efectividad en la población mayor. Aunque los resultados de investigación son extensos, éstos están dispersos, hay escasa síntesis del mejor conocimiento y no es fácil visualizar los distintos modelos experimentados, sus ingredientes específicos y qué resultados les son atribuibles. Por tanto, constituye un área de incertidumbre idónea para la realización de una revisión sistemática.

Objetivos: Caracterizar los modelos de Enfermería de Práctica Avanzada desarrollados para la atención a población mayor de 65 años en diferentes entornos (atención hospitalaria, domiciliaria, ambulatoria, residencial) en términos de tipos de pacientes atendidos, intervenciones desplegadas y resultados alcanzados. Aislar los componentes de las intervenciones que realizan las enfermeras de práctica avanzada en el ámbito del mayor.

Diseño: Estudio en dos fases:una primera de revisión sistemática y metanálisis (si procede) y una segunda mediante técnicas cualitativas.

Análisis de datos: En función del grado de heterogeneidad y comparabilidad se realizará revisión cualitativa o meta-análisis. Si fuera el caso, los resultados se resumirán en medidas relativas de efecto (OR/RR) y medidas absolutas (RAR) o diferencia de medias (ponderada/estandarizada), en función de las variables de resultado de los estudios originales. Se calculará la precisión de los resultados mediante los intervalos de confianza al 95%. Análisis de sensibilidad. En la fase cualitativa se realizará análisis de contenido de las intervenciones procedentes de la revisión sistemática, que se contrastarán con el contenido de la Clasificación de Intervenciones de Enfermería (NIC), para someterlas posteriormente a consenso de expertos mediante técnica Delphi.

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1. ASPECTOS CIENTÍFICO-TÉCNICOS DEL PROYECTO

1.1 BIBLIOGRAFÍA

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1.2	ANTECEDENTES Y ESTADO ACTUAL DEL TEMA DE ESTUDIO

Se valorará el conocimiento sobre los antecedentes y estado actual del tema (Máximo 3 páginas)

Los programas de práctica avanzada enfermera surgen en los años 60 (1), aunque no es fácil determinar con precisión a qué hace referencia el término "práctica avanzada" ya que, ha estado muy determinado por la influencia del contexto y las políticas imperantes en las que se desarrollaban. El Consejo Internacional de Enfermería define la enfermera de práctica avanzada (EPA) como una enfermera graduada universitaria que ha adquirido un conocimiento experto, habilidades complejas de toma de decisiones y competencia clínica para expandir su práctica, cuyas características están configuradas por el contexto y/o el país en el que está acreditada para ejercer y a la que se le exige una formación universitaria de segundo o tercer ciclo (2). Las características que suelen tener estas enfermeras se podrían agrupar atendiendo a sus características formativas y de práctica clínica: formación postgrado de alto nivel mediante programas formativos estructurados y acreditados, con sistemas de regulación de la práctica sustentados en la certificación, el registro o la renovación de credenciales. En su práctica suelen integrar la investigación, la formación, la práctica y la gestión (3) , con un alto grado de autonomía profesional (4) que implica una cartera de pacientes propia y poseen habilidades avanzadas de valoración del estado de salud, de toma de decisiones y de razonamiento diagnóstico, actuando como consultores para distintos proveedores de salud.

En los últimos 20 años se viene produciendo un incremento importante en el número de enfermeras con funciones avanzadas, en varios países del entorno anglosajón y de países nórdicos. En los años 80, tan sólo había en el Reino Unido 353 enfermeras catalogadas como de práctica avanzada, mientras que ya en 1989 había 1.016 enfermeras oficialmente reconocidas con estas funciones (5).

Para la American Nurses Association (ANA), la formación en EPA gira en torno a tres ejes (6): la especialización, el desarrollo y el avance. La especialización delimita el dominio central de los cuidados enfermeros; el desarrollo está vinculado a la adquisición de nuevos conocimientos y competencias que legitiman el rol de autonomía y, por último, el avance hace referencia a la integración de la teoría en cuidados enfermeros, adquirida a través de la formación académica, y de la investigación basada en la práctica clínica.

Según la Association des Infirmières et Infirmiers du Canada (AIIC) "la práctica avanzada de enfermería como expresión global describe un nivel avanzado de la práctica enfermera que maximiza la utilización de competencias especializadas y de saber enfermero a fin de responder a las necesidades de los clientes en el dominio de la salud". Esta práctica utiliza un modelo en cuidados enfermeros apoyado sobre un saber teórico, empírico y de experiencia del dominio de la práctica, con el objetivo de ofrecer un cuidado holístico, integral y completo. La práctica fundada en la evidencia es el elemento central de las competencias de la EPA (7).

Para optimizar el cuidado de paciente y minimizar los conflictos que supone introducir una innovación de este tipo en las organizaciones sanitarias, caracterizadas por un profesionalismo rígido, es importante que las enfermeras que ejercen estos roles, puedan hacerlo en las condiciones adecuadas. Los factores más importantes identificados para el éxito de la implantación de EPA tienen que ver con las relaciones con otros miembros del equipo y la definición y expectativas del rol. Otros factores importantes dependen de las características personales de los profesionales y de la experiencia previa, la formación recibida para el nuevo rol o la cultura de la organización y los recursos disponibles (8).

Se han desarrollado modelos de EPA en muchos campos, que van desde la atención a pacientes hospitalizados agudos (9), a la atención a la demanda aguda en Atención Primaria (10,11) o en Urgencias Hospitalarias (12), con resultados en general bastante notables en términos de efectividad. Uno de los campos donde se ha desarrollado ampliamente la EPA es en la atención a la población mayor (13). Las enfermeras de práctica avanzada, integradas en los equipos interdisciplinarios de salud, mejoran la salud y el bienestar, reducen los costes y mejoran la calidad de vida (14). El seguimiento proactivo y las llamadas telefónicas estructuradas por este tipo de enfermeras consiguen la participación activa y disminución de reingresos en programas de rehabilitación cardíaca (15,16) incluso si ésta se realiza en el domicilio (17), así como en insuficiencia cardiaca (18,19). Igualmente, la EPA ha mostrado efectos positivos en la salud mental de ancianos en la comunidad (20), incluso aquellos que tienen demencias severas (21) o, más difícil aún, en la utilización de servicios de salud para problemas agudos y la calidad de vida de ancianos con bajo nivel de ingresos (22).

En el ámbito de las residencias de ancianos la variedad y cantidad de las experiencias de modelos EPA es particularmente prometedora. Los residentes atendidos mediante EPA frente a la atención tradicional tienen efectos positivos en la incontinencia, las tasas de úlceras de presión, las conductas agresivas y la relación afectiva en pacientes con deterioro cognitivo (23,24), así como en un importante problema en estos contextos, como son las caídas (25). Importantísima en este ámbito es la evaluación de los complejos problemas nutricionales que afecta a los institucionalizados, donde también la participación de EPAs en equipos

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multidisciplinares muestra capacidad para mejorar los parámetros bioquímicos y la depresión que acompaña con frecuencia a los procesos de de desnutrición (26). En problemas tan difíciles de abordar en mayores institucionalizados como son los procesos depresivos (27), los trastornos de sueño (28) o el estrés por traslado (29), también han aparecido resultados vinculados a la intervención de estas enfermeras.

Pero, muchas de estas intervenciones tienen a menudo un escaso sustrato conceptual y obedecen a diseños locales, que pretenden dar respuesta a problemas coyunturales con soluciones rápidas y no siempre sostenibles. Esto produce un abanico de modalidades muy dispares entre sí, y no se cuenta en la actualidad con una clara ordenación conceptual al respecto, que permita obtener una visión estructurada del rango posible de actuaciones mediante EPA en este grupo poblacional (30). Los criterios de selección de población diana oscilan desde aquellos que usan estrictamente la edad como elemento de clasificación, hasta aquellos que recurren a criterios funcionales o de comorbilidad.

Por otra parte, las intervenciones son siempre de carácter multicomponente, lo que conlleva algunas dificultades metodológicas que no siempre son salvadas con éxito. Disponemos hoy en día de desarrollos conceptuales que permiten aislar con bastante solvencia las intervenciones complejas, pero son escasamente empleados (31). Baste sólo el ejemplo de la complejidad de intervenciones en el campo de la insuficiencia cardiaca en ancianos, en la que la diversidad de modelos hace verdaderamente difícil reproducir un modelo de intervención en varios contextos (32).

Asimismo, los criterios de resultado y 'endpoints' empleados en muchos estudios no siempre son de suficiente calidad (exceso de utilización de variables intermedias y de variables proxy, uso de variables poco indicativas del propósito perseguido, etc). Un ejemplo claro de este problema se observa con claridad en el caso del uso de la variable 'institucionalización' como 'endpoint' de declive funcional, cuando en muchas ocasiones puede obedecer a dificultades de afrontamiento familiar (33).

Pero, uno de los principales problemas reside en que la figura de la EPA suele estar inserta en el seno de otras intervenciones y es difícil discernir con qué inputs del modelo están asociados los resultados obtenidos. En la medida en que los modelos de práctica enfermera avanzada son con frecuencia utilizados para lograr resultados en la atención a mayores frágiles, el conocimiento de éstos, de sus componentes y de las habilidades comunes que contribuyen al éxito de los mismos podría servir para orientar la formación, la práctica basada en la evidencia y guiar el desarrollo de servicios de este tipo orientados a este segmento de población.

En nuestro país, en 2007 había 7.531.826 personas de 65 y más años (el 16,7% de la población total), habiendo crecido la población mayor en los últimos cinco años, en más de 250.000 personas. En España, además, las proyecciones de población auguran un incremento de este envejecimiento que duplicará al actual. El INE proyecta una población para el 2060 de 15.679.878 personas que habrán superado el umbral de los 65 años. Esta población será entonces el 29,9% de la población total. El panorama demográfico futuro presenta una sociedad envejecida en la que casi un tercio de la población serán personas mayores: en 2060 se prevé que la población española sea tan envejecida, hasta el punto de que por cada niño de entre 0 a 14 años habrá 2,3 personas mayores (34). Este escenario plantea serios retos a los Servicios de Salud para ofrecer una atención integral, continuada y centrada en la persona, por la creciente complejidad de las organizaciones sanitarias, la constante compartimentalización de los servicios y la amplia variabilidad de la práctica clínica. La mayor prevalencia de incapacidad como consecuencia de la enfermedad, junto con la necesidad de más tiempo para la recuperación del estado de salud basal tras un proceso patológico, justifica la necesidad de cuidados preventivos (detección y abordaje precoz del deterioro funcional), progresivos (desde la atención aguda a la de soporte, pasando por la intervención activa sobre la pérdida de función) y continuados (desde el hospital al domicilio, y viceversa) (35).

Nuestro contexto ya tiene experiencias en la introducción de prácticas avanzadas mediante la gestión de casos (36) y ante este escenario de envejecimiento, cronicidad y dependencia creciente, se ve ante la tesitura de organizar intervenciones que den respuesta a muchos de estos retos, expandiendo objetivos y contextos de atención que, potencialmente, podrían incorporar las evidencias conocidas en este terreno. Como se ha visto, aunque hay múltiples resultados de investigación sobre el tema, éstos están dispersos, hay una escasa síntesis del mejor conocimiento al respecto y no es fácil obtener una adecuada panorámica de los distintos modelos experimentados, cuáles son sus ingredientes específicos y qué tipos de resultados son atribuibles a los mismos. Por tanto, constituye un área de incertidumbre idónea para la realización de una revisión sistemática que intente dar respuesta a estos interrogantes.
De forma adicional, la disponibilidad de un lenguaje estandarizado para denominar las intervenciones enfermeras, (la Nursing Intervention Classification), inserto en la mayoría de sistemas de información y registro de nuestro contexto de atención, podría ofrecer un recurso adicional para clasificar los componentes de los distintos modelos y facilitaría la descripción e inclusión en el espectro de posibilidades de práctica avanzada en el Sistema Sanitario Público Andaluz.

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1.3	HIPÓTESIS O PREGUNTA DE INVESTIGACIÓN

Se valorará la claridad y concreción de la hipótesis o pregunta de investigación.

En esta revisión sistemática se pretende responder a las siguientes preguntas:

1. ¿Qué tipos de intervenciones de EPA se han desarrollado para la atención a población mayor de 65 años en diversos contextos (atención especializada, ambulatoria, domiciliaria, residencial, etc)?
2. ¿Cuáles son los componentes específicos de las intervenciones de los modelos desarrollados?
3. ¿Qué efectos han producido en los diversos grupos de población anciana que se han aplicado?
4. ¿Se pueden integrar estos componentes en los sistemas estandarizados de lenguaje enfermero disponibles para describir intervenciones?

1.4	OBJETIVOS

Enumerar brevemente, con claridad, precisión y de forma acorde con la duración prevista del proyecto, los objetivos concretos que se persiguen. Se valorará la claridad, relevancia y novedad de los objetivos.

El estudio tendrá como objetivos:

Primarios:

1. Caracterizar los modelos de Enfermería de Práctica Avanzada desarrollados para la atención a población mayor de 65 años en diferentes entornos (atención hospitalaria, domiciliaria, ambulatoria, residencial) en términos de tipos de pacientes atendidos, intervenciones desplegadas y resultados alcanzados.
2. Aislar los componentes de las intervenciones que realizan las enfermeras de práctica avanzada en el ámbito del mayor.

Secundarios:

3. Describir las intervenciones de estos modelos de EPA mediante la Clasificación de Intervenciones de Enfermería (NIC).
4. Identificar posibles intervenciones desplegadas en estos modelos de EPA, no detalladas en la NIC.

1.5	METODOLOGÍA

Detallar y justificar las actividades o tareas que se van a desarrollar. Se valorará la viabilidad del proyecto de investigación: adecuación de la metodología, el diseño de la investigación, análisis de los datos y plan de trabajo a los objetivos (Máximo 5 páginas).

Diseño del estudio: El estudio tiene dos fases: una primera consistente en una revisión sistemática y metanálisis (si procede) y una segunda mediante técnicas cualitativas (identificación de componentes comunes en los modelos de intervención y en la NIC, aplicando análisis de contenido, combinado con consenso de expertos)

FASE 1: REVISIÓN SISTEMÁTICA

1.*Criterios para la selección de los estudios*:

1.4 Tipos de estudios

- Estudios experimentales controlados con asignación aleatoria de los sujetos a los grupos de intervención y de control.
- Estudios cuasi-experimentales controlados sin asignación aleatoria de los sujetos a los grupos de intervención y de control.
- Estudios cuasi-experimentales tipo antes-después.
- Series de tiempo interrumpido. Análisis longitudinal de los resultados con al menos tres observaciones antes y después de la intervención.

1.2 Tipos de participantes

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- Profesionales sanitarios: médicos, enfermeras de práctica habitual, enfermeras de práctica avanzada (se aplicarán los criterios de Reimanis (3) y Manley (4) para la identificación de este rol en los distintos estudios).
- Otros profesionales: trabajadores sociales, agentes comunitarios, fisioterapeutas, rehabilitadores, terapeutas ocupacionales, podólogos, nutricionistas.
- Pacientes:
  - Personas mayores de 65 años:
    - Atendidas en servicios hospitalarios de agudos o crónicos
    - Atendidas en régimen ambulatorio para distintos problemas de salud.
    - Atendidas en programas de atención domiciliaria en cualquiera de sus modalidades.
    - Atendidas en régimen residencial en instituciones.
- Se excluirán estudios que incluyan:
  - Pacientes ingresados en Unidades Agudas Psiquiátricas.
  - Pacientes atendidos en Unidades de Salud Mental de Segundo Nivel y Unidades de Salud Mental Comunitaria.

1.3 Tipos de intervenciones

Cualquier tipo de servicio en el que intervengan enfermeras con roles de práctica avanzada (cartera de pacientes propia, habilidades avanzadas de valoración de salud, de razonamiento diagnóstico, prescripción, solicitud de pruebas, derivación, consultoría para otros profesionales, gestión de casos, etc.).

1.4 Tipos de medidas de resultado

Resultados de los pacientes

- Morbilidad.
- Mortalidad.
- Funcionalidad física.
- Funcionalidad cognitiva.
- Calidad de vida.
- Satisfacción.
- Apoyo social y/o familiar.
- Eventos adversos que comprometan la seguridad de la persona (medicación, caídas, fallo en el rescate, etc.).

Resultados del proceso de atención

A. Utilización de recursos por parte de los profesionales:
   - Pruebas y análisis
   - Derivaciones
   - Prescripciones
   - Estancias

o Utilización de recursos por los pacientes:
   - Reingresos
   - Frecuentación de consultas
   - Nº de visitas en el domicilio

Resultados económicos

- Costes de la atención

2. *Estrategia de búsqueda para la identificación de los estudios*

Se realizarán búsquedas en las siguientes bases de datos: MEDLINE, CINAHL, EMBASE, WEB OF SCIENCE, Psychinfo, SCOPUS, COCHRANE, Cochrane Controlled Trials Register-CCTR, Joanna Briggs Institute, Centre for Review and Dissemination, HEN (EuroWHO), IME, CUIDEN, ENFISPO, DIALNET, SCIELO y también revisiones y documentos de evaluación en Centros de investigación de servicios de salud y Agencias de Evaluación de

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Tecnologías Sanitarias: Buscador de INAHTA, Agency for Health Care research and Quality (AHRQ), Centre for Health Economics and Policy Analysis de la Universidad de McMaster, King's Fund, También se realizarán búsquedas en Google Académico, documentos del Consejo Internacional de Enfermería e informes de la OCDE y la American Academy of Nurse Practitioners, así como búsquedas concatenadas en las referencias de los estudios encontrados.
Se emplearán filtros metodológicos específicos desarrollados por la Health Information Research Unit de la Universidad de McMaster para estudios aleatorizados y controlados, revisiones sistemáticas[1,2,3,4,5]. Los términos de búsqueda de EPA se han consensuado entre dos expertos en la materia y se han contrastado con términos MeSH de PubMed y Subject Headings de CINAHL (Ver Anexo 1)

3. *Métodos de revisión*

La primera etapa de revisión de los resultados comprenderá la evaluación detallada de los títulos y resúmenes para determinar si cada artículo reúne los requisitos predeterminados para ser escogido. Si este paso ofrece dudas, se evaluará el texto completo del artículo para ver si reúne o no los criterios de inclusión. Para garantizar la calidad del proceso, se procederá a doble evaluación de los registros obtenidos por parte de dos revisores de forma ciega.
Tras este primer proceso, todas las referencias identificadas como potencialmente elegibles, serán evaluadas para ver si cumplen los criterios de inclusión para la revisión. Este proceso, nuevamente será llevado a cabo en paralelo por dos revisores de forma ciega. Las discrepancias que pudieran surgir en el proceso serán resueltas mediante discusión entre los dos evaluadores y la intervención de un tercer evaluador ajeno al proceso. Adicionalmente, se realizará una prueba piloto con los revisores, para la aplicación de los criterios de inclusión, sobre una muestra de 15 artículos elegida.

4. *Recogida y extracción de datos*

Se empleará un formulario electrónico para la introducción de los resultados básicos de los estudios incluidos y evaluados, sustentado por la aplicación RevMan 5.0.24 que incluye los siguientes ítems: métodos, intervenciones, participantes, resultados considerados y anotaciones del revisor. Se consensuarán previamente posibles códigos para describir rutinas de resultados habituales en estos estudios. Cuando los estudios originales no aporten con claridad los datos necesarios para la extracción, se contactará directamente con los autores para aclarar dudas u obtenerlos directamente, si es posible.

Paralelamente, se alimentará una base de datos más exhaustiva con información detallada de cada estudio incluido, con la información estructurada con arreglo a una adaptación de los criterios del grupo EPOC de la Cochrane (Bero L, Eccles M, Grilli R, Grimshaw J, Gruen RL, Mayhew A, et al. Cochrane Effective Practice and Organisation of Care Group. About the Cochrane Collaboration (Cochrane Review Groups (CRGS)). 2008, Issue 3; Vol. Art. No.: EPOC). Por la naturaleza del área de estudio, que implica la reorganización de la atención para la implementación de modelos de EPA, se ha optado por este enfoque metodológico, específicamente orientado a evaluar efectividad de intervenciones en Servicios de Salud, entre las cuales figura la denominada "revisión de roles" o los "cambios en la mezcla de competencias de los proveedores", apartado en el que se clasificarían la mayoría de estudios de esta revisión

1. Diseño del estudio: Estudio controlado aleatorizado/ Estudio controlado/ Estudio antes-después/Serie temporal
2. Intervenciones: Sobre profesionales/ Económico-financiera / Organizativa /Regulatoria
3. Controles
4. Características de la intervención: basada en evidencias/ propósito/ naturaleza del cambio perseguido con la intervención/formato/ fuente/ apoyada en GPCs/ Destinatarios/Temporalización/Entorno/Fuente de financiación/Aprobación ética
5. Participantes:
    a. Características de los proveedores (grado profesional/nivel de formación/especialización/edad/experiencia clínica)
    b. Características de los pacientes: problema clínico/nº sujetos en el estudio/episodios de

1 Montori VM, Wilczynski NL, Morgan D, Haynes RB; Hedges Team. Optimal search strategies for retrieving systematic reviews from Medline: analytical survey. BMJ. 2005;330(7482):68
2 Eady AM, Wilczynski NL, Haynes RB. PsycINFO search strategies identified methodologically sound therapy studies and review articles for use by clinicians and researchers. J Clin Epidemiol. 2008;61(1):34-40
3 Wilczynski NL, Haynes RB; Hedges Team. EMBASE search strategies achieved high sensitivity and specificity for retrieving methodologically sound systematic reviews. J Clin Epidemiol. 2007; 60(1):29-33
4 Wong SS, Wilczynski NL, Haynes RB. Developing optimal search strategies for detecting clinically sound treatment studies in EMBASE. J Med Libr Assoc. 2006; 94(1):41-7.
5 Wong SS, Wilczynski NL, Haynes RB. Optimal CINAHL search strategies for identifying therapy studies and review articles. J Nurs Scholarsh. 2006;38(2):194-9

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atención/entorno de la atención/características socio-demográficas
6. Entorno: sistema de pago/entorno de la provisión/estatus académico del centro
7. Métodos: unidad de asignación/unidad de análisis/potencia estadística del estudio/calidad metodológica
8. Identificación potencial de barreras para la aplicación de al EPA en el entorno estudiado
9. Criterios de resultado: tipo/duración del seguimiento/posible efecto techo en la mejora estudiada
10. Resultados: basales y post intervención en grupos control e intervención, incluyendo significación estadística y especificando si las unidades de asignación y de análisis fueron distintas.

5. Evaluación de la calidad metodológica de los estudios

Este proceso será llevado a cabo por dos evaluadores de forma independiente. Para la evaluación se utilizará el check-list de evaluación de sesgos incluido en la aplicación RevMan 5.0.24 para la valoración de la calidad de estudios de intervención, junto con los criterios de calidad metodológica del grupo EPOC Cochrane (Bero L, Eccles M, Grilli R, Grimshaw J, Gruen RL, Mayhew A, et al. Cochrane Effective Practice and Organisation of Care Group. About the Cochrane Collaboration (Cochrane Review Groups (CRGS)). 2008, Issue 3; Vol. Art. No.: EPOC). Los criterios metodológicos tienen que ver con:

1. Ocultación de la asignación
2. Seguimiento de los profesionales que aplican la intervención
3. Seguimiento de los pacientes y de los episodios de atención.
4. Cegamiento de resultados primarios (evitación de sesgo de detección).
5. Medición basal
6. Fiabilidad de la medición de los resultados primarios
7. Protección de la contaminación entre grupos

En caso de discrepancia o dudas entre los revisores, se recurrirá a un tercer evaluador adicional y se utilizarán como apoyo los estándares de publicación CONSORT, CONSORT extendido y TREND.

Con arreglo a estos criterios, los estudios se clasificarán en:

- Se cumplieron todos los criterios de calidad: bajo riesgo de sesgo.
- Uno o más de los criterios de calidad se cumplieron sólo parcialmente: riesgo de sesgo moderado.
- Uno o más criterios no se cumplieron: alto riesgo de sesgo.

Este proceso de extracción de datos y evaluación de la calidad metodológica será registrado en formato electrónico mediante formulario web protegido con acceso con clave para cada revisor y con sistema de control de entrada de datos para minimizar errores en la calidad de la información introducida.

FASE 2: FASE CUALITATIVA

Se realizará en dos subfases: una primera consistente en el análisis de contenido de los listados de intervenciones resultantes de la revisión y de la Clasificación de Intervenciones de enfermería (NIC), para identificar términos afines semánticamente. Posteriormente, se someterán las asociaciones identificadas a consenso de expertos mediante técnica Delphi. Se les pedirá que se pronuncien sobre la pertinencia de las asociaciones establecidas, mediante una escala tipo Likert con rango 1-9, a través de una plataforma de encuestado web (Lime Survey).

Análisis

FASE 1: Revisión sistemática

En función del grado de heterogeneidad y comparabilidad de los estudios, se llevará a cabo un meta-análisis de los resultados obtenidos. Para ello, se definirán con antelación las comparaciones que se efectuarán, las variables de resultado que se emplearán y la medida de resumen más idónea.

En caso de excesiva heterogeneidad, no se efectuará meta-análisis y se realizará sólo una revisión cualitativa de los distintos estudios. Los cálculos se efectuarán desde modelos de efectos aleatorios que asume los estudios como una muestra aleatoria de una población hipotética de estudios y cuya heterogeneidad puede ser representada mediante una sola varianza, proporcionando resultados más conservadores, con intervalos de confianza más amplios. La homogeneidad se examinará mediante diagramas de forest-plot y el estadístico I^2, derivado a su vez del estadístico Q (medida estandarizada de la heterogeneidad observada, a la que no le afectan las unidades del tamaño del efecto):

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$$Q = \sum_{i=1}^{k} W_i (Y_i - M)^2$$

Donde: W= peso de cada estudio (inverso de la varianza); Y= tamaño del efecto del estudio; M= Efecto global; K= número de estudios. Como consecuencia, se calculará la ratio entre el exceso de variación y la dispersión:

$$I^2 = \frac{(Q^2 - gl)}{Q} x100$$

Donde: gl= grados de libertad→ k-1 (k=nº de estudios incluidos en el meta-análisis).

La determinación de la heterogeneidad se estratificará en tres niveles, con arreglo a los criterios de Higgins y cols.[6]:

<25%→ Baja heterogenidad

25-50% → Moderada heterogeneidad

>50%→ Alta heterogeneidad

Los resultados se resumirán en formato de medidas relativas de efecto (OR/RR) y medidas absolutas (RAR) o, mediante diferencia de medias (ponderada/estandarizada), en función de la naturaleza de las variables de resultado de los estudios originales. Se calculará la precisión de los resultados mediante los intervalos de confianza al 95%. Los métodos de análisis serán los que incluye el software RevMan 5.0.24:

Tipos de datos		Modelo	Método
Dicotómicos	*OR*	Efectos fijos	Peto Mantel-Haenszel
		Efectos aleatorios	DerSimonian y Laird
	RR	Efectos fijos	Mantel-Haenszel
		Efectos aleatorios	DerSimonian y Laird
	RAR	Efectos fijos	Mantel-Haenszel
		Efectos aleatorios	DerSimonian y Laird
Continuos	DPM	Efectos fijos	Inverso varianza
		Efectos aleatorios	DerSimonian y Laird
	DEM	Efectos fijos	Inverso varianza
		Efectos aleatorios	DerSimonian y Laird

Se efectuarán análisis de sensibilidad mediante dos procedimientos: inclusión-exclusión de estudios en los análisis, a posteriori y, si procede, reanálisis mediante imputación de missing-data de datos faltantes (para este procedimiento se usarán, según los casos, la mediana de puntos adyacentes y/o la tendencia lineal en el punto).

Se ejecutará análisis de funnel plot para determinar posibles sesgos de publicación.
También se realizará un análisis de concordancia entre revisores a lo largo de las distintas fases del proceso, para incorporarlas a los resultados de la revisión, mediante índice kappa.
Para las distintas fases de análisis se emplearán las aplicaciones RevMan 5.0.24 y PASW 18.

FASE 2: Cualitativa.

A. En primer lugar se realizará **análisis de contenido** de las intervenciones procedentes de la revisión sistemática y se contrastará con el contenido de las intervenciones y actividades de la Clasificación de Intervenciones de Enfermería (NIC). Para ello, siguiendo los criterios de Berelson para formular inferencias identificando de manera sistemática y objetiva ciertas características específicas dentro de un texto, se utilizarán:

6 Higgins J, Thompson SG, Deeks JJ, Altman DG. Measuring inconsistency in meta-analyses. BMJ. 2003; 327:557-560

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- Como unidades de muestreo: los listados de intervenciones procedentes de la revisión sistemática y el listado de intervenciones y actividades de la NIC. Ambos listados estarán procesados digitalmente para someterlos al tratamiento de software de análisis cualitativo.
- Como unidades de registro: el enunciado de las intervenciones de la revisión sistemática y el enunciado de la intervención y de las actividades en la NIC.
- En este caso, la unidad de contexto y la de registro coinciden.

B. El sistema de codificación se operativizará para la enumeración y reglas de recuento con los siguientes criterios: presencia, frecuencia (se considerará la utilización discrecional de frecuencias ponderadas en aquellos términos que impliquen mayor peso en la descripción de una intervención).

C. Se agruparán por analogía las distintas categorías temáticas de intervenciones en ambos listados y se buscarán aquellas que coincidan para asociarlas. Este proceso se realizará simultáneamente por dos codificadores de forma ciega.

Para el análisis de consenso de expertos, se agruparán los rangos de valores de las respuestas en tres grupos: de 1 a 3, de 4 a 6 y de 7 a 9, en orden ascendente de pertinencia de la asociación propuesta. El nivel de acuerdo se medirá mediante percentiles (Acuerdo (>p75), Acuerdo parcial (p25-p75) y Desacuerdo (<p25)] y la dispersión a través del rango intercuartílico de las respuestas del siguiente modo: RI<2: Respuestas poco dispersas, homogeneidad entre los expertos; RI=3: Cierto grado de divergencia entre las respuestas; RI>3: disparidad de respuestas amplia.

Durante la fase cualitativa se empleará el software Atlas Ti. 5.6, Lime Survey y PASW 18.0

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1.6 PLAN DE TRABAJO

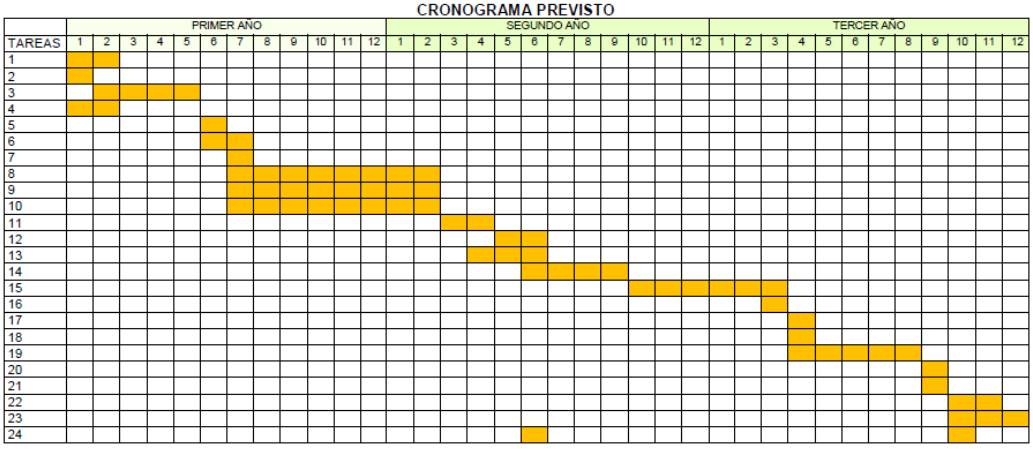
Se valorará una buena descripción del plan de trabajo con indicación de la/s persona/as que van a desarrollar cada tarea (Máximo 1 página).

ACTIVIDADES:

1. Elaboración de aplicación para extracción detallada de datos en soporte web.
2. Construcción y refinamiento de estrategias de búsqueda en las distintas bases de datos y fuentes.
3. Selección de estudios para entrenamiento de revisores..
4. Entrenamiento de revisores y pilotaje de fiabilidad inter-revisor.
5. Distribución de estudios hallados entre pares de revisores.
6. Selección de estudios para inclusión/exclusión.
7. Arbitraje de discrepancias en la selección de estudios.
8. Evaluación de estudios incluidos y extracción de datos.
9. Arbitraje de discrepancias en la evaluación de estudios
10. Contacto con autores originales en caso de necesidad.
11. Análisis de los datos.
12. Elaboración de resultados de la revisión.
13. Digitalización del listado de intervenciones de la revisión
14. Digitalización de intervenciones y actividades de la NIC
15. Análisis de contenido.
16. Elaboración de asociaciones para juicio de expertos
17. Procesado de formulario web para rondas Delphi
18. Selección e invitación de panelistas
19. Ejecución de Rondas Delphi
20. Análisis de acuerdo.
21. Elaboración de listado final de intervenciones clasificadas e intervenciones sin clasificar mediante NIC.
22. Elaboración informe final investigación
23. Elaboración de manuscritos para publicación
24. Elaboración de comunicaciones para difusión

Investigador	***Actividades***
Juan Carlos Morilla Herrera (JCMH)	1-2-3-4-6-7-8-9-10-11-12-15-18-20-22-23-24
José Miguel Morales Asencio (JMMA)	1-2-3-4-6-7-8-9-10-11-12-15-17-20-23
Francisco Javier Martín Santos (FJMS)	6-8-12-13-14-23
Javier Navarro Moya (JNM)	6-8-12-13-14-23-24
Mónica Rodríguez Bouza (MRB)	6-8-12-13-14-23-24
Fernando González Posadas (FGP)	6-8-12-13-14-23-24
Francisco José Muñoz Ronda (FJMR)	6-8-12-13-14-23-24
Personal Becario/a	6-8-10-12-13-14-16-18-19-21-22-23-24

CRONOGRAMA PREVISTO



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1.7	ASPECTOS ÉTICOS DE LA INVESTIGACIÓN

Se valorará que se especifiquen los aspectos éticos que se deben tener en cuenta para realizar el proyecto.

Este estudio maneja datos secundarios de estudios originales y por tanto, no está sometido a los criterios habituales de investigaciones originales. No obstante, los participantes en la revisión elaborarán una declaración explícita de conflicto de intereses (Anexo 2).
Para la fase de juicio de expertos se les pedirá expresamente su consentimiento para participar a través del formulario web y se les garantizará en todo momento la confidencialidad de datos e información aportada y el uso exclusivo con finalidad investigadora. Se solicitará la aprobación por la CEIS del DS Málaga.

1.8	PLAN DE DIFUSIÓN Y DIVULGACIÓN

Se valorará la calidad del plan de difusión y divulgación de los resultados del proyecto de investigación en forma (publicaciones en revistas científicas, patentes, comunicaciones a congresos, etc.) y lugares (congresos, reuniones, jornadas de divulgación, etc.)

Se están haciendo los contactos con la Colaboración Cochrane para solicitar la admisión a evaluación del protocolo de la revisión para publicación en la base de datos Cochrane. Si fuese admitido, una vez concluida la revisión, se remitirían los resultados para su publicación íntegra en la misma, con lo que la difusión tendría un alcance muy elevado, por la naturaleza del medio de difusión que supone la Cochrane.
En caso contrario, se procederá a la difusión en revistas de impacto (ver apartado correspondiente más adelante) y en congresos nacionales (Congreso nacional de Enfermería Comunitaria de FAECAP y de Enfermería Geriátrica) y se valorará la presentación a eventos internacionales en función de la disponibilidad de datos con arreglo a las fechas en que se celebre alguno pertinente para la presentación de resultados. En este sentido, se baraja la posibilidad de presentar una comunicación en la International Conference in Community Health Nursing Research, Biennial Symposium de 2011 en Edmonton, Canadá. El equipo investigador ya tiene antecedentes de presentación y admisión de comunicaciones en este organismo internacional (Congreso Mundial de Australia de 2009) y es la opción prevista inicialmente.

2. INVESTIGADOR/A PRINCIPAL Y EQUIPO INVESTIGADOR

2.1	CV DEL/ DE LA INVESTIGADOR/A PRINCIPAL Y DEL EQUIPO INVESTIGADOR

Si se trata de un grupo no emergente, se valorará:

- Que la persona investigadora principal haya obtenido financiación para otros proyectos de investigación relacionados con el tema propuesto.
- La actividad investigadora anterior de la persona investigadora principal y del grupo de investigación.
- Horas de dedicación y composición del equipo adecuados al desarrollo del proyecto de investigación.
- Actividad científica de la persona investigadora principal y del equipo investigador relevante a nivel nacional e internacional en los últimos 5 años.
- Capacitación científico-técnica de la persona investigadora principal y del equipo investigador para realizar el proyecto.

Si se trata de un grupo emergente, se valorará:

- Horas de dedicación y composición del equipo adecuados al desarrollo del proyecto.
- Capacidad y potencialidad para llevar a cabo el proyecto de investigación.
- La actividad investigadora anterior de la persona investigadora principal y del grupo de investigación, teniendo en cuenta que se trata de un grupo emergente.
- Formación contrastada en investigación de la persona investigadora principal.

El equipo está compuesto por Directores de Unidades de Gestión Clínica y de Cuidados de Distritos Sanitarios de Atención Primaria del Servicio Andaluz de Salud, asesores de la Consejería de Salud, investigadores de la Universidad de Málaga, enfermeros gestores de casos y enfermeros clínicos, incluyendo doctores y másteres en diversas ramas, con una amplia trayectoria previa en la dirección de proyectos de investigación financiados y de difusión en revistas de impacto. Los miembros del equipo vienen desarrollando desde 2002 una línea en investigación en servicios de salud para poblaciones vulnerables y dependientes que ha incluido, entre otros, proyectos como la evaluación del modelo de atención domiciliaria de Andalucía, financiado por el ISCIII, con difusión internacional e incluido entre las prácticas evaluadas por el Health Policy Monitor Europeo.

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Estudios financiados por miembros del equipo investigador en los últimos 5 años:

1. EFECTIVIDAD DE UN NUEVO MODELO DE ATENCIÓN DOMICILIARIA EN ANDALUCÍA (Estudio ENMAD). IP: JM Morales Asencio. IC: JC Morilla, FJ Martín Santos. Financiado por la Consejería de Salud de la Junta de Andalucía (proyecto 134/02, 18.000 €) y por el FIS (Exp. PI031161; 58.000 €).
2. VALIDACIÓN DE UN INSTRUMENTO PARA EL CRIBAJE TELEFÓNICO DE PACIENTES CON NECESIDAD DE ATENCIÓN DOMICILIARIA TRAS EL ALTA HOSPITALARIA. IP: FJ Martín Santos. Financiado por la Consejería de Salud de la Junta de Andalucía. (*Exp. 162/03;* 5.000€).
3. VALIDACION DE INDICADORES NOC COMO MARCADORES DIAGNÓSTICOS DE RESPUESTAS HUMANAS A TRAVÉS DE LA TAXONOMÍA DIAGNÓSTICA DE LA NANDA. ESTUDIO VINCCI. IP: JC Morilla Herrera. IC: IC: JM Morales Asencio, FJ Martín Santos, M Cuevas. Financiado por la Consejería de Salud de la Junta de Andalucía (Exp. S0123/2006; 11.925 €).
4. IMPLEMENTACIÓN DE UN PROGRAMA DE GESTIÓN DE RIESGOS SANITARIOS EN UN DISTRITO DE ATENCIÓN PRIMARIA (ESTUDIO PROGRES-AP). Investigador colaborador: JM Morales Asencio, FJ Martín Santos. Financiado por el FIS (Exp. PI06/90309; 29.647 €).
5. Características de la práctica enfermera en Andalucía. Investigador colaborador: FJ Martín Santos, JC Morilla Herrera, JM Morales Asencio. Financiado por la Consejería de Salud de la Junta de Andalucía. (Expte. 0022/06; 9.200 €) y por el FIS (Exp.: S0145/2006; 126.000 €).
6. Identificación Automática de Tejidos en Imágenes Digitales de Úlceras Por Presión Mediante Técnicas de Inteligencia Artificial. Investigadores colaboradores: JC Morilla Herrera, FJ Martín Santos. Financiado por la Consejería de Salud de la Junta de Andalucía. (Exp. S0213/2007; 58.500 €).
7. Diseño de un modelo de gestión de casos para pacientes con enfermedad crónica: insuficiencia cardiaca y EPOC. Fase I: modelización e identificación de componentes de la intervención a través de sus protagonistas: pacientes y profesionales (Estudio DELTA-iCE-Pro). IP: JM Morales Asencio. IC: JC Morilla, FJ Martín Santos, M Cuevas. Financiado por la Consejería de Salud de la Junta de Andalucía. (Expte. 222/2008; 39.283 €).
8. Descripción y comparación de los servicios de atención domiciliaria de salud y social en Europa y 4 comunidades autónomas (Estudio EURHOMAP). IC: JM Morales Asencio y FJ Martín Santos. Financiado por el FIS (PI08/90522; 37.510 €).

Publicaciones más relevantes en los últimos 5 años:

1. Morales-Asencio JM, Morilla-Herrera JC, Martín-Santos FJ, Gonzalo-Jiménez E, Cuevas Fernández-Gallego M, Bonill de las Nieves C, Tobías-Manzano A, Rivas Campos A. The association between nursing diagnoses, resource utilisation and patient and caregiver outcomes in a nurse-led home care service: Longitudinal study. Int J Nurs Stud. 2009; 46(2): 189-196. ISI IF: 2,310 (JCR 2008).
2. Morales-Asencio JM, Gonzalo-Jiménez E, Martín-Santos FJ, Morilla-Herrera JC, Celdrán-Mañas M, Millán-Carrasco A, García-Arrabal JJ, Toral López I. Effectiveness of a nurse-led case management home care model in Primary Health Care. A quasi-experimental, controlled, multi-centre study. BMC Health Serv Res. 2008; 8: 193 ISI IF: 1,680 (JCR 2008).
3. Morales-Asencio JM, Gonzalo Jiménez E, Morilla Herrera JC, Martín Santos FJ. Salud Pública basada en la evidencia. Recursos sobre la efectividad de intervenciones en la comunidad. Rev Esp Salud Pub. 2008; 82: 5-20 ISI IF: 0,806 (JCR 2008).
4. de Pedro Gómez J, Morales-Asencio JM, Sesé Abad A, Pericàs J, Bennàsar M, Muñoz Ronda FJ, Ruiz Román MJ. Validación de la versión española del Cuestionario sobre la Práctica Basada en la Evidencia (Evidence Based Practice Questionnaire). Rev Esp Salud Pub. 2009; 83(4): 577-86. ISI IF: 0,806 (JCR 2008).
5. Hormigo Pozo A, Viciana López MA, Gómez Jiménez L, Gallego Parrilla MD, Orellana Lozano J, Morales-Asencio JM. Mejora de la efectividad en el manejo del riesgo cardiovascular de pacientes diabéticos tipo II en Atención Primaria. ATENC PRIM. 2009; 1(5): 240-5.
6. Morales Asencio JM, Bonill de las Nieves C, Celdrán Mañas M, Morilla Herrera JC, Martin Santos FJ, Contreras Guzmán E, San Alberto Giraldos M, Castilla Soto J. Diseño y validación de un instrumento de evaluación de la satisfacción con los servicios de Atención Domiciliaria: SATISFAD. Gac Sanit. 2007; 21 (2): 106-113.
7. Morales Asencio JM, Sarría Santamera A. Efectividad de los modelos alternativos de atención a pacientes con insuficiencia cardiaca. Rev Calidad Asistencial. 2006; 21(1): 51-9.
8. Martin Santos FJ, Morilla Herrera JC, Morales Asencio JM, Gonzalo Jiménez E. Gestión compartida de la demanda asistencial entre médicos y enfermeras en Atención Primaria. Enferm Comunit. 2005; 1(1): 1(1) 35-42.
9. Morilla Herrera JC, Martin Santos FJ, Morales Asencio JM, Gonzalo Jiménez E. Oportunidades para la atención integral. Enferm Comunit. 2005; 1(2): 37-48.

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2.2 BREVE RESUMEN DEL GRUPO DE INVESTIGACIÓN DE LOS ÚLTIMOS 5 AÑOS

Nombre y apellidos	Especialidad	Tipo de investigador (IP o IC)	Nº años investigando	Nº art. revistas nacionales	Nº art. revistas internacionales	Nº Patentes	Nº aportaciones Congresos nacionales	Nº aportaciones congresos internacionales
JUAN CARLOS MORILLA	Diplomado Enfermería. Obstetricia y Ginecología, Máster en Geriatría y gestión de servicios geriátricos	IP	7	18	2		28	1
JOSÉ MIGUEL MORALES	Enfermería, Antropología, Dr. Economía de la Salud	IC	13	60	6		12	8
FRANCISCO JAVIER NAVARRO MOYA	Enfermería ,Especialista en enfermería familiar y comunitaria.	IC	5	4	2		9	2
FRANCISCO JAVIER MARTÍN SANTOS	Enfermería. Máster Salud Pública. Máster Geriatría	IC	17	25	2		22	3
MÓNICA RODRÍGUEZ BOUZA	Diplomada Universitaria en enfermería	IC	12	7	1	0	24	4
FERNANDO GONZÁLEZ POSADAS	Diplomado Universitario en Enfermería	IC	5	2	0	0	14	2
FRANCISCO JOSÉ MUÓZ RONDA	Diplomado Universitario en Enfermería. Antropólogo	IC	2	3	0	0	22	1

3. MEDIOS DISPONIBLES Y PRESUPUESTO SOLICITADO

3.1 MEDIOS Y RECURSOS DISPONIBLES PARA REALIZAR EL PROYECTO

A) MATERIAL INVENTARIABLE

El estudio se centralizará en la Unidad de Investigación del Distrito Sanitario Málaga y en el Departamento de Enfermería de la Facultad de Ciencias de la Salud de la Universidad de Málaga. La Facultad cuenta con una infraestructura docente integrada por 3 aulas con capacidad para 110 alumnos, 3 aulas con capacidad para 70 alumnos, 3 laboratorios docentes de Enfermería de 105 m^2, 2 laboratorios docentes de Fisioterapia de 120 m^2. una Unidad Docente Asistencial de Podología de 110m^2, otra Unidad Docente Asistencial de Fisioterapia de 20m^2 , un laboratorio docentes de Terapia Ocupacional de 25 m^2, un laboratorio de Anatomía de 240m^2, 4 dependencias para docencia/reuniones de pequeños grupos y una sala de juntas con capacidad para 50 personas.

Se dispone además de despachos para el Decanato, Direcciones de Departamento, Gestión Económica, Conserjería y Técnicos de laboratorio. El profesorado cuenta con 32 despachos individuales y 4 despachos compartidos, además de 2 despachos para los administrativos de los departamentos.

La Facultad tiene un aula de informática con 20 puestos de ordenador. La política de la Universidad de Málaga contempla en todos sus centros la dotación de acceso a Internet mediante wifi, por ello, la Escuela Universitaria de Ciencias de la Salud cuenta con wifi en todo el recinto con las siguientes redes: PDI, PAS, alumnos, campus virtual, UMA y Eduroam. Se dispone de acceso con licencia para uso en Campus de software Ofimático, estadístico (PASW 18, AMOS 16) y de análisis cualitativo (ATLAS Ti 6).

Existe un servicio de reprografía disponible para personal docente e investigador, con tarifas especiales para la comunidad universitaria.

Los despachos disponen de conexión telefónica a la red corporativa de la UMA. Igualmente, el Departamento dispone de

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Fax.
La Unidad de Efectividad e Investigación del Distrito Sanitario Málaga, acreditada por la Agencia de Calidad Sanitaria de Andalucía, cuenta con acceso a repertorios bibliográficos mediante BV-SSPA, sala de trabajo para personal investigador con 8 puestos, así como a equipos informáticos con software de apoyo a investigación: paquetes estadísticos (SPSS, Stata, R), análisis estadístico (Atlas Ti), gestores bibliográficos (EndNote, Zotero), etc.

B) MATERIAL BIBLIOGRÁFICO

La Facultad tiene una Biblioteca perteneciente a la Biblioteca de la UMA y dispone de 10.245 monografías y 206 revistas indexadas, con 48 puestos de lectura y 3 ordenadores públicos. Al estar integrada en el catálogo JABEGA de la UMA se tiene acceso a los fondos globales de la Biblioteca de la Universidad que ascienden a 921.364 libros (233.085 electrónicos) y 23.706 suscripciones a publicaciones periódicas, de las cuales, el mayor grupo corresponde a suscripciones electrónicas, con 17.924 títulos.
La Biblioteca presta los siguientes servicios a la comunidad universitaria (personal docente y personal investigador): obtención de documentos (Consulta en sala, préstamo, renovaciones y reservas, acceso a recursos electrónicos, servicio de Préstamo Interbibliotecario), información y atención al usuario (Búsqueda en catálogos y otros recursos de información, servicio de Información y Referencia, formación de usuarios, actividades de cooperación y participación) así como otros servicios de apoyo a la docencia e investigación (RefWorks: Gestor de referencias, Boletines de novedades, Bibliografías recomendadas, Producción Científica, Préstamo de portátiles, Zona WIFI y Buzón de sugerencias).

C) PERSONAL

Biblioteca de la Facultad: 1 director y 1 Técnico
Conserjería: 6 PAS. El Departamento cuenta además con 1 Técnico de Laboratorio y 1 Administrativa al frente de la Secretaría del mismo.
Unidad de Investigación: 1 Coordinador, 1 técnico administrativo y personal técnico de apoyo y becarios de investigación.

3.2 PRESUPUESTO SOLICITADO Y JUSTIFICACIÓN.

Se deberá desglosar y justificar cada partida del presupuesto solicitado indicando los conceptos, unidades, precio unitario, etc., y, si se dispone de la información, es recomendable señalar el proveedor. **En caso de no coincidir con el presupuesto introducido en la aplicación informática prevalecerá el que allí se indicó** (Ver anexo).

CONCEPTOS	PRESUPUESTO SOLICITADO			
	AÑO 1	AÑO 2	AÑO 3	TOTAL

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Bienes y Servicios: (detalle y justificación de la necesidad) **Equipamiento Inventariable:** (bienes para ser catalogados) Ordenador portátil gama media (becario de investigación) **Material Fungible:** (incluir aquí fungibles de laboratorio, mat. oficina, pequeño mat. informático, impresión, etc.) • Software Filemaker Pro Advanced 11: • Impresión de pósters **Material Bibliográfico:** (libros y revistas) **Formación y difusión de resultados:** (inscripciones a congresos, cursos puntuales de aprendizaje de técnicas concretas) • Formación de revisores (1 taller de 4 horas) • Costes de publicación en revistas especializadas **Contratación de servicios externos y arrendamiento de equipamiento de investigación:** (cualquier contratación de servicio (traducciones, realización de encuestas, realización de técnicas específicas, etc.). Se deberá indicar el tipo de servicio a contratar y la necesidad del mismo. Traducción de artículos	1.100€ 595 € 300 €	100 €	1.300 € 500 €	1.100€ 595 € 100 € 300 € 1.300 € 500 €
Personal: (Justificación y detalle) **Investigador/a Postdoctoral** **Investigador/a predoctoral** **Personal becario:** 1 becario de investigación durante 30 meses **Personal de apoyo a la investigación**	7.000 €	14.000 €	14.000€	35.000 €
Viajes y Dietas: (Justificación y detalle de nº días y destino) **Viajes y dietas para Congresos nacionales** 1 Congreso nacional **Viajes y dietas para Congresos internacionales** **Reuniones de grupo**		600 €	600 €	3001300 1.200 €
Otros Gastos: (Justificación y detalle) **Mensajería, seguros ensayos clínicos, cuota Internet y teléfono, etc.** Gastos alojamiento web introducción datos	150 €	150 €		300 €
TOTAL	9.145	14.850	16.400	40.395
Comentarios:				

3.3	DATOS DEL PERSONAL SOLICITADO

Cumplimentar solo en caso de que se solicite personal.

Tipo de personal: becario de investigación
Duración del contrato/beca: 24 meses
Horas de dedicación al proyecto: 20 horas semanales
Actividades a realizar en el proyecto: mantenimiento de la base de datos de extracción de resultados, control de entradas y salidas de registros, revisión de la calidad de datos introducidos, mantenimiento de incidencias, soporte a los revisores en el proceso de extracción y registro de datos de los estudios evaluados, distribución

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entre los revisores de los datos originales que pudieran aportar los autores de los estudios, , digitalización de intervenciones de la revisión y NIC, apoyo para el proceso de análisis de contenido, correspondencia con panelistas Delphi, seguimiento encuestas, soporte al equipo investigador durante el proceso de análisis y elaboración de informe final de resultados.

Justificación de la necesidad: El equipo investigador tiene amplia experiencia en la revisión y evaluación de estudios, pero, ante una previsible abundancia y heterogeneidad de las características de los estudios, el proceso de introducción de datos puede ofrecer una elevada complejidad que requerirá el mantenimiento y vigilancia de la calidad de los datos. Además, el soporte a los revisores en este proceso facilita que éstos se centren exclusivamente en el proceso de revisión crítica, delegando en el becario de investigación la distribución de artículos, revisión de posibles errores en los datos extraídos, coordinación de revisiones discrepantes para someterlas a un tercer revisor, distribución de datos adicionales aportados por investigadores originales, comunicación de incidencias entre revisores e investigador principal, etc. Esto genera además garantías de control en este delicado proceso de la revisión y agiliza tiempos, permitiendo que el período de revisión sea más eficiente. Por otra parte, la fase cualitativa requiere un apoyo aún mayor, para la digitalización del material que será sometido a análisis de contenido, así como el mantenimiento de la correspondencia y monitorización de respuestas en la fase Delphi.

4. APLICABILIDAD DEL PROYECTO PARA EL SISTEMA SANITARIO PÚBLICO ANDALUZ

4.1 IMPACTO CLÍNICO, ASISTENCIAL Y/O DESARROLLO TECNOLÓGICO

Se valorarán las expectativas de transferencia de resultados de la investigación a la práctica clínica, a la innovación tecnológica, a la organización, a la gestión de recursos y a los servicios sanitarios o a las políticas de salud, y que se describan los posibles beneficiarios

En el momento actual una de las líneas de trabajo de la Dirección de Estrategias de Cuidado (DECA) de la Consejería de Salud de la Junta de Andalucía se centra en el desarrollo de la Práctica Enfermera Avanzada. En este sentido ya se ha posibilitado en Andalucía la prescripción enfermera que como ha podido dirimirse es una de las circunstancias convenientes al desarrollo de este tipo de prácticas. Se trabaja en el momento actual en desarrollar líneas en relación con la EPA como son el Cribado por Enfermeras de Pacientes en Urgencias, la cirugía menor o las Unidades de Residencias.
Por otro lado, la población Andaluza al igual que el resto de los países del primer mundo sufre de un envejecimiento poblacional que sitúa a los problemas del mayor en el centro de los intereses del sistema sanitario.
Esta revisión es crucial para determinar los modelos de EPA posibles, las funciones e intervenciones que deben desarrollar las enfermeras de EPA. El presente trabajo puede ayudar a orientar las políticas sanitarias en Andalucía particularmente en lo referente a las enfermeras y a la mejor gestión de los recursos disponibles, al mismo tiempo resultará útil a los programas de formación y acreditación así como a la dirección de nuevas investigaciones.

4.2 IMPACTO BIBLIOMÉTRICO

Indicar la relevancia del impacto

Se remitirán los siguientes artículos para publicación:

a) Protocolo de la revisión: inicialmente se enviará a la base de datos Cochrane. FI: 5,653 Cuartil 1 (JCR© 2009). Si no fuese admitido, se remitiría a la revista BMC Health Services Research FI: 1,660 Cuartil 2 (JCR© 2009).
b) Resultados de la revisión: si es aceptada en Cochrane, se publicarían en esta base de datos. En caso contrario, se remitirían los resultados a Worldviews on Evidence-Based Nursing FI: 1944 Cuartil 1 (JCR© 2009).

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4.3	GENERACIÓN DE PATENTES

Indicar los posibles resultados susceptibles de ser patentables

4.4	ANTECEDENTES DEL INVESTIGADOR/A PRINCIPAL Y DEL EQUIPO INVESTIGADOR EN LA APLICACIÓN DE RESULTADOS DE PROYECTOS ANTERIORES

El investigador principal, junto con la mayoría de miembros del grupo de trabajo, formaron parte de la Comisión que diseñó el modelo actual de gestión de casos en Atención Primaria de Andalucía y posteriormente llevó a cabo un estudio multicéntrico financiado por el FIS (estudio ENMAD) que evaluó dicho modelo con resultados que han sido difundidos en todas las Comunidades Autónomas de nuestro país que han iniciado experiencias de implementación de gestión de casos (Cataluña, Aragón, Cantabria, Asturias…). Además, los resultados del estudio ENMAD han sido utilizados en el Estrategia de Cuidados Paliativos del Ministerio de Sanidad y Consumo. Uno de los instrumentos que produjo este estudio (SATISFAD) está siendo utilizado actualmente en muchos Distritos de Atención Primaria para evaluar la satisfacción con los servicios de atención domiciliaria y sometido a validación para la implementación en el sistema de ventilación mecánica domiciliaria de Cataluña.
El investigador principal y algunos de los miembros del equipo se encuentran entre los 10 autores más citados según el último análisis del espacio Científico Iberoamericano en el campo de la Enfermería, según la última revisión de factor H realizada por la fundación INDEX en 2006 (Gálvez Toro A, Amezcua M, Salido Moreno MP, Hueso Montoro C. Impacto de Autor CUIDEN Citación. Trayectorias científicas relevantes y excelencia a través del Factor h (h-index) de Hirsch en el espacio científico iberoamericano. Index de Enfermería (edición digital) 2006;55)

4.4.2. Equipo investigador
El grupo está configurado por centrados en el estudio sobre modelos de atención a poblaciones vulnerables, incluyendo en la misma:
- La situación sociosanitaria de grupos de población con altas necesidades de cuidados: Personas con necesidades de cuidados de larga duración: mayores frágiles, discapacidad funcional severa o media, alta hospitalaria con necesidad de continuidad de cuidados en el domicilio, pacientes en situación terminal, cuidadores de estos pacientes, servicios que reciben estos pacientes en términos de: adecuación, accesibilidad, satisfacción y continuidad.
- Las prácticas profesionales de las enfermeras responsables de los cuidados en términos de: características cientifico-técnicas, eficacia y efectividad de las intervenciones.
En este área, el núcleo inicial de investigadores conformado a principios de los noventa, ha ido creciendo con la idea de estrechar la cooperación entre profesionales del ámbito académico y del ámbito de los servicios enfermeros, en atención primaria y especializada. Los miembros del grupo colaboran entre sí, además de en la tarea investigadora, en la docente y en la de consultoría (el grupo ha contribuido al diseño y puesta en marcha de proyectos importantes en el Servicio Andaluz de Salud como: el nuevo modelo de atención domiciliaria, basado en la gestión de casos, el desarrollo de procesos asistenciales, y el diseño e implementación de guías de práctica clínica). A este propósito contribuye, así mismo, el mantenimiento de una estrecha red de contactos y vínculos con las más relevantes sociedades científicas, grupos y fundaciones de enfermería, a nivel andaluz, nacional e internacional.
Los resultados de uno de los estudios llevados a cabo por el grupo (estudio ENMAD) han sido incorporado en el Observatorio Europeo de Políticas de Salud.

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Appendix 3: Ethic Approval

Servicio Andaluz de Salud
CONSEJERÍA DE SALUD

JUNTA DE ANDALUCIA

ANEXO 4

INFORME DE LA COMISIÓN DE ÉTICA E INVESTIGACIÓN SANITARIA

D. Bernardo Herrera García, Presidente de la Comisión de Ética e Investigación Sanitaria del Distrito Sanitario Málaga,

CERTIFICA

Que esta Comisión ha evaluado la propuesta del promotor para que se realice el estudio

MODELOS DE INTERVENCIÓN DE ENFERMERÍA DE PRÁCTICA AVANZADA EN POBLACIÓN MAYOR Y SU DESCRIPCIÓN A TRAVÉS DE LA CLASIFICACIÓN DE INTERVENCIONES DE ENFERMERÍA. REVISIÓN SISTEMÁTICA Y ESTUDIO CUALITATIVO. Estudio MIDE-PACIE

y considera que:

- Se cumplen los requisitos necesarios de idoneidad del protocolo en relación con los objetivos del estudio y están justificados los riesgos y molestias previsibles para el sujeto.
- La capacidad del investigador y los medios disponibles son apropiados para llevar a cabo el estudio.
- Es adecuado el procedimiento para obtener el consentimiento informado
- El alcance de las compensaciones económicas previstas no interfiere con el respeto a los postulados éticos.

Por tanto, este Comité acepta que dicho estudio sea realizado por

JUAN CARLOS MORILLA HERRERA como investigador principal.

Lo que firmo en Málaga, a 9 de julio de 2010

Firmado:

Bernardo Herrera García

Presidente de la Comisión de Ética e Investigación Sanitaria del DS Málaga

c/. Sevilla 23. 29009 Málaga
Teléf. 951 03 13 00. Fax 951 03 13 05

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Appendix 4: Erasmus Certificate

UNIVERSIDAD DE MÁLAGA

Programa de aprendizaje permanente

DG Educación y Cultura

CERTIFICATE OF ARRIVAL AND DEPARTURE
ERASMUS 2012-2013

Name and Surnames: SILVIA GARCIA MAYOR

(Capital letters)

CERTIFICATE OF ARRIVAL
(To be signed by a member of the staff of the host institution)

IT IS HEREBY CERTIFIED THAT THE STUDENT HAS STARTED HIS/HER PERIOD OF STUDY AT OUR INSTITUTION

Signed by: S.A. Kendall

Position: Director, CRIPACC Date of arrival: 8/5/2013

Signature and Official Seal of the Institution

Date: 8/5/13 (the same as the arrival date)

CERTIFICATE OF DEPARTURE
(To be signed by a member of the staff of the host institution)

IT IS HEREBY CERTIFIED THAT THE STUDENT HAS FINISHED ~~HIS~~/HER PERIOD OF STUDY AT OUR INSTITUTION

Signed by: S.A. Kendall

Position: Director, CRIPACC Date of Departure: 1/08/2013

Signature and Official Seal of the Institution

AG Walton

Date: 01/08/13 (the same as the departure date)

School of Health & Social Work
University of Hertfordshire
College Lane, Hatfield
Herts AL10 9AB

Please send to the International Office by e-mail: vallego@uma.es or fax: +34 952 13 2971 before 15th October 2012 for 1st semester and one academic year students and 1st March 2013 for 2nd semester students.

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Appendix 5: Acreditation for Erasmus Student

UNIVERSIDAD DE MÁLAGA

DG Educación y Cultura

CREDENCIAL ESTUDIANTE ERASMUS /
ACCREDITATION FOR ERAMUS STUDENTS

Nombre de la institución de origen: / Name of the home institution:
UNIVERSIDAD DE MÁLAGA (E MALAGA01)

ESTE DOCUMENTO ACREDITA QUE:/THIS DOCUMENT VOUCHES THAT:

Don/Doña/Mr./Ms.: SILVIA GARCÍA TAJOR

ha sido seleccionado/a por la Universidad de Málaga como estudiante ERASMUS para el curso 2012-2013* en la universidad socia: / has been selected as an ERASMUS student for 2012-2013* in the partner university:

Nombre de la institución de acogida: / Name of the host institution:

UNIVERSITY OF HERTFORDSHIRE

Fecha:/Date: 11/02/2013

Sello y firma: / Stamp and signature:

Responsable Erasmus universidad de origen (UMA)
Home university Erasmus staff (UMA)

* El periodo de estudios mínimo en la institución de acogida será de 3 meses y el máximo de 12 meses, entre el 1 de junio de 2012 y el 30 de septiembre de 2013. / The minimum period of study in the host institution will be 3 months and the maximum 12 months, between 1st June 2012 and 30th September 2013.

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Appendix 6: Certificate of attendance to the Post Graduate Health and Social Work Student Research Conference at University of Hertfordshire.

University of Hertfordshire UH School of Health and Social Work

Sylvia Garcia-Mayor

attended the

Post Graduate Health and Social Work

Student Research Conference

at

University of Hertfordshire

on

9.15am – 4pm, Friday 12 July 2013

Chair's signature

Publicaciones y Divulgación Científica
UMA UNIVERSIDAD DE MÁLAGA

Appendix 7: Oral presentation prize certification

University of Hertfordshire UH School of Health and Social Work

This is to certify that

Silvia Garcia-Mayor

Was awarded the prize for her oral presentation at the

Post Graduate Health and Social Work

Student Research Conference

at

University of Hertfordshire

on
9.15am – 4pm, Friday 12 July 2013

Chair's signature

Prize donated by Waterstones

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Appendix 8: Search strategies

CINAHL: Search made on 23/04/2011, 22 references found.

S47 S46 AND S44 31

S46 S8 AND S45 321

S45 S14 OR S27 21584

S44 S36 OR S43 176447

S43 S37 OR S38 OR S39 OR S40 OR S41 OR S42 33838

S42 PT SYSTEMATIC REVIEW 19974

S41 AB MEDLINE 10885

S40 TI systematic 8296

S39 MH Meta Analysis 10083

S38 MH Cochrane Library 5307

S37 MH Systematic Review 7537

S36 S28 OR S29 OR S30 OR S31 OR S32 OR S33 OR S34 OR

S35 157685

S35 AB singl* W3 blind* or AB doubl* W3 blind* or AB trebl* W3 blind* or AB tripl* W3 blind* 10421

S34 TI singl* W3 blind* or TI doubl* W3 blind* or TI trebl* W3 blind* or TI tripl* W3 blind* 3541

S33 TX random* N3 allocat* 4796

S32 MH random assignment 24941

S31 TX randomi?ed N3 control* N3 trial* 50779

S30 TX clinical N3 trial* 123906

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S29 PT clinical trial* 45469

S28 MH clinical trials 67368

S27 (S15 OR S16 OR S17 OR S18 OR S19 OR S20 OR S21 OR S22 OR S23 OR S24 OR S25 OR S26) 15562

S26 (MM "Geriatric Depression Scale") 31

S25 (MM "Physical Examination") 2641

S24 (MM "Rehabilitation, Geriatric") 1370

S23 (MM "Pain Measurement") 3058

S22 (MM "Fall Risk Assessment Tool") 10

S21 (MM "Geriatric Nutrition") 868

S20 (MM "Geriatric Psychiatry") 613

S19 (MM "Geriatrics") 1175

S18 (MM "Functional Assessment Inventory") 2

S17 (MM "Geriatric Functional Assessment") 974

S16 (MM "Nursing Assessment") 3760

S15 (MM "Geriatric Assessment") 1867

S14 (S9 OR S10 OR S11 OR S12 OR S13) 6555

S13 (MM "Health Services for the Aged") 2804

S12 (MM "Aged, Hospitalized") 1189

S11 (MM "Aged, 80 and Over") 99

S10 (MM "Aged") 1255

S9 (MM "Frail Elderly") 1418

S8 (S1 or S2 or S3 or S4 or S5 or S6 or S7) 21345

S7 (MM "Disease Management") 2592

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S6 (MM "Case Management") 6540

S5 (MM "Specialties, Nursing") 1391

S4 (MM "Nurse Practitioners") 5984

S3 (MM "Gerontologic Nurse Practitioners") 240

S2 (MM "Advanced Nursing Practice") 4312

S1 (MM "Advanced Practice Nurses") 1673

19.S23 (S12 or S13 or S14 or S15 or S16 or S17 or S18 or S19 or S20 or S21 or

20.S22)

21.S22 AB singl* W3 blind* or AB doubl* W3 blind* or AB trebl* W3 blind* or

22.AB tripl* W3 blind*

23.S21 TI singl* W3 blind* or TI doubl* W3 blind* or TI trebl* W3 blind* or

24.TI tripl* W3 blind*

25.S20 MH quantitative studies

26.S19 TX random* N3 allocat*

27.S18 MH random assignment

28.S17 TX placebo*

29.S16 MH placebos

30.S15 TX randomi?ed N3 control* N3 trial*

31.S14 TX clinical N3 trial*

32.S13 PT clinical trial*

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33.S12 MH clinical trials

COCHRANE PLUS

Search made on 23/04/2011, 548 references found.

geriatr*[title/abstract]

"Geriatric Psychiatry" [title/abstract]

"Geriatric Assessment" [title/abstract]

"Aged, 80 and over"[Mesh]

"Aged" [title/abstract]

"Health Services for the Aged"[title/abstract]

"Frail Elderly"[title/abstract]

"Disease Management"[title/abstract]

"Case Management"[title/abstract]

"Advanced Practice Nursing" [title/abstract]

"Specialties, Nursing"[title/abstract]

"Nurse Clinicians"[title/abstract]

"Nurse Practitioners"[title/abstract]

"Geriatric Nursing"[title/abstract]

nurse-led [title/abstract]

practice nurse[title/abstract]

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#1 ((PRACTICE NURSE) OR (NURSE-LED) OR (GERIATRIC NURSING) OR (NURSE PRACTITIONERS) OR (NURSE CLINICIANS) OR (SPECIALTIES NURSING)):TA 1282

#2 ((ADVANCED PRACTICE NURSING) OR (CASE MANAGEMENT) OR (DISEASE MANAGEMENT)):TA 5953

#3 ((FRAIL ELDERLY) OR (HEALTH SERVICES FOR THE AGED) OR (AGED) OR (AGED 80 AND OVER)):TA 22958

#4 ((GERIATRIC ASSESSMENT) OR (GERIATRIC PSYCHIATRY) OR (GERIATR*)):TA 1948

#5 #1 OR #2 7095

#6 #3 OR #4 24567

#7 #1 AND #6673

EMBASE

Search made on 23/04/2011, 133 references found.

#14 #10 AND #13 307

#13 #11 AND #12 12,831

#12 #3 OR #4 1,951,675

#11 #1 OR #2 41,291

#10 #5 OR #6 OR #7 OR #8 OR #9 399,609

#9 'systematic review'/exp/mj 2,155

#8 'randomized controlled trial'/exp 288,186

#7 'meta analysis'/exp/mj 3,993

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#6 'controlled clinical trial'/exp 394,291

#5 'cochrane review' 1,209

#4 geriatr* OR 'geriatric patient'/exp OR 'geriatric assessment'/exp OR 'geriatric care'/exp OR 'elderly care'/exp OR 'gerontopsychiatry'/exp 219,772 #3 'aged'/exp OR 'frail elderly'/exp 1,855,185

#2 'disease management'/mj OR 'case management'/exp 7,949

#1 'advanced practice nursing'/exp OR 'clinical nurse specialist'/exp OR 'nurse practitioner'/exp OR 'geriatric nursing'/exp OR 'practice nurse' 33,552

SCOPUS

Search made on 23/04/2011, 40 references found.

((TITLE-ABS-KEY(advanced practice nursing) OR TITLE-ABS-KEY(specialties,nursing) OR ALL("Nurse Practitioners") OR TITLE("NURSE-LED") OR TITLE-ABS-KEY("Case Management") OR TITLE-ABS-KEY("Disease Management")) AND (TITLE-ABS-KEY("Geriatric Nursing") OR TITLE-ABS-KEY("Geriatric Assessment") OR TITLE-ABS-KEY("Geriatric Psychiatry") OR TITLE-ABS-KEY(geriatr*) OR TITLE-ABS-KEY(rehabilitation geriatric) OR TITLE-ABS-KEY(pain measurement) OR TITLE-ABS-KEY(fall risk assessment))) AND (TITLE-ABS-KEY(clinical trial*) OR TITLE-ABS-

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KEY(randomized controlled trial) OR TITLE-ABS-KEY(randomised controlled trial) OR ABS(random assignment) OR (ABS(single) OR ABS(double)) AND ABS(blind) OR TITLE(systematic) OR TITLE-ABS-KEY(meta analysis)) 49

4 ☐ TITLE-ABS-KEY(clinical trial*) OR TITLE-ABS-KEY(randomized controlled trial) OR TITLE-ABS-KEY(randomised controlled trial) OR ABS(random assignment) OR (ABS(single) OR ABS(double)) AND ABS(blind) OR TITLE(systematic) OR TITLE-ABS-KEY(meta analysis) 173.923

3 ☐ (TITLE-ABS-KEY(advanced practice nursing) OR TITLE-ABS-KEY(specialties,nursing) OR ALL("Nurse Practitioners") OR TITLE("NURSE-LED") OR TITLE-ABS-KEY("Case Management") OR TITLE-ABS-KEY("Disease Management")) AND (TITLE-ABS-KEY("Geriatric Nursing") OR TITLE-ABS-KEY("Geriatric Assessment") OR TITLE-ABS-KEY("Geriatric Psychiatry") OR TITLE-ABS-KEY(geriatr*) OR TITLE-ABS-KEY(rehabilitation geriatric) OR TITLE-ABS-KEY(pain measurement) OR TITLE-ABS-KEY(fall risk assessment)) 2.567

2 ☑ TITLE-ABS-KEY("Geriatric Nursing") OR TITLE-ABS-KEY("Geriatric Assessment") OR TITLE-ABS-KEY("Geriatric Psychiatry") OR TITLE-ABS-KEY(geriatr*) OR TITLE-ABS-KEY(rehabilitation geriatric) OR TITLE-ABS-KEY(pain measurement) OR TITLE-ABS-KEY(fall risk assessment) 166.392

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1 TITLE-ABS-KEY(advanced practice nursing) OR TITLE-ABS-KEY(specialties,nursing) OR ALL("Nurse Practitioners") OR TITLE("NURSE-LED") OR TITLE-ABS-KEY("Case Management") OR TITLE-ABS-KEY("Disease Management")

Web of Science

Search made on 23/04/2011, 337 references found.

5

395

#4 AND #3

Databases=SCI-EXPANDED, SSCI, CPCI-S Timespan=All Years

4

>100,000

TS=clinical trial* OR TS=randomized controlled trial OR TS=randomised controlled trial OR TS=random assignment OR TS=((single OR double) AND blind) OR TI=systematic OR TS=meta analysis AND Language=(English OR Spanish) AND Document Type=(Article)

Databases=SCI-EXPANDED, SSCI, CPCI-S Timespan=All Years

3

1,431

#2 AND #1

Databases=SCI-EXPANDED, SSCI, CPCI-S Timespan=All Years

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2

34,326

TS=Geriatric Nursing OR TS=Geriatric Assessment OR TS=Geriatric Psychiatry OR TS=geriatr* OR TS=rehabilitation geriatric OR TS= pain measurement OR TS=fall risk assessment AND Language=(English OR Spanish) AND Document Type=(Article) Databases=SCI-EXPANDED, SSCI, CPCI-S Timespan=All Years

1

>100,000

TS=advanced practice nursing OR TS=specialties,nursing OR TS=Nurse Practitioners OR TS=NURSE-LED OR TS=Case Management OR TS=Disease Management AND Language=(English OR Spanish) AND Document Type=(Article) Databases=SCI-EXPANDED, SSCI, CPCI-S Timespan=All Years

PUBMED

Search made on 23/04/2011, 619 references found.

geriatr*[title/abstract]

"Geriatric Psychiatry" [Majr]

"Geriatric Assessment" [Majr]

"Aged, 80 and over"[Mesh]

"Aged"[Mesh]

"Health Services for the Aged"[Majr]

"Frail Elderly"[Majr]

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"Disease Management"[Majr]

"Case Management"[Majr]

"Advanced Practice Nursing"[Mesh]

"Specialties, Nursing"[Majr]

"Nurse Clinicians"[Majr]

"Nurse Practitioners"[Majr]

"Geriatric Nursing"[Majr]

nurse-led[title]

practice nurse[title]

IME

Search made on 23/04/2011, 2 references found.

"práctica avanzada"

PSYCHINFO

Search made on 24/04/2011, 12 references found.

CHEPA

Search made on 24/04/2011, 4 references found.

DARE

Search made on 23/04/2011, 68 references found.

HEN

Search made on 23/04/2011, 9 references found.

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Appendix 9: Excluded studies.

	Standard 1	Standard 2	Standard 3	Standard 4	Standard 5	Standard 6	Standard 7	Standard 8	Standard 9
Riegel 2006	X								
Riegel 2002	X								
Ryan 1998		X							
Morales-Asencio 2008		X							
Ruppar 2008	X	X							
Galbreath 2004	X								
Matharu 2004	X								
Hebert 2008	X								
Jaarsma 2008	X								
Fleischer 2009			X						
Inglis 2004	X								
Hahn 2005				X					
Humbert 2007					X				
Jarman 2002	X								
Fulmer 1999						X			
Byles 2000		X							
Smeulders 2010	X								
Shearer 2007	X								
Oliva 2010		X							
Patrick 2006		X			X				
Oeseburg 2009		X							
Phillips 2005		X							
Rask 2007	X								
Ryan 2006	X						X		
Turner 2008	X								
Walters 1998	X								
Windham 2003		X							
Thompsom 2007		X							
Taylor 2005		X							
Thompson 2005	X								
Yau 2005		X							
Vincent 2006								X	
Haesler 2006		X							
Hughes 2002		X							
Blaha 2000		X							
Reuben 2002		X							
Naylor 1999		X							
Jennings-Sanders 2005				X					
Kerse 2008						X			

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Landi 1999				X					
Laramee 2003	X								
Mayo 2008	X								
McCauley 2006		X							
Liebel 2008		X							
Courtenay 2009	X								
Crotty 2010		X							
Daniels 2010		X							
DeBusk 2004	X								
Harari 2007						X			
Duffy 2005		X							
Dellasega 2002									X
Elkan 2004		X							
Cowan 2006				X					
Udén 1999		X				X			
Perry 2008		X							
Gonseth 2004		X							
Jaarsma 1999		X							
Krichbaum 2007		X				X			
Krichbaum 2005		X				X			
Kristensson 2006		X							
Lee 2002		X				X			
Leung 2004a		X							
Loeb 2006						X			
Long 2002		X							
Mador 2004		X							
Melis 2008						X			
Hammar 2009						X			
Schein 2005		X							
Berger 2010	X								
Fletcher 2002		X							
Hallberg 2004		X							
Stewart 2002		X							
Wagner 2007		X							
Blue 2001		X							
Rondinini 2008		X							
Ryden 2000		X							
Schraeder 2009		X							
Trief 2009		X							
Goodwin 2003		X							
Harris 2005		X							
Bellantonio 2008		X							
Berg 2004		X							
Bouman 2008		X							
Brand 2004		X							
Caplan 2004		X							

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Carroll 2006		X							
Carroll 2007		X							
Cline 2008		X							
Coleman 2004		X							
Duffy 2010		X							
Leung 2004		X							
Leveille 1998		X							
McCorkle 2000		X							
McCusker 2003		X							
Stuck 1995		X							
Melis 2009		X							
Newcomer 2004		X							
Phelan 2004		X							

Standard 1: Results not divided between age groups.
Standard 2: Different type study than the included ones (randomized controlled trials, quasi-experimental, or interrupted time series), including pilot and secondary data analysis.
Standard 3: No nurse.
Standard 4: Patients' age < 65
Standard 5: Patients' age not clear.
Standard 6: No APNs.
Standard 7: Patients' mean age < 65
Standard 8: No nursing intervention
Standard 9: Different type of patients than those defined in the inclusion criteria.

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