Evaluación de los Cuidados Enfermeros en los Programas de Cribado de Cáncer

Llúcia Benito Aracil

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UNIVERSITAT DE BARCELONA

Escola d'Infermeria

Programa de Doctorado en Ciencias Enfermeras

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Al Nil, al Nico i a la Xell.

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Reconduïm-la a poc a poc, la vida,

a poc a poc i amb molta confiança,

no pas pels vells topants ni per dreceres

grandiloqüents, sinó pel discretíssim

camí del fer i desfer de cada dia.

Reconduïm-la amb dubtes i projectes,

i amb turpituds, anhels i defallences,

humanament, entre brogit i angoixes,

pel gorg dels anys que ens correspon de viure.

En solitud, però no solitaris,

reconduïm la vida amb la certesa

que cap esforç no cau en terra eixorca.

Dia vindrà que algú beurà a mans plenes

l'aigua de llum que brolli de les pedres

d'aquest temps nou que ara esculpim nosaltres

Solstici (Miquel Marti i Pol).

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Resumen

Introducción: Las enfermeras son fundamentales en la prevención y detección precoz del cáncer y las guías para la garantía de calidad en la detección precoz del cáncer recomiendan que estos profesionales se incluyan en los equipos multidisciplinares de los programas. Sin embargo, el papel de la enfermera en este ámbito ha sido descrito en términos muy generales y no existen documentos que describan las actividades de estos profesionales.

La mayoría de la literatura sobre el tema se ha desarrollado en ámbitos anglosajones y no se ha documentado suficientemente en nuestro país. El cribado de cáncer y sus cuidados se deben ofrecer dentro de un contexto de programas organizados con un riguroso sistema de evaluación del proceso y de los resultados. Por estos motivos, creemos importante identificar las actividades de las enfermeras y poder evaluarlas, para dotar a la profesión de las herramientas necesarias para ofrecer una práctica excelente.

Para ello, se han identificado los siguientes **objetivos**: 1) Definir el rol de la enfermera en los programas de cribado de cáncer, 2) identificar los indicadores de la actividad de la enfermera de cribado de cáncer, 3) y evaluar los cuidados enfermeros del programa de cribado de cáncer del *Institut Català d'Oncologia* en relación a la transmisión de la información.

Metodología: Para responder a estos objetivos se han utilizado diferentes enfoques metodológicos.

El primer objetivo se alcanzó mediante tres artículos, el primero a partir de una revisión en profundidad de la literatura científica sobre las actividades de la enfermera en los programas de cribado de cáncer. El segundo artículo utilizó metodología Delphi para contextualizar las actividades, identificadas mediante la revisión, en los programas poblacionales del territorio español. Este estudio se llevó a cabo en una población de expertos en cribado de cáncer a los que se les pidió que identificaran las actividades de enfermería en este ámbito, a partir de la lista identificada mediante la revisión de la literatura realizada en el artículo anterior.

Y el tercer artículo, fue un estudio descriptivo en el que un grupo de expertos realizó un análisis para identificar las intervenciones de la taxonomía *Nursing Interventions Classification*, a partir del listado de actividades seleccionadas en el artículo anterior.

Se planteó el segundo objetivo del proyecto para identificar indicadores de la actividad de la enfermera de cribado, y se resolvió mediante dos fases.

La primera fase consistió en una revisión bibliográfica utilizando las palabras clave "*continuity", "coordination", "indicators", "screening", "nurs*", "patient navigat*"* y *"evaluation"* a partir de las cuales se identificaron 14 artículos de los que se extrajeron 118 indicadores potenciales. La segunda fase se hizo mediante el consenso del grupo de expertos, al que se le entregó los 118 indicadores potenciales para que los valorara.

El tercer objetivo era evaluar uno de los indicadores indicadores. Esta evaluación de la comprensión de la información se hizo a través de una encuesta transversal, cuya población de estudio fueron los profesionales de atención primaria de L'Hospitalet de Llobregat. Se basó en una encuesta sobre los conocimientos de los profesionales sobre procedimientos de cribado de cáncer colorrectal, los factores de riesgo, las recomendaciones de seguimiento posterior a la exploración diagnóstica y las estrategias de derivación, así como las características demográficas y profesionales de los sujetos de estudio. Y posteriormente mediante un ensayo clínico controlado y aleatorizado por conglomerados, que se realizó en los 12 centros de atención primaria de L'Hospitalet de Llobregat. La intervención consistió en una sesión informativa sobre los procedimientos del cribado del cáncer colorrectal y las recomendaciones, en 6 de 12 centros (seleccionados aleatoriamente). Se utilizó el mismo cuestionario que en el artículo anterior para ver el impacto de la intervención.

Resultados: Mediante la revisión bibliográfica se detectó que las enfermeras llevan a cabo el seguimiento del participante en cribado, se aseguran de la continuidad y la coordinación durante todo el proceso, y proporcionan información relacionada con el proceso.

El panel de expertos que participó en el estudio identificaron 25 actividades realizadas por las enfermeras del cribado de cáncer colorrectal, y 17 realizadas por las enfermeras del cribado de cáncer de mama.

Posteriormente, los expertos en taxonomía enfermera correlacionaron estas actividades con 15 intervenciones catalogadas en la *Nursing Interventions Classificatio*n que correspondían a cuatro dominios y ocho clases.

Se propusieron indicadores que evaluaran la continuidad y la coordinación del proceso de cribado de cáncer. El grupo de expertos seleccionó 7 indicadores que fueron la adecuación y tiempo de espera de la derivación de participantes, la entrega y disponibilidad del informe del proceso, la comprensión de profesionales implicados en el proceso, la satisfacción y la comprensión de participantes.

En la evaluación de la comprensión de los profesionales implicados en el programa se obtuvo una puntuación media estimada (desviación estándar) de 8,43 (1,30) sobre una puntuación total de 12. En cuatro de las preguntas, más del 60% de las respuestas no fueron correctas, una estaba relacionada con los factores de riesgo, dos relacionadas con las colonoscopias de seguimiento, y una relacionada con el circuito de seguimiento. Sólo el 30,8% de los participantes creía que eran responsables de determinar los intervalos adecuados de seguimiento y de la programación de estas colonoscopias.

Después de realizar la sesión informativa, se volvió a entregar el cuestionario para ver el impacto de la intervención realizada. No se encontraron diferencias estadísticamente significativas entre el grupo intervención y el grupo control, sin embargo, en nueve preguntas se aumentó el porcentaje de respuestas correctas en el grupo intervención, mayoritariamente relacionadas con el seguimiento posterior a la exploración diagnóstica.

Conclusiones: Las actividades de la enfermera de cribado de cáncer son principalmente: actuar como gestora de casos y proporcionar información. Estas actividades favorecen la continuidad y la coordinación durante el proceso, que son clave para garantizar la calidad de los programas de cribado de cáncer. Sin embargo, la evaluación continuada de los programas de cribado en cáncer no incluye indicadores de coordinación y continuidad. Por ello, se proponen indicadores que midan la continuidad y coordinación del proceso de cribado mediante la adecuación y el tiempo de espera de la derivación de participantes, la entrega y disponibilidad del informe del proceso, la comprensión de los profesionales implicados en el proceso, la satisfacción y la comprensión de participantes. La evaluación continuada de estos indicadores permite detectar áreas de mejora y tiene como finalidad diseñar e implementar intervenciones que contribuyan a mejorar la calidad de los programas de cribado en cáncer. Los resultados obtenidos de la medición del indicador de comprensión de los profesionales implicados en el proceso revelan que, aunque conocen el proceso de cribado de cáncer colorrectal, hay algunos aspectos que podrían mejorar como son los principales factores de riesgo no modificables del cáncer colorrectal y las recomendaciones de seguimiento posterior al cribado. Para mejorar estos aspectos más desconocidos sobre el cribado de cáncer colorrectal, se diseñó una intervención educativa basada en píldoras informativas. Esta intervención permitió mejorar ciertas áreas de conocimiento, pero no de forma significativa. Por lo tanto, es necesario diseñar e implementar estrategias dirigidas a incrementar el conocimiento de los profesionales de atención primaria respecto al circuito de los programas de cribado de cáncer colorrectal.

Abstract

Introduction: Nurses are fundamental in the prevention and early detection of cancer, additionally guidelines for quality assurance in cancer screening recommend that nurses should be included in the multidisciplinary program teams. However, the role of the nurse in this area has been described in very general terms and there are no documents describing the current activities of these professionals in these programs.

Meanwhile, most of the literature on the subject has been developed in Anglo-Saxon areas and has not been sufficiently documented in our country. For these reasons, we believe important to identify and evaluate activities, to provide excellent practical tools.

Objectives: 1) To define the role of the nurse in the cancer screening programs. 2) To identify evaluation indicators of the activity of cancer screening nurse. 3) And to evaluate the nursing care of cancer screening program the Catalan Institute of Oncology.

Methodology: To meet the objectives different methodological approaches have been used.

The first objective was raised by three articles; the first article was made from a thorough review of the scientific literature about the activities of the nurse in cancer screening programs. The second article used Delphi methodology to contextualize the activities, identified by reviewing, in population-based programs of the Spanish territory. A population of cancer screening experts were asked to identify nursing activities in this area from the list identified by literature review in the previous article.

And the third article was a descriptive study in which a group of experts conducted an analysis to identify the interventions of the Nursing Interventions Classification taxonomy, from the list of selected activities in the previous article.

To solve the second objective of the project it was carried out by two phases.

The first phase consisted of a literature review using the keywords "*continuity", "coordination", "indicators", "screening", "nurs*", "patient navigat*"* and *"evaluation"* from which 14 articles which were identified 118 potential indicators

were extracted. The second phase was made by consensus of the expert group, which was given the 118 potential indicators for the asset.

The evaluation of nursing care was made by a cross-sectional survey; the study population were primary care professionals of L'Hospitalet de Llobregat.

This descriptive study was based on a survey to gather information about the knowledge of professionals on procedures for colorectal cancer screening, colorectal cancer risk factors, the recommendations after the diagnostic examination and referral strategies, and demographic and professional characteristics of study subjects.

And then through a clinical trial cluster randomized controlled, conducted in 12 primary care centers of L'Hospitalet de Llobregat. The intervention consisted of a briefing in six of the twelve centers (randomly selected) about colorectal cancer screening program. The same questionnaire as in the previous article was used to see the impact of the intervention.

Results: Through literature review has been found that nurses carry out monitoring participant screening, ensure continuity and coordination throughout the process, and provide information related to the process.

Forty-seven experts on cancer screening in the study identified 25 activities performed by nurses 17 colorectal cancer screening performed by nurses of screening for breast cancer.

Subsequently, nurse taxonomy experts correlate these activities with interventions Nursing Interventions Classifications 15 corresponding to four domains and eight classes.

To assess these indicators' nursing care, the group of experts selected seven indicators were: adequacy and waiting time derivation of participants, delivery and availability of the report of the process, understanding professionals involved in the process, satisfaction and understanding of participants

Was assessed one of the selected indicators, it was the understanding of the professionals involved in the program. The estimated average score (standard deviation) was 8.43 (1.30) on a total score of 12. In four questions, over 60% of the answers were not correct: one related to risk factors, two related with follow-up colonoscopies, and related monitoring circuit. Only 30.8% of participants believed they were responsible for determining the appropriate intervals for monitoring and programming colonoscopies.

He turned to deliver the questionnaire to see the impact of the intervention. No statistically significant differences between the intervention group and the control group were found, however, in 9 questions the percentage of correct answers was increased in the intervention group, mostly related to diagnostic follow-up exploration.

Conclusions: The activities of the nurse cancer screening are mainly: act as case manager and provide information. One of the contributions of nurses is to ensure that coordination and continuity of the process is maintained. However, the continued evaluation of cancer screening programs does not include indicators of coordination and continuity. The indicators measuring the continuity and coordination of the screening process proposed were: the suitability and the waiting time derivation of participants, delivery and availability of the report of the process, understanding of the involved professionals involved in the process, satisfaction and understanding of participants. The continuous assessment of indicators detects areas for improvement and aims to design and implement interventions, that help to improve the quality of cancer screening programs. The results of the measurement's understanding of the professionals involved in the process reveal that, although they know the process of screening for colorectal cancer, there are some aspects that could improve as are the main risk factors are not modifiable colorectal cancer and recommendations post-screening follow-up. To improve the unknown aspects of screening for colorectal cancer, an educational intervention based on information pills was designed. This intervention helped improve certain areas of knowledge, but not significantly. It is necessary to design and implement strategies to increase the knowledge of primary care professionals about the course of screening programs for colorectal cancer.

1. INTRODUCCIÓN

1.1. Epidemiología y factores de riesgo del cáncer

1.1.1. Epidemiología del cáncer

El cáncer es hoy en día uno de los principales problemas de salud pública en todo el mundo por su incidencia, prevalencia y mortalidad. El envejecimiento de la población, el incremento de la incidencia de muchos tumores malignos y la mejor supervivencia de los enfermos de cáncer debido a los avances diagnósticos y terapéuticos, han supuesto un aumento significativo del número de pacientes con cáncer (Ferlay et al., 2013).

1.1.1.1. Epidemiología del cáncer de mama

El cáncer de mama (CM) es la primera causa de muerte por cáncer y el tumor más frecuente en las mujeres de todo el mundo (a excepción de los tumores de piel no melanomas). Se calcula que se diagnosticaron 1,67 millones de nuevos casos en el año 2012, lo que representa el 25,2% de todos los cánceres diagnosticados en mujeres. Y se contabilizaron cerca de 198.000 muertes (el 15.4% de las muertes por cáncer) (Ferlay, et al. 2013 y Torre et al., 2015).

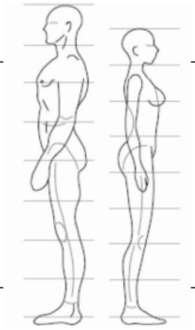
En el año 2012, se diagnosticaron en España más de 25.000 nuevos casos de CM. La tasa de incidencia ajustada fue de 67,3 casos nuevos por 100.000 mujeres. El CM es la causa de muerte por cáncer más frecuente entre las mujeres españolas, y se estima que se producen más de 6.000 muertes anuales por esta enfermedad. La tasa de mortalidad ajustada en el año 2012 fue de 11,8 por 100.000 mujeres (Ferlay et al., 2013).

1.1.1.2. Epidemiología del cáncer colorrectal

El cáncer colorrectal (CCR) representa casi un 10% del total de cánceres a nivel mundial, es el tercer cáncer más frecuente diagnosticado en hombres y el segundo en mujeres, con una estimación de 1,4 millones de casos y 693.900 muertes en 2012 (Ferlay et al., 2013 y Torre et al., 2015).

En España, el CCR ha pasado a ser el primer cáncer en frecuencia considerando ambos sexos (López-Abente, Ardanaz, Torrella-Ramos, Mateos, Delgado-Sanz, y Chirlaque, 2010; Pollán, Michelena, Ardanaz, Izquierdo, Sánchez-Pérez, y Torrella, 2010). La figura 1 muestra los casos nuevos y las muertes de los cánceres más frecuentes en España. (Ferlay et al., 2013 y Torre et al., 2015).

Figura 1: Incidencia y mortalidad del cáncer en España en el 2012.



#	Casos nuevos	Muertes	Casos nuevos	Muertes
1º	Próstata 27.853	Pulmón 17.430	Mama 25.215	Mama 6.075
2º	Pulmón 21.780	Colorrectal 8.742	Colorrectal 12.979	Colorrectal 5.958
3º	Colorrectal 19.261	Próstata 5.481	Pulmón 4.935	Pulmón 3.688

Fuente: Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, Rebelo M, Parkin DM, Forman D, Bray, F. GLOBOCAN 2012 v1.0, Cancer Incidence and Mortality Worldwide: IARC

1.1.2. Factores de riesgo del cáncer

El cáncer es una enfermedad multifactorial debida al efecto combinado de factores genéticos y ambientales. La mayor exposición a agentes cancerígenos en la población general está relacionada con los hábitos de vida (De Vita, Hellman, y Rosemberg, 2001). Algunos de estos factores son el tabaco, el alcohol, la dieta, la exposición solar, las radiaciones ionizantes, los carcinógenos ocupacionales, la contaminación atmosférica, los agentes infecciosos, los diversos aspectos de la vida sexual y reproductiva, la herencia y el nivel socioeconómico. El estilo de vida juega un papel fundamental en la patogenia del cáncer y son, por lo tanto, susceptibles de estrategias de prevención primaria (Riboli y Lambert, 2002; Riboli et al., 2002).

Existen otros factores de riesgo no modificables como la genética y la edad, que tienen gran importancia en la incidencia y hacen necesario combinar la prevención primaria con otras estrategias para disminuir el impacto de la enfermedad (Planificación Sanitaria, 2005).

1.1.2.1. Factores de riesgo del cáncer de mama

Se han identificado numerosos factores de riesgo asociados al CM. Sin embargo, el principal factor de riesgo es la edad (Helmrich et al., 1983; McPherson et al., 2000).

La mayoría de los factores de riesgo se relacionan con los antecedentes reproductivos que modulan la exposición hormonal durante la vida, por tanto, la menarquia precoz (antes de los 12 años), la menopausia tardía (después de los

55) y la nuliparidad o un menor número de embarazos aumentan el riesgo de CM (Anothaisintawee et al., 2013; Burstein et al. 2008). Otro factor de riesgo conocido es tener familiares de primer grado afectos de CM (Collaborative Group on Hormonal Factors in Breast Cancer [C.G.H.F.B.C.], 2001).

1.1.2.2. Factores de riesgo del cáncer colorrectal

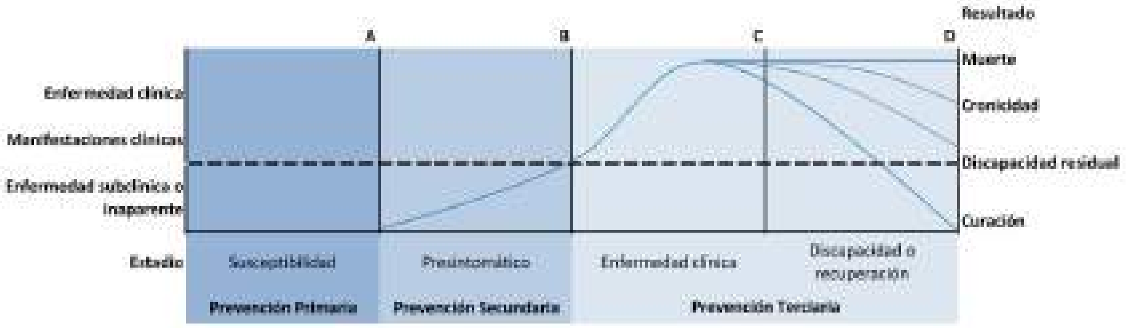
El principal factor de riesgo no modificable del CCR también es la edad (Riboli y Lambert, 2002; Riboli et al., 2002). Johnson et al., realizaron un metanálisis sobre los factores de riesgo del CCR y concluyeron que la enfermedad inflamatoria intestinal, los antecedentes de CCR en familiares de primer grado, un mayor índice de masa corporal, el consumo de tabaco y la ingesta de carne roja aumentan el riesgo de CCR. Aunque el consumo de alcohol y de carne procesada mostró algún efecto, no se encontró significancia estadística para estos factores de riesgo. La OMS considera carne procesada a cualquier tipo de carne que ha sido transformada con salazón, curado, fermentación, ahumado u otros procesos para modificar el sabor y preservar el alimento. Esto incluiría beicon, salchichas, hamburguesas, embutidos, embutidos hechos con sangre, carne picada de ave o vísceras (Johnson et al., 2013).

Por otro lado, concluyeron que la actividad física y el consumo de frutas y verduras disminuían el riesgo de CCR. Se encontró una cierta tendencia de un efecto positivo con el uso de terapia hormonal y de aspirina y/o antiinflamatorios no esteroideos, pero no se detectó significación estadística (Johnson et al., 2013).

1.2. Prevención del cáncer.

Prevenir el cáncer es promocionar y preservar la salud, restaurarla cuando está dañada, y minimizar el sufrimiento y la angustia que la enfermedad produce. La prevención está relacionada con la historia natural del cáncer, que tiene diversas fases y que se resumen en la figura 2.

Figura 2: Historia natural de cáncer y los diferentes niveles de prevención



Adaptado de Mausner and Kramer, 1985

Inicialmente existe un periodo libre de enfermedad, aunque la persona está expuesta a los factores de riesgo para el cáncer. Posteriormente se inicia la fase preclínica y se produce la aparición biológica de la enfermedad (Punto A de la figura 2). Como resultado de la progresión de la enfermedad aparecen los síntomas y/o signos que pueden provocar que se efectúe el diagnóstico del cáncer (Punto C). Se inicia la fase clínica, en el que la enfermedad puede derivar a curación, discapacidad residual, enfermedad permanente o crónica, o muerte (Punto D). La prevención de la enfermedad se relaciona con las diferentes etapas de la historia natural de la misma, y clásicamente se han definido tres niveles diferentes: la prevención primaria, la secundaria y la terciaria.

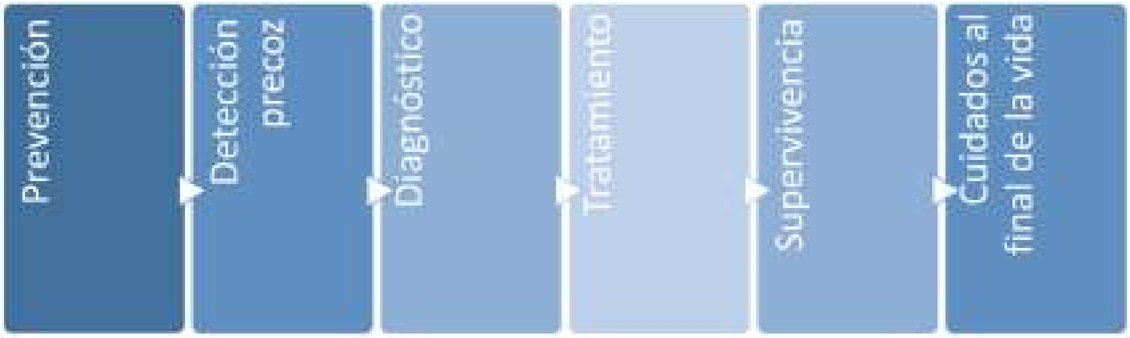
La **prevención primaria** es la prevención de la enfermedad mediante la reducción de la exposición a los factores de riesgo o mediante un aumento de su resistencia a ellos, evitando así la aparición de la enfermedad.

La **prevención secundaria** se refiere a la detección de la enfermedad en una etapa inicial, cuando el tratamiento es más eficaz que en el momento del diagnóstico y tratamiento habituales (Silva, 1999).

La **prevención terciaria** hace referencia a todos los procedimientos que se realizan en los pacientes con la enfermedad con el fin de evitar las complicaciones clínicas y las recaídas. Es el uso del tratamiento y programas de rehabilitación para mejorar el desenlace de la enfermedad entre los individuos afectados (Silva, 1999).

El cuidado del cáncer se produce en un continuo que va desde la prevención al tratamiento para la supervivencia o los cuidados al final de la vida. El camino no es lineal y no todo el mundo se detiene en cada fase o está el mismo tiempo en cada una de ellas (Figura 3). Este proyecto abarca hasta el momento del diagnóstico y por lo tanto no contempla ni el tratamiento del cáncer ni su posible desenlace. Se analizará la prevención primaria y la secundaria, que forman parte de las dos primeras fases del continuo (Prevención y detección precoz).

Figura 3: Proceso de cuidado del cáncer



1.2.1. Prevención primaria del cáncer

La prevención primaria del cáncer pretende reducir la incidencia de cáncer mediante el control de las causas y la exposición a los factores de riesgo (Silva, 1999). Por ello, el primer paso para poder actuar es conocer las exposiciones de riesgo y evaluar su impacto sobre la presentación de la enfermedad. Una vez identificados los factores de riesgo y estimado su impacto en la población, es importante considerar los métodos para eliminar o reducir la exposición a los mismos. La intervención debe ir enfocada a aquellos factores de riesgo que puedan ser modificables como son los factores relacionados con el estilo de vida, factores físicos, químicos, biológicos o sociales (Doll, Peto, 1981).

El 35% de las muertes por cáncer en el mundo son atribuibles a 9 factores de riesgo potencialmente modificables, que son: el tabaco, el alcohol, la dieta, la exposición solar, las radiaciones ionizantes, los carcinógenos ocupacionales, la contaminación atmosférica, los agentes infecciosos, y los diversos aspectos de la vida sexual y reproductiva. Por tanto, las actividades de prevención primaria estarán relacionadas con estos factores de riesgo (Danaei et al., 2005).

Para afrontar el problema del cáncer, la Unión Europea puso en marcha en 1987 el programa Europa contra el cáncer. Una de las iniciativas que surgieron a partir de este programa, fue la redacción de un código que sirviera como guía a todos los ciudadanos de la UE. El código se resume en algunas recomendaciones que pueden reducir la incidencia del cáncer y también la mortalidad relacionada con esta enfermedad (Tabla 1) (Schüz et al., 2015).

Tabla 1: Código Europeo Contra el Cáncer

1) No fume. No consuma ningún tipo de tabaco
2) Haga de su casa un hogar sin humo. Apoye las políticas antitabaco en su lugar de trabajo.
3) Mantenga un peso saludable.
4) Haga ejercicio a diario. Limite el tiempo que pasa sentado.
5) Coma saludablemente: • Consuma gran cantidad de cereales integrales, legumbres, frutas y verduras. • Limite los alimentos hipercalóricos (ricos en azúcar o grasa) y evite las bebidas azucaradas. • Evite la carne procesada; limite el consumo de carne roja y de alimentos con mucha sal.
6) Limite el consumo de alcohol, aunque lo mejor para la prevención del cáncer es evitar las bebidas alcohólicas.
7) Evite una exposición excesiva al sol, sobre todo en niños. Utilice protección solar. No use cabinas de rayos UVA.
8) En el trabajo, protéjase de las sustancias cancerígenas cumpliendo las instrucciones de la normativa de protección de la salud y seguridad laboral.
9) Averigüe si está expuesto a la radiación procedente de altos niveles naturales de radón en su domicilio y tome medidas para reducirlos.
10) Para las mujeres: • La lactancia materna reduce el riesgo de cáncer de la madre. Si puede, amamante a su bebé. • La terapia hormonal sustitutiva (THS) aumenta el riesgo de determinados tipos de cáncer, limítelo. Limite el tratamiento con THS.
11) Asegúrese de que sus hijos participan en programas de vacunación contra: • la hepatitis B (los recién nacidos) • el virus del papiloma humano (VPH) (las niñas).
12) Participe en programas organizados de cribado del cáncer: • colorrectal (hombres y mujeres) • de mama (mujeres) • cervicouterino (mujeres).

Fuente: Schüz et al., 2015

1.2.1.1. Prevención primaria del cáncer de mama

Las estrategias de prevención primaria del CM van encaminadas a disminuir la aparición de nuevos tumores, mediante la reducción o desaparición de los factores de riesgo modificables. Aquellos relacionados con la reproductibilidad y la exposición hormonal son difícilmente modificables porqué implican cambios sociales. Sin embargo, existen otros factores de riesgo que se consideran modificables como son la reducción del consumo de alcohol, el aumento de la actividad física, la reducción de la obesidad y la no ingesta de terapia hormonal substitutoria. Así, las intervenciones irán dirigidas a la modificación, reducción o desaparición de estos factores de riesgo (Clarke, Purdi, y Glaser, 2006; Tirona, Sehgal, y Ballester, 2010).

1.2.1.2. Prevención primaria del cáncer colorrectal

La evidencia disponible indica que las intervenciones de prevención primaria en el CCR pueden incidir en las diversas etapas del desarrollo de esta neoplasia: previamente a la aparición de los adenomas, durante el crecimiento de éstos y en el proceso de transformación a carcinoma.

No existen datos concluyentes en cuanto al efecto protector de determinados hábitos dietéticos, pero están en estudio distintas sustancias con probable efecto protector en relación al CCR como una dieta rica en folatos y calcio, pobre en grasa y carnes rojas. No existen datos en el momento actual que apoyen la dieta rica en fibra y en antioxidantes como protectora. Se recomienda abandono del hábito tabáquico y evitar el consumo excesivo de alcohol. Realizar ejercicio físico de manera regular parece tener un efecto protector. En relación a los fármacos; la aspirina y los antiinflamatorios no esteroideos pueden disminuir la formación de pólipos y promover la regresión de los mismos, aunque todavía no existen resultados definitivos al respecto (Castells et al., 2004).

1.2.2. Prevención secundaria del cáncer

La prevención primaria no siempre es fácil debido al desconocimiento o la dificultad de modificar comportamientos, es por ello que la detección precoz (o prevención secundaria) se ha visualizado como la mejor estrategia para mejorar el pronóstico de algunos tipos de cáncer. Es la alternativa para interrumpir la historia natural del cáncer, ya que permite detectar lesiones precursoras o detectar la enfermedad en fases iniciales, cuando el tratamiento es más efectivo (Tirona et al, 2010; Marzo-Castillejo et al., 2014). El estadio de la enfermedad en el momento del diagnóstico sigue siendo el principal factor pronóstico, por lo tanto, el conseguir el diagnóstico precoz en un momento en que los tratamientos sean más eficaces y menos agresivos, sigue siendo una de las vías para abordar el problema del cáncer.

Existen diferentes intervenciones propuestas en los diferentes tumores y situaciones para la detección precoz del cáncer que propone la *United States Preventive Services Task Force* (USPSTF) y se resumen en la tabla 2 (Moyer, 2012).

Tabla 2: Recomendaciones sobre el cáncer

Cáncer de mama
Recomendación a favor de la mamografía de cribado cada 2 años para las mujeres de 50-74 años
La decisión de iniciar un cribado regular cada 2 años antes de los 50 años debe ser individualizada y tener en cuenta las características de los pacientes, incluyendo sus preferencias en cuanto a los beneficios y riesgos
La evidencia para evaluar los beneficios y riesgos de la mamografía en mujeres mayores de 75 años es insuficiente
Recomendación en contra de enseñar cómo se debe hacer la autoexploración mamaria
La evidencia para evaluar los beneficios y riesgos adicionales del examen clínico de la mama más allá del cribado con mamografía en mujeres mayores de 40 años es insuficiente
La evidencia para evaluar los beneficios y riesgos adicionales de utilizar la mamografía digital o la resonancia magnética en lugar de la mamografía convencional como modalidades de cribado del cáncer de mama es insuficiente.
Cáncer de cuello uterino
Citología de cribado (test Papanicolau) cada 3 años en las mujeres de entre 21 y 65 años. En las mujeres de 30 a 65 años que quieren alargar el intervalo de cribado, se puede combinar la citología y el test del VPH cada 5 años
Recomendación en contra del cribado en las mujeres menores de 21 años de edad
No recomienda del cribado en las mujeres de 65 años si los cribados previos son negativos y no hay un riesgo elevado de cáncer de cuello uterino
No recomienda el cribado en las mujeres histerectomizadas y que no presentan antecedentes de lesión precancerosa de alto grado (CIN grados 2, 3) o un cáncer de cuello uterino
Recomendación en contra del cribado con el test del VPH, solo o en combinación con la citología, en mujeres menores de 30 años de edad.
Cáncer de ovario
Recomendación en contra del cribado de ovario.

Tabla 2: Recomendaciones sobre el cáncer (continuación)

Cáncer colorrectal
Recomendación a favor del test de sangre oculta en heces (TSOH) (anual), la sigmoidoscopia (cada 5 años) o la colonoscopia (cada 10 años) en adultos de 50 a 69 años. El balance beneficio-riesgo es diferente para cada una de estas pruebas Recomendación en contra del cribado en personas mayores de 85 años La evidencia para evaluar los beneficios y riesgos adicionales de la colonoscopia mediante tomografía computarizada y test de ADN es insuficiente.
Cáncer de próstata
Recomendación en contra del cribado con PSA en cualquier grupo de edad.
Cáncer de pulmón
Cribado anual con tomografía computarizada con baja dosis de radiación en las personas con riesgo elevado de padecer un cáncer de pulmón (personas de 55 a 80 años que han fumado 30 paquetes-año, que son fumadoras en la actualidad o han dejado de fumar en los últimos 15 años Se excluye a las personas que no han fumado durante los últimos 15 años, o que desarrollan un problema de salud que limita sustancialmente la esperanza de vida o que no tienen la capacidad o la voluntad de someterse a un tratamiento quirúrgico de pulmón.
Cáncer de piel (melanoma, basocelular, espinocelular)
Consejo a los niños adolescentes y adultos jóvenes de 10 a 24 años que tienen piel clara para minimizar la exposición a la radiación ultravioleta para reducir el riesgo de cáncer de piel La evidencia para evaluar los beneficios y riesgos adicionales del consejo para la prevención del cáncer de piel en adultos mayores de 24 años es insuficiente La evidencia para evaluar los beneficios y riesgos adicionales del examen completo de piel, mediante exploración clínica por parte de un profesional o el autoexamen para el diagnóstico precoz del cáncer de piel, es insuficiente.
Cáncer de vejiga urinaria
La evidencia para evaluar los beneficios y riesgos es insuficiente.

Adaptado de: Marzo-Castillejo et al., 2014

1.2.2.1. Cribado de cáncer

El cribado es la búsqueda sistemática, mediante una prueba o exploración, de una enfermedad en fase precoz o de lesiones precursoras de esta, en una población asintomática (Silva, 1999; Wilson y Jungner, 1968). Es una medida de prevención secundaria y la Organización Mundial de la Salud (OMS) la definió como “la identificación presuntiva, con la ayuda de pruebas, exámenes u otras técnicas susceptibles de aplicación rápida, de los sujetos afectados por una enfermedad o por una anomalía que hasta entonces había pasado desapercibida”. El objetivo principal es el de disminuir la incidencia de complicaciones derivadas de una patología, disminuir la mortalidad y/o aumentar la calidad de vida de las personas afectadas por esta patología (Wald, 2001).

Si bien el objetivo de la detección precoz de un cáncer es principalmente el de reducir la mortalidad por esta causa, antes de recomendar un cribado se debe tener muy presente el hecho de que también comporta efectos adversos diversos.

El efecto adverso más frecuente es el número de falsos positivos (la prueba de cribado es positiva, pero después de realizar otras pruebas confirmatorias, finalmente no se ha diagnosticado cáncer). En parte, es consustancial a los cribados un alto porcentaje de falsos positivos ya que, en el contexto de una población asintomática, la prevalencia de los distintos cánceres es baja y, por consiguiente, no podemos esperar valores predictivos positivos altos. Sin embargo, los falsos positivos, conllevan por una parte la ansiedad que se sufre hasta tener un resultado definitivo y, por otra, el uso de pruebas diagnósticas y tratamientos innecesarios. Estas pruebas confirmatorias y tratamientos también pueden tener sus propias complicaciones y efectos adversos (incluidos los falsos diagnósticos definitivos). (Gray y Austoker, 1998).

El número de falsos negativos también se considera un efecto adverso del cribado ya que se ha descrito que pueden producir una sensación de excesiva seguridad y retraso en la búsqueda de atención sanitaria frente a la presencia de síntomas asociados a la enfermedad cribada.

Por último, no puede olvidarse que los cribados podrían detectar lesiones precancerosas que quizás no se hubieran convertido nunca en cánceres sintomáticos (sobrediagnóstico y sobretratamiento) y mucho menos llegar a estadios avanzados con resultado de muerte (Holland, Stewart, y Masseria, 2006).

Esta relación entre beneficio y riesgo no es constante, sino que este equilibrio puede ir cambiando. La tabla 3 resume los principales beneficios y los riesgos del cribado.

Tabla 3: Beneficios y riesgos del cribado

Beneficios:
Mejora del pronóstico de los casos detectados
Tratamiento menos radical que cura los casos precoces
Ahorro de recursos
Mayor tranquilidad en casos con resultado negativo
Riesgos y Desventajas:
Mayor tiempo de morbilidad en casos que no mejoran su pronóstico
Sobretratamiento de anomalías de pronóstico incierto
Riesgo de efectos adversos por el proceso de cribado
Costes añadidos
Falsa tranquilidad en los casos falsos negativos

Fuente: Holland et al., 2006

Debido a todos estos posibles riesgos, toda actividad de cribado requiere una serie de condiciones para que se pueda aplicar. En este sentido, en 1968 Wilson y Junger definieron los principios necesarios para implantar un programa de cribado (Wilson y Junger, 1968). Estos principios se muestran en la tabla 4.

Tabla 4: Principios de un programa de cribado

1- La condición ha de ser un importante problema de salud
2- Debe existir un tratamiento aceptado para los pacientes con la enfermedad
3- Los recursos para el diagnóstico y tratamiento deben estar disponibles
4- Debe existir una fase latente o estadio preclínico
5- Debe existir un test adecuado para examinar el órgano
6- El test ha de ser aceptado por la población
7- La historia natural de la condición, incluyendo el desarrollo desde fase latente hasta enfermedad declarada, debe ser entendida
8- Debe existir una política acordada de a quién tratar como pacientes
9- El coste de encontrar un caso (incluyendo el diagnóstico y tratamiento de pacientes diagnosticados) debe ser económicamente balanceado en relación al tratamiento total
10- El cribado ha de ser un proceso continuo y no de una sola ronda

Fuente: Wilson y Junger, 1968

Principios del cribado:

a. Una enfermedad adecuada:

Fase preclínica detectable: Para que una enfermedad sea adecuada para el control a través de un programa de detección y tratamiento precoces, tiene que incluir una fase preclínica suficientemente larga durante la cual sea detectable.

Tratamiento precoz: El tratamiento precoz debe ofrecer alguna ventaja frente al tratamiento posterior.

Importancia de la enfermedad: La enfermedad debe ser un problema de salud importante, medido mediante la prevalencia, incidencia o mortalidad.

b. Una prueba de cribado adecuada:

Debe estar dirigido a una enfermedad adecuada con una prueba adecuada. Para evaluar si se trata de la prueba de cribado adecuada, es necesario considerar su validez y aceptabilidad.

c. Un programa de cribado adecuado:

Antes de implantar un programa de cribado se debe contar con todas las facilidades de diagnóstico y tratamiento de los sujetos positivos en la prueba.

Se debe garantizar la continuidad asistencial y se deben realizar controles de calidad de manera periódica.

Los criterios de Wilson y Junger se definieron ya hace más de 40 años, y desde entonces muchos autores han intentado adaptar o reinventar estos criterios para adaptarlos al contexto actual de los cribados. En 2008 la OMS presentó una revisión de criterios adaptados a los avances tecnológicos sufridos en los últimos 40 años, sobretodo en el ámbito de la genómica (Andermann, Blancquaert, Beauchamp, y Déry, 2008).

Revisión de los criterios del cribado (Andermann et al., 2008):

- El programa de cribado debe responder a una necesidad reconocida.
- Los objetivos del programa de cribado deben ser definidos desde el principio.
- Debe haber una población definida.
- Debe haber evidencia científica de la eficacia del programa de cribado.
- El programa debe integrar educación, pruebas, servicios clínicos y gestión del programa.
- Debe haber garantía de calidad, con mecanismos para minimizar los riesgos potenciales de cribado.
- El programa debe asegurar la elección informada, la confidencialidad y el respeto por la autonomía.
- El programa debe promover la equidad y el acceso a la detección de toda la población diana.
- La evaluación del programa se debe planificar desde el principio.
- Los beneficios generales de cribado deben compensar el daño.

Tipos de cribado

Los cribados se pueden clasificar en función de diferentes características (Delgado, 2006):

En función del número de enfermedades que criba: Existen los cribados simples (para una sola enfermedad) y los cribados múltiples (para varias enfermedades). Consiste en la aplicación de dos o más test de cribado combinados a un gran número de personas. Se realiza para economizar en tiempo y esfuerzo humano.

En función del número de etapas: El cribado monofásico (se criba mediante una sola etapa) y cribado *multifásico (de varias etapas).*

En función de la población cribada: Existe el cribado no selectivo (dirigido a toda la población) y cribado selectivo (dirigido a un grupo seleccionado con un riesgo elevado).

Un cierto tipo de cáncer es una enfermedad relativamente poco frecuente en la población general, por ese motivo los programas de cribado tienen que cribar a un número importante de sujetos para encontrar un cáncer.

El cribado dirigido a grupos de alto riesgo (o cribado selectivo) permitiría limitar el cribado a estos grupos y tener programas más eficientes. Previamente, para el cribado selectivo, es importante identificar estos grupos de alto riesgo de manera eficiente y conocer el porcentaje total de un determinado tipo de cáncer que se da en este grupo frente a el porcentaje que se da en grupos de riesgo moderado o bajo.

La mayoría de los casos de cáncer en una población se dan en sujetos con un riesgo moderado o bajo y sólo una pequeña parte en sujetos de alto riesgo. De esta manera, un programa de cribado en grupos de alto riesgo puede ser altamente eficaz para este grupo de sujetos, pero ineficaz a nivel poblacional ya que en el mejor de los casos sólo puede detectar una pequeña parte de los casos de la población. Hasta la fecha, el cribado selectivo basado en grupos de alto riesgo definidos por factores etiológicos no se ha demostrado útil.

En función del momento de detección: Hay dos tipos de cribado, el precoz (búsqueda de la enfermedad en su estadio inicial) y el cribado tardío (búsqueda de casos “olvidados” en la población).

En función del método de acceso a la población: Desde el punto de vista organizativo, el cribado del cáncer se puede ofrecer a la población como un programa organizado (dirigido al conjunto de la población) o como cribado oportunista (se criba a la persona cuando se presenta en un servicio sanitario). El cribado oportunista es el que se ofrece desde los servicios sanitarios asistenciales a las personas que acuden al médico por otra razón diferente de la condición que se quiere cribar. Consigue una menor cobertura poblacional que se traduce en un menor impacto poblacional y en consecuencia se puede acompañar de desigualdades. Estas desigualdades son menores en el cribado organizado ya que la búsqueda de participación es activa en toda la población diana.

Los criterios de calidad de un cribado organizado están definidos y son homogéneos entre los diferentes programas, en cambio en los cribados oportunistas los criterios son propios de cada servicio.
Otra diferencia importante entre estos dos tipos de cribado es la evaluación, que en el caso de los organizados se puede evaluar la cobertura, los resultados y la calidad, sin embargo, en los programas oportunistas estos aspectos son difíciles de evaluar.

Es recomendable ofrecer el cribado dentro de un contexto de programas organizados en los que se garantice la calidad, la accesibilidad, la equidad, y la información a la población sobre los beneficios y efectos adversos. Un programa organizado implica tener un equipo multidisciplinar de profesionales, una estructura definida del cribado, un sistema riguroso de evaluación del proceso y de los resultados, y una retroalimentación de la evaluación a los participantes y a los profesionales implicados (Lynge, Törnberg, von Karsa, Segnan, y van Delden, 2012).

1.2.2.2. Situación de los programas de cribado de cáncer

Cuando se analiza la evidencia existente procedente de ensayos aleatorios controlados se concluye que, hasta el momento, únicamente se recomienda implantar programas de detección precoz en el CM, en el CCR y en el cáncer de cuello de útero (Von Karsa et al. 2008). Es por este motivo, que el Ministerio de Sanidad Español, junto con las comunidades autónomas (CCAA) y diversas sociedades científicas, ha definido una cartera común básica de servicios públicos sobre los cribados, que incluye programas poblacionales de cribado de CM y CCR, y oportunista de cuello uterino.

En junio de 2013 el grupo de expertos sobre concreción de cartera común de servicios para cribado de cáncer elaboró un informe proponiendo las características de la cartera común básica de servicios del Sistema Nacional de Salud en lo que se refiere a cribado de cáncer (Grupo de trabajo sobre concreción de la cartera común de servicios del Sistema Nacional de Salud para cribado de cáncer, 2013).

Las características propuestas fueron las siguientes:

1. Cribado de Cáncer de Mama

   Con carácter general, el cribado de CM se debe realizar en el marco de programas organizados de carácter poblacional a las mujeres residentes de 50-69 años de edad, mediante mamografía cada dos años.

2. Cribado de Cáncer Colorrectal

   Con carácter general, el cribado CCR se debe realizar en el marco de programas organizados de carácter poblacional a los hombres y mujeres residentes de 50-69 años de edad mediante el TSOH cada dos años.

   Mientras que la cobertura del cribado de cáncer de mama es de aproximadamente el 100%, el cribado de cáncer colorrectal está en proceso de implementación y extensión en la mayoría de las comunidades autónomas. Por ello, se propone que estos programas se vayan implantando de forma progresiva con el objetivo de que, en el plazo de 5 años, desde la entrada en vigor de la norma, todas las CCAA hayan iniciado este programa y en 10 años la cobertura (invitación a participar) se aproxime al 100%.

3. Cribado de Cáncer de Cuello Uterino

   La realización de pruebas de cribado de cáncer de cuello uterino se indicará a las mujeres con edades comprendidas entre 25 y 65 años mediante citología cervical cada 3-5 años.

   En España, el cáncer de cuello uterino es un tumor con una baja incidencia y mortalidad debido, en parte, a la realización de citologías cervicovaginales en un alto porcentaje de mujeres españolas desde hace varias décadas.

   Paralelamente, se han introducido recientemente la vacuna frente al VPH y técnicas para su detección, que van a implicar una modificación a medio plazo de las bases con las que hay que realizar este cribado (población objetivo, test de cribado, intervalo entre exploraciones), así como la forma de ofertarlo.

   Actualmente, a nivel europeo se está trabajando para actualizar la guía de calidad del cribado de cáncer de cuello uterino, en la que se incluirán recomendaciones para mejorar los programas de cribado de este tipo de cáncer teniendo en cuenta este nuevo escenario.

Por estos motivos, el grupo de trabajo consideró recomendar que continúe la prestación de este servicio tal y como se está realizando hasta ahora, a la espera de las próximas recomendaciones europeas.

1.2.2.2.1. Cribado de cáncer de mama

La historia natural del CM favorece la posibilidad de la detección precoz mediante un test de cribado, ya que existe una fase preclínica detectable en que su duración es de 1 a 3 años.

La mamografía actualmente es la única prueba o test de cribado que permite reconocer lesiones en una fase inicial, lo que puede incrementar la tasa de diagnósticos en estadios localizados. Su resultado no determina un cáncer, por lo que es imprescindible la realización de pruebas radiológicas complementarias para establecer el diagnóstico definitivo.

En España la cobertura actual de los programas de cribado de CM es del 100% en todas las CCAA y sus características se describen a continuación (Ascunce et al., 2010; Mellado y Osa, 2013; Red de Programas de Cribado de Cáncer):

- Tipo de programa: Programa poblacional.
- Población objetivo: 50-69 años de edad, excepto en cinco CCAA donde la población objetivo también abarca a las mujeres de 45 a 49 años.
- Prueba de cribado: Mamografía.
- Características de la prueba: El número de proyecciones es de 2 en cada mama en el cribado inicial.
- Número mínimo de lecturas/año: No se exige en todas las CCAA. Siguiendo las directrices europeas es recomendable que cada radiólogo realice un mínimo de 5.000 lecturas anuales).
- Método de lectura: Mayoritariamente la doble lectura (sin y con consenso). No obstante, las modalidades varían entre CCAA, y pueden ser simple (un lector), doble con consenso (2 lectores, que indican las pruebas complementarias por acuerdo), doble sin consenso (2 lectores con indicación de prueba complementaria si alguno lo sugiere), y doble con arbitrio (2

lectores y, si no concuerdan, un tercer radiólogo para hacer prevalecer la conducta coincidente).

- Intervalo entre exploraciones: 2 años.

La tabla 5 resume las características de los diferentes programas de cribado de CM del territorio español.

Tabla 5: Características de los programas de cribado de CM en España

CCAA	Año Inicio	Edad	Intervalo	Prueba cribado inicial
Andalucía	1995	45-69	2 años	Mamografía 2 proyecciones
Aragón	1997	50-64	2 años	Mamografía 2 proyecciones
Principado de Asturias	1991	50-69	2 años	Mamografía 2 proyecciones
Islas Baleares	1997	50-69	2 años	Mamografía 2 proyecciones
Canarias	1999	50-69	2 años	Mamografía 2 proyecciones
Cantabria	1997	50-69	2 años	Mamografía 2 proyecciones
Castilla-La Mancha	1992	45-69	2 años	Mamografía 2 proyecciones
Castilla-León	1992	50-69	2 años	Mamografía 2 proyecciones
Catalunya	1992	50-69	2 años	Mamografía 2 proyecciones
Comunidad Valenciana	1992	45-69	2 años	Mamografía 2 proyecciones
Extremadura	1998	50-69	2 años	Mamografía 2 proyecciones
Galicia	1992	50-69	2 años	Mamografía 2 proyecciones
Madrid	1999	50-69	2 años	Mamografía 2 proyecciones
R. Murcia	1995	50-69	2 años	Mamografía 2 proyecciones
Navarra	1990	45-69	2 años	Mamografía 2 proyecciones
País Vasco	1995	50-69	2 años	Mamografía 2 proyecciones
La Rioja	1993	45-69	2 años	Mamografía 2 proyecciones

Fuente: Red de Programas de Cribado de Cáncer, 2013 y Vidal et al., 2010

1.2.2.2.1.1. Programa de detección precoz de cáncer de mama del Instituto Catalán de Oncología

En el año 1992 se inició el programa de detección precoz de CM con una prueba piloto en la población de Molins de Rei (Barcelona, Cataluña).

Desde el año 2001, el programa de detección precoz de CM se desarrolla en red, con una Oficina Técnica gestionada por el Institut Català d'Oncologia (ICO) y Unidades de Cribado, donde se realizan las mamografías, situadas más cercanas al domicilio de las mujeres. Estas 11 unidades de cribado, se sitúan a lo largo del área de Barcelona Metropolitana para dar cobertura a la población diana de las comarcas de Alt Penedès, Garraf, Baix Llobregat y la ciudad de L'Hospitalet de Llobregat. La población diana de todo este territorio es de 160.000 mujeres. En la tabla 6 se muestran los resultados de los últimos 5 años.

Tabla 6: Resultados del programa de cribado de CM del ICO

Año	Mujeres Invitadas	Mujeres Participantes	Resultado negativo	Casos diagnosticados*
2015	80.486	49.480 (64%)	46.936 (95%)	181 (3,66‰)
2014	80.258	48.204 (60%)	46.814 (97%)	205 (4,25‰)
2013	80.647	51.957 (62%)	49.878 (96%)	194 (3,90‰)
2012	80.333	48.701 (61%)	46.324 (95%)	218 (4,50‰)
2011	78.932	49.156 (62%)	46.705 (95%)	165 (3,40‰)

* Porcentaje de mujeres participantes que han sido diagnosticadas de cáncer de mama

1.2.2.2.2. Cribado de cáncer colorrectal

El CCR es una enfermedad que cumple todos los criterios de cribado de la Organización Mundial de la Salud. Tiene una historia natural conocida a partir de lesiones precursoras, como son los pólipos adenomatosos, representa un verdadero problema de salud pública por su elevada incidencia en los países y dispone de pruebas eficaces para detectar la enfermedad en fases premalignas. Además, el CCR progresa lentamente desde estadios precoces a fases avanzadas, ofreciendo mayor posibilidad de curación si se diagnostica de forma temprana (Calcerrada, Valentin, y Blasco, 2008). La eficacia del cribado de CCR ha sido demostrada en diferentes estudios que han concluido que el TSOH y la sigmoidoscopia flexible, reducen la mortalidad por CCR (Brawley y Kramer, 2005; von Karsa et al., 2008).

Actualmente en España, ocho CCAA tienen programas en desarrollo, con una ronda completa o más y en extensión a toda la población (Cataluña, C. Valenciana, Murcia, Cantabria, País Vasco, Canarias, Castilla y León y La Rioja.). Otras cuatro han iniciado programas piloto (Galicia, Navarra, Aragón y Extremadura), y otras cinco CCAA no han iniciado este cribado (Andalucía, Asturias, Baleares, Madrid, y Castilla-La Mancha, así como Ceuta y Melilla). La cobertura global del programa en el año 2012 era de un 17% de la población diana total España (Ascunce et al., 2010; Red de Programas de Cribado de Cáncer, 2013).

Las características de estos programas son las siguientes (Red de Programas de Cribado de Cáncer, 2013):

- Población objetivo: Existe cierta variabilidad respecto a la edad de la población diana (la mayoría 50-69 años) ya que algunos programas han empezado por cohortes específicas para luego extenderlo progresivamente a las demás. Cantabria ofrece este cribado a una población de 55-69 años.
- Prueba de cribado: La prueba que se utiliza es el test de detección de TSOH inmunológico (TSOHi) de tipo cuantitativo en todas las CCAA excepto en una que es de tipo cualitativo. El número de muestras que se realizan en los diferentes programas es una y el punto de corte en 100, excepto en Murcia que se realiza dos tomas de muestras. Es decir, se considera positivo (presencia de sangre en heces) cuando existe una cifra de hemoglobina en heces ≥100 ng/ml en una sola muestra. Se considera negativo (ausencia de sangre en heces) cuando existe una cifra de hemoglobina en heces <100 ng/ml.
- Prueba diagnóstica: La prueba de elección para la investigación de los casos positivos en la prueba de detección TSOHi es la colonoscopia con sedación y sin ingreso hospitalario, debido a su alta sensibilidad para la detección de lesiones adenomatosas y de CCR.

- Intervalo de exploración: 2 años. La periodicidad es bienal en todas las CCAA que realizan este cribado.

La tabla 7 resume las características de los programas de cribado de CCR.

Tabla 7: Características de los programas de cribado de CCR en España

CCAA	Año	Edad	Intervalo	TSOHi
Andalucía	2014	50-69	2 años	Cuantitativo (1 muestra)
Aragón	2013	50-59, 50-54	2 años	Cuantitativo (1 muestra)
Principado de Asturias	2015	50-69	2 años	Cuantitativo (1 muestra)
Islas Baleares	2015	50-69	2 años	Cuantitativo (1 muestra)
Canarias	2009	50-69	2 años	Cuantitativo (1 muestra)
Cantabria	2008	50-69	2 años	Cualitativo
Castilla-La Mancha	2015	50-69	2 años	Cuantitativo (1 muestra)
Castilla-León	2010	50-69	2 años	Cuantitativo (1 muestra)
Catalunya	2000	50-69	2 años	Cuantitativo (1 muestra)
Comunidad Valenciana	2005	50-69	2 años	Cuantitativo (1 muestra)
Extremadura	2011	50-69	2 años	Cuantitativo (1 muestra)
Galicia	2013	50-69	2 años	Cuantitativo (1 muestra)
Madrid	2014	50-69	2 años	Cuantitativo (1 muestra)
R. Murcia	2006	50-69	2 años	Cuantitativo (2 muestra)
Navarra	2013	50-69	2 años	Cuantitativo (1 muestra)
País Vasco	2009	50-69	2 años	Cuantitativo (1 muestra)
La Rioja	2010	50-69	2 años	Cuantitativo (1 muestra)

Fuente: Red de Programas de Cribado de Cáncer, 2013

1.2.2.2.2.1. Programa de detección precoz de cáncer de colon y recto del Instituto Catalán de Oncología

En el año 2000 se inició en la zona de L'Hospitalet de Llobregat el primer programa de cribado poblacional para la detección precoz de CCR. Empezó como programa piloto y actualmente ya se han finalizado seis rondas de cribado de manera bienal. Posteriormente, en el año 2004 se amplió a la zona de Vilafranca del Penedès y en el 2007 a la del Penedès Rural.

Hasta el año 2015 la población diana era de 90.000 personas. Actualmente está en fase de implantación en las zonas del área metropolitana sud y el área metropolitana norte, pero aún no se tienen resultados de la primera ronda finalizada. Con la extensión, la población diana aumentará hasta 400.000 personas procedentes de las comarcas del Alt Penedès, el Garraf, el Baix Llobregat, algunas zonas del Maresme y las cuidades de Santa Coloma, Badalona y Hospitalet de Llobregat. La tabla 8 muestra los resultados de los últimos cinco años en la comarca del Alt Penedès y de L'Hospitalet de Llobregat.

Tabla 8: Resultados del programa de cribado de CCR del ICO

Año	Población Invitada	Población Participante	Resultado negativo	Casos diagnosticados* (Adenomas y Cáncer)
2015	92.328	24.345 (26,40%)	23.140 (95,10%)	447 (18,36‰)
2014	34.341	13.739 (40,00%)	12.965 (94,37%)	482 (35,08‰)
2013	48.002	17.734 (36,94%)	16.882 (95,20%)	311 (17,50‰)
2012	35.937	13.392 (37,30%)	12.455 (93,00%)	421 (31,40‰)
2011	51.653	13.532 (26,20%)	12.440 (91,90%)	329 (24,30‰)

* Porcentaje de población participante que han sido diagnosticada de cáncer o adenomas

1.2.2.2.3. Cribado de cáncer de cuello de útero

En la actualidad, el cribado de cáncer de cuello uterino se realiza en todas las Comunidades y Ciudades Autónomas de España con las siguientes características (Ascunce et al., 2010; Red de Programas de Cribado de Cáncer, 2013):

- Tipo de cribado: Mayoritariamente se realiza de forma oportunista, aprovechando el contacto de la interesada con el sistema sanitario. Exceptuando las Comunidades de Asturias, La Rioja y Castilla y León donde se realiza mediante cribado poblacional.
- Población objetivo: Mujeres asintomáticas que sean o hayan sido sexualmente activas, con edades comprendidas entre 25 y 65 años. Existen diferencias entre las CCAA en cuanto a la edad de comienzo y la periodicidad del cribado. En la mayoría de los programas la población diana son las mujeres de 25 a 65 años, aunque en algunos el comienzo es a una edad más temprana, 20-21 años, o más avanzada, 35 años. Sin embargo, existe un consenso en cuanto a su finalización a los 65 años.
- Prueba de cribado: El tipo de prueba de cribado es la citología de Papanicolau en todos los programas. En cinco CCCAA se está introduciendo la determinación del VPH en caso de mujeres cribadas inadecuadamente. En ocho CCAA se hace el test del VPH en función de los resultados de la citología o en postratamiento quirúrgico. En algunas CCAA se incluye la determinación del VPH en poblaciones de riesgo, o a partir de los 35 años.
- Intervalo entre exploraciones: el intervalo recomendado es de 3-5 años. En la mayoría de los programas se realiza una citología cada tres años; únicamente en cuatro programas se realiza con un intervalo diferente (en dos programas se realiza cada cinco años, en otro programa cada cuatro años y en otro programa cada dos años).

1.3. Calidad en los programas de detección precoz del cáncer

El informe del *Institute of Medicine* para asegurar la calidad del cuidado del cáncer abordó la necesidad de añadir la calidad del cribado de cáncer como parte del proceso continuo de la atención del cáncer. Conceptualizamos este continuo como una progresión de los tipos de cuidados con transiciones igualmente importantes entre ellos (figura 3). Cada tipo de cuidado y de transición están sujetos a fallos, que pueden ser responsabilidad de los proveedores, de los pacientes, o del sistema. Para mejorar los resultados, es importante identificar los posibles problemas en cada tipo de cuidado y transición (Hewitt y Simone, 1999).

1.3.1. Concepto de calidad de la atención en salud

La calidad de la atención en salud es una idea extraordinariamente difícil de definir. Existen múltiples definiciones de lo que se entiende por calidad de la atención en salud. Todas responden a diversas interpretaciones sobre qué significa atender las necesidades de atención sanitaria de la población a la que se ofrecen los servicios cuya calidad queremos definir. La tabla 9 muestra diferentes definiciones de calidad en el ámbito de la salud.

Tabla 9: Autores y definiciones del concepto de calidad en salud

Autor/es	Definición de calidad en salud
Donabedian (1980)	Tipo de atención que se espera que va a maximizar el bienestar del paciente, una vez tenido en cuenta el balance de ganancias y pérdidas que se relacionan con todas las partes del proceso de atención
RH Palmer (1989)	La provisión de servicios accesibles y equitativos con un nivel profesional excelente, optimizando los recursos y logrando la adhesión y la satisfacción del usuario
Ministerio de Sanidad (Reino Unido) (1997)	Hacer las cosas adecuadas a las personas adecuadas en el momento preciso y hacer las cosas bien la primera vez.
Consejo de Europa (1998)	Grado por el que el tratamiento dispensado aumenta las posibilidades del paciente de alcanzar los resultados deseados y reduce las posibilidades de resultados indeseados, considerando el estado de conocimiento actual
OMS (2000)	Asegurar que cada paciente reciba el conjunto de servicios diagnósticos y terapéuticos más adecuado para conseguir una atención sanitaria óptima, teniendo en cuenta todos los factores y los conocimientos del paciente y del servicio médico, y lograr el mejor resultado con el mínimo riegos de efectos iatrogénicos y la máxima satisfacción del paciente con el proceso
(Instituto de Medicina) (IOM) (2001)	El grado en que los servicios de salud, para los individuos y las poblaciones, incrementa la probabilidad de los resultados deseados y son consistentes con el conocimiento profesional actual

Fuentes: Donabedian, 1980; Institute of Medicine, 2001; Palmer, 1989.

Revisando la variedad de definiciones existentes, se hace evidente una primera conclusión: no es posible elegir una y darla por universalmente válida. El concepto de calidad es relativo ya que puede variar según el contexto en el que nos hallemos. Por lo tanto, hay que tomar aquella definición que más se adecue a las circunstancias del entorno donde va a ser aplicada.

Uno de las definiciones aplicable a los programas de cribado de cáncer es la de Palmer “la provisión de servicios accesibles y equitativos, con el nivel profesional óptimo, que tiene en cuenta los recursos disponibles y logra la adhesión y satisfacción del usuario” (Palmer, 1989).

1.3.2. Garantía de calidad

Al igual que ocurre con la definición de calidad, existen múltiples definiciones de garantía de calidad. Sin embargo, todas estas definiciones de garantía de calidad comparten varias características. Fundamentalmente, la garantía de calidad es el conjunto de actividades que se llevan a cabo para fijar normas, vigilar y mejorar el desempeño de tal manera que la atención prestada sea lo más eficaz y segura posible.

La introducción de la garantía de calidad a la medicina moderna se debe a la enfermera británica, Florence Nightingale, quien evaluó la calidad de la atención de los hospitales militares durante la Guerra de Crimea. Después de evaluar los cuidados, introdujo las primeras normas de atención sanitaria, que produjeron una notable reducción de los índices de mortalidad en los hospitales. Utilizó métodos estadísticos para generar informes que correlacionaban los resultados del paciente con las condiciones ambientales (Nightingale, 1858).

Por lo tanto, la garantía de calidad incluiría todas aquellas actividades y programas destinados a garantizar o mejorar la calidad de la atención. El concepto incluye la evaluación o la evaluación de la calidad de la atención; la identificación de problemas o deficiencias en la prestación de cuidados; el diseño de actividades para superar estas deficiencias; y la monitorización del seguimiento para garantizar la eficacia de las posibles medidas de mejora. Se trata de un proceso continuo tal y como muestra la figura 4.

Figura 4: Proceso de garantía de calidad

1.3.3. Evaluación de la calidad de la atención en salud

Es imprescindible medir y evaluar la calidad de los cuidados prestados para ofrecer garantía de calidad. Donabedian propuso medir la calidad asistencial evaluando su estructura, sus procesos y sus resultados. Argumentó que "una buena estructura aumenta la probabilidad de un buen proceso, y un buen proceso aumenta la probabilidad de un buen resultado". Propuso que la evaluación de la calidad debía ser multidimensional, basada en elementos de estructura, de proceso y resultados, ya que conseguir unos buenos resultados de la atención se relaciona con la disponibilidad de recursos (estructura) y de cómo se utilicen dichos recursos (procesos) (Donabedian 1988).

Donabedian definió:

Estructura: Las características de los escenarios donde se presta la atención y los recursos requeridos para asistencia sanitaria. Esto incluye recursos materiales (instalaciones, capital, equipo, medicamentos, etc.), recursos intelectuales (conocimiento médico, sistemas de información) y recursos humanos (profesionales de atención sanitaria).

Proceso: La utilización de recursos en cuanto a lo realizado en prestar y recibir asistencia. Esto puede ser clasificado en procesos relacionados con el paciente (índices de intervención, índices de derivación, etc.) y aspectos organizativos (suministro con medicamentos, gestión de listas de espera, pagos del personal sanitario, captación de fondos, etc.).

Resultados: Los efectos de la atención asistencial sobre el estado de salud de los pacientes y poblaciones, y comprende tanto resultados definitivos (mortalidad, morbilidad, discapacidad o calidad de vida) como resultados intermedios (presión arterial, peso corporal, bienestar personal, capacidad funcional, capacidad para sobrellevar problemas, mejora del conocimiento).

1.3.3.1. Evaluación de la calidad de un programa de detección precoz de cáncer

Un cribado se debería ofrecer siempre con un riguroso sistema de evaluación del proceso y de los resultados, ya que la relación entre los beneficios y los riesgos depende de la calidad del cribado.

Las actividades de evaluación y control de los programas permiten conocer el grado de consecución de los objetivos del cribado y emprender las acciones correctoras que se consideren necesarias para desarrollar una gestión adecuada del programa y propiciar una utilización adecuada y eficiente de los recursos. Los programas organizados deben garantizar el cumplimiento de requisitos de calidad establecido.

Por lo tanto, para que un cribado implique una mejora de la efectividad, se debe garantizar la calidad y accesibilidad a pruebas diagnósticas adicionales y al tratamiento y rehabilitación en el caso de precisarse alguna de estas atenciones. (Wilson y Junger, 1968).

Hay que tener en cuenta que el cribado se dirige a una población «asintomática», por ello debe cumplir requisitos más estrictos que los exigibles a pruebas diagnósticas empleadas en pacientes sintomáticos. Por lo tanto, debe ofrecerse si se ha demostrado que disminuye la mortalidad específica de la enfermedad o la incidencia de la enfermedad en estado avanzado, si se conocen bien sus beneficios y sus riesgos y su relación es favorable, y si la relación coste-eficacia resulta aceptable.

Por todo ello, es muy importante, en los programas de cribado, tener un sistema de evaluación de calidad para analizar el balance esperable entre los efectos beneficiosos y los efectos secundarios adversos para la población incluida en proceso de cribado. Este sistema implica la evaluación de todo el proceso y sus resultados, y la retroalimentación de la evaluación de los participantes y los profesionales involucrados. La evaluación ha de permitir valorar el efecto o impacto del programa y la calidad y el rendimiento del mismo, y ha de ser una actividad inherente al propio proceso de cribado, y nunca debe ser interpretada como un sistema de control, sino como un sistema que permite el análisis, la obtención de información sobre lo que hacemos y cómo lo hacemos y, en caso necesario, cuáles son los aspectos a mejorar, cambiar o utilizar adecuadamente (Lynge et al, 2012; Cerda & Ascunce, 2006).

El proceso de evaluación de los programas de cribado viene recogido en la Recomendación del Consejo de Europa 2003/878/CE que establece que “un cribado de calidad incluye el análisis del proceso y de los resultados, así como una pronta notificación de estos resultados a la población y al personal que realiza el cribado”. Este proceso tiene como finalidad la monitorización del programa y la detección de problemas que puedan ser corregidos para cumplir los compromisos establecidos (Recomendación del Consejo, 2003), y debe especificar los aspectos generales de la evaluación: los principales indicadores referidos a la estructura, a la actividad, al proceso y a los resultados, así como los criterios o estándares, la periodicidad de la evaluación, las fuentes de los datos para la elaboración de los indicadores y los responsables de llevar a cabo la evaluación.

Las Guías Europeas, recogen los estándares de calidad recomendados y constituyen un documento de referencia en todos los aspectos del cribado. Estas guías contienen documentos sobre control técnico, directrices epidemiológicas, radiográficas y radiológicas, control de calidad en patología y cirugía e incluye un sumario con los indicadores utilizados para evaluar el proceso de cribado. Las guías que actualmente rigen el control de calidad de los programas de cribado de cáncer implantados en España son las europeas mediante unos indicadores estándares de calidad. Los principales indicadores comunes en estas guías son; la participación global, la participación de la población que se invita por primera vez al programa, la adherencia al cribado, tasa de detección de tumores y las características de los tumores detectados.

La guía europea para el control de calidad del cribado de CM es:

- Perry, N., Broeders, M., de Wolf, C., Törnberg, S., Holland, R., von Karsa, L. & Puthaar, E. (Eds.). (2006). *European guidelines for quality assurance in breast cancer screening and diagnosis* (4th ed). Office for Official Publications of the European Communities: Luxembourg; 2006.

La guía europea para el control de calidad del cribado de CCR es:

- Segnan, N., Patnick, J., von Karsa, L. (2010). *European guidelines for quality assurance in colorectal cancer screening and diagnosis* 1st ed). Office for Official Publications of the European Communities: Luxembourg.

La guía europea para el control de calidad del cribado de cáncer de cuello uterino es:

- Arbyn., M., Anttila, A., Jordan, J., Ronco, G., Schenck, U., … von Karsa L. (2008). *European guidelines for quality assurance in cervical cancer screening* (2nd ed.). Office for Official Publications of the European Communities: Luxembourg.

1.4. Enfermería y prevención del cáncer

Las enfermeras juegan un papel importante en la prevención y la detección precoz del cáncer (McIlfatrick, Keeney, McKenna, McCarley, y McIlwee, 2016). Este rol ha ido evolucionando con los años, paralelamente a la evolución del tratamiento, la prevención y de la detección precoz del cáncer. Este papel puede y debe darse en los diferentes ámbitos de la enfermería, ya sea tanto en la atención primaria como la especializada.

La *Oncology Nursing Society* elaboró un documento donde se describía la implicación de le enfermera en la prevención del cáncer. Y citaba una serie de intervenciones (Jennings-Dozer y Mahon, 2002):

- Informar a la población sobre los factores de riesgo del cáncer.
- Promover los cambios de vida hacia unos hábitos de vida saludables en relación al cáncer.
- Concienciar a la población sobre la importancia de la prevención del cáncer.
- Explicar los beneficios y riesgos de los programas de cribado de cáncer.
- Fomentar la participación de la población en los programas de cribado de cáncer.

Sin embargo, aunque se habla del papel fundamental de la enfermera en la prevención y la detección precoz del cáncer, pocos estudios han definido específicamente el papel de la enfermera en el cribado de cáncer (Malik, 1993). Los estudios que lo hacen se publicaron hace más de 20 años y se centraron en el cribado oportunista. No existen estudios recientes que describan los cuidados enfermeros en los programas poblacionales de cribado de cáncer.

Diversas instituciones como; la International *Society of Nurses in Cancer Care o la European Oncology Nursing Society*, entre otras (Arbyn et al, 2008; Perry et al, 2006; Segnan, Patnick y von Karsa, 2010), recomiendan la incorporación de los profesionales enfermeros en los equipos multidisciplinarios de los programas de cribado de cáncer. Estas instituciones describen los objetivos que deben ser alcanzados por estos profesionales, sin embargo, no describen las actividades a realizar para conseguirlos.

El papel de la enfermera en este tipo de programas ha sido descrito en términos muy generales y no incluyen las actividades que lo componen. Paralelamente, la mayoría de la literatura sobre el tema se ha desarrollado en ámbitos anglosajones y no se ha documentado suficientemente en nuestro país. Por estos motivos creemos importante identificar las actividades y poder evaluarlas, para dotar a la profesión de las herramientas necesarias para ofrecer una práctica excelente.

Ya hemos visto que es muy importante, en los programas de cribado, tener un sistema de evaluación de calidad para analizar el balance esperable entre los efectos beneficiosos y los efectos secundarios adversos para la población incluida en proceso de cribado. Por lo tanto, posterior a la identificación es imprescindible crear herramientas para poder evaluar la actividad.

Por todo ello, el objetivo de esta tesis es incrementar el conocimiento en relación a los cuidados enfermeros en el cribado de cáncer. En este contexto, los objetivos principales de esta tesis doctoral aparecen en el siguiente apartado y se llevaron a cabo a través de las publicaciones presentadas en este compendio.

2. OBJETIVOS

Objetivos:

1. Definir el rol de la enfermera en los programas de cribado de cáncer.

1.1. Identificar el conjunto de actividades que componen el papel de la enfermera en el cribado del cáncer.

1.2. Contextualizar en los programas de cribado poblacional, a través de sus profesionales, las actividades de la enfermera de cribado.

1.3. Identificar qué etiquetas *Nursing Interventions Classification* (NIC) corresponden a las intervenciones de enfermería en el cribado del cáncer de establecer un sistema de documentación de enfermería.

2. Identificar los indicadores de la actividad de la enfermera de cribado de cáncer.

3. Evaluar los cuidados enfermeros del programa de cribado de cáncer del Institut Català d'Oncologia en relación a la transmisión de la información.

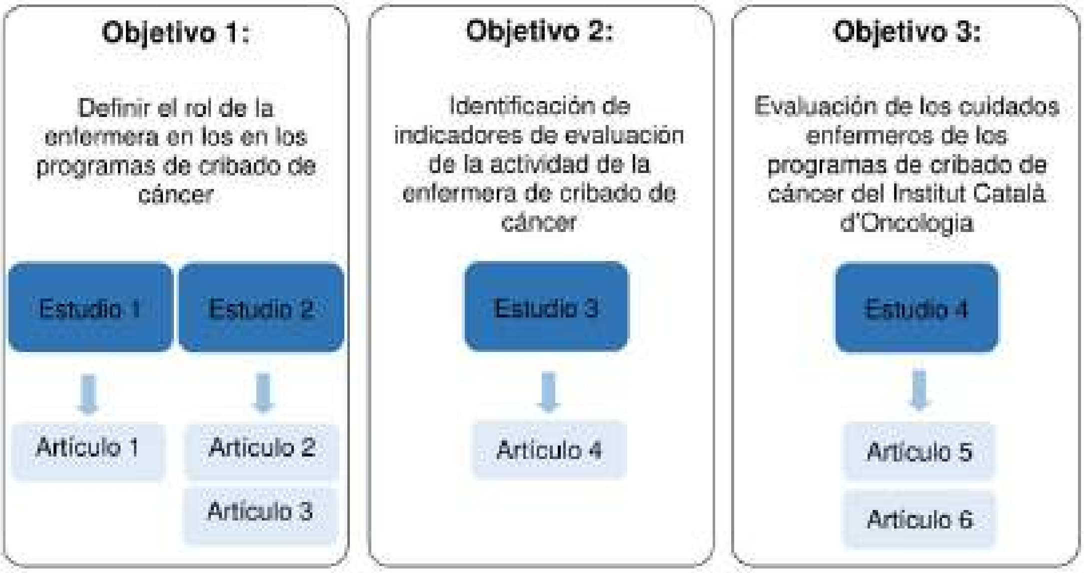
3.1. Describir los conocimientos de los médicos y las enfermeras de atención primaria en relación a los procedimientos de cribado de cáncer colorrectal, recomendaciones de vigilancia posterior a la polipectomía y estrategias de derivación.

3.2. Evaluar el impacto de una intervención informativa sobre los conocimientos de los profesionales de atención primaria en relación a los procedimientos de cribado de cáncer colorrectal, recomendaciones de vigilancia posterior a la polipectomía y estrategias de derivación.

3. METODOLOGÍA

A continuación, se observa en la Figura 5 la organización de los objetivos, los estudios y los artículos presentados en esta tesis:

Figura 5: Organización de los objetivos y estudios de la Tesis



Tal y como se ha descrito un apartado anterior, el primer objetivo fue definir el rol de la enfermera en los programas de cribado de cáncer. Para alcanzar este objetivo se propuso el **Estudio 1** y el **Estudio 2**, que llevaron por título "*Defining the Role of the Nurse in Population-Based Cancer Screening Programs: A Literature Review*" y "*Identifying nursing activities in population-based colorectal and breast cancer screening programs in Spain*" respectivamente. Los resultados de estos dos estudios se muestran en los **Artículos 1, 2 y 3**.

El siguiente objetivo, fue determinar los indicadores de evaluación de la actividad de la enfermera de cribado de cáncer**.** Este objetivo se resolvió mediante el **Estudio 3** titulado "*Coordination and continuity of care for cancer screening: performance measurement and reporting"* y obtuvo como resultado el **Artículo 4**.

El tercer objetivo evaluaba los cuidados enfermeros del programa de cribado de cáncer de L'Hospitalet de Llobregat. Para ello se diseñó el **Estudio 4** (en dos fases)**:** *"Cross-sectional survey on awareness of colorrectal cáncer and its screening program of primary health care professionals in Catalonia, Spain"* y *"Impacto de una intervención informativa sobre el programa de cribado de cáncer* *colorrectal en profesionales de atención primaria*". Los resultados de este estudio se publicaron en los **Artículos 5 y 6**.

Los artículos que forman parte de esta tesis son:

Artículo 1. Benito, L., Binefa, G., Lluch, M.T., Vidal, C., Milà, N., Puig, M., Roldán, J., García, M. (2014). Defining the role of the nurse in population-based cancer screening programs. *Clinical Journal of Oncology Nursing*, 18(4), E77-83.

ISI Journal Citation Reports® Ranking: 2014; 62/111 Nursing (SCIE).
Impact Factor: 0,910 Quartile in Category: Q3.

Artículo 2. Benito, L., Binefa, G., Vidal, C., Lluch, M.T., Puig, M., Padrol, I., García, M. (2016). Identifying nursing activities in population-based colorectal and breast cancer screening programs in Spain: A Delphi Study. *Collegian*, [Epub ahead of print].

ISI Journal Citation Reports® Ranking: 2015; 50/116 Nursing(SCIE).
Impact Factor: 1,122 Quartile in Category: Q2.

Artículo 3. Benito, L., Lluch, M.T., Falcó, A.M., García, M., Puig, M. (2015). Identifying Nursing Interventions in a Cancer Screening Program Using Nursing Interventions Classification Taxonomy. *International Journal of Nursing Knowledge*, [Epub ahead of print].

ISI Journal Citation Reports® Ranking: 2015; 86/116 Nursing(SCIE).
Impact Factor: 0,727 Quartile in Category: Q3.

Artículo 4. Benito, L., Espinosa, J., Binefa, G., Vidal, C., Lluch, M.T. Puig, M., Cabré, M., Padrol, I., García, M. Coordination and continuity of care for cancer screening: performance measurement and reporting.

Manuscrito enviado a una revista científica. Pendiente de revisión.

Artículo 5. Benito, L., García, M., Binefa, G., Milà, N., Vidal, C., Lluch, M.T., Puig, M. and The primary care-screening working group. (2016). Cross sectional survey on awareness of colorectal cancer and its screening program of primary health care professionals in Catalonia, Spain. *European Journal of Cancer Care,* 25(6):992-1004.

ISI Journal Citation Reports® Ranking: 2015; 14/116 Nursing (SCIE).
Impact Factor: 1,794 Quartile in Category: Q1.

Artículo 6. Benito-Aracil, L., Binefa-Rodríguez, G., Milà-Díaz, N., Lluch-Canut, M.T., Puig-Llobet, M., García-Martínez, M. (2015). Impacto de una intervención informativa sobre el programa de cribado de cáncer colorrectal en profesionales de atención primaria. *Enfermería Clínica*, 25(5),223-31.

Indexada en Scopus.

Para responder a los objetivos planteados en la presente tesis doctoral hemos utilizado diferentes enfoques metodológicos disponibles en los artículos y manuscritos de la tesis doctoral.

Artículo 1: Defining the role of the nurse in population-based cancer screening programs.

El primer artículo se efectuó mediante una revisión de la literatura científica sobre las actividades de la enfermera en los programas de cribado de cáncer. La estrategia de búsqueda se efectuó en MEDLINE (bajo la interfaz PubMed), CINAHL y SCOPUS. El marco temporal usado para la búsqueda fue desde enero de 2000 hasta junio de 2012. Se utilizaron las palabras clave: nurse role, nursing role, or nurse’s role and cancer screening.

Artículo 2: Identifying nursing activities in population-based colorectal and breast cancer screening programs in Spain: A Delphi Study.

En este artículo se utilizó metodología Delphi para contextualizar las actividades, identificadas mediante la revisión, en los programas poblacionales del territorio español.

Se utilizó un panel de expertos teniendo en cuenta los conocimientos y experiencia en el cribado de cáncer. Para ello, se contactó con todos los profesionales de los programas poblacionales de cribado de cáncer de las diferentes regiones del territorio español (n=68).

Se enviaron cuestionarios a través del correo electrónico y se utilizaron dos rondas para llegar al consenso, que se consideró a partir del 75% del panel.

Artículo 3: Identifying Nursing Interventions in a Cancer Screening Program Using Nursing Interventions Classification Taxonomy.

El tercer artículo fue un estudio descriptivo en el que un grupo de expertos realizó un análisis para identificar las intervenciones de la taxonomía NIC, a partir del listado de 25 actividades seleccionadas en el artículo anterior.

El equipo investigador identificó las etiquetas NIC que se relacionaban con cada una de ellas, y a partir de esta propuesta inicial, se preparó una plantilla para entregarla a un panel de expertos.

El panel de expertos consistió en profesionales expertos en taxonomía enfermera, y se utilizaron los criterios de Fehring para identificarlos. Estos criterios requieren que todos los miembros obtengan una puntuación superior a 5, y se obtuvo una media de 6,8 (mínimo 5 y máximo 8) (Fehring, 1994).

Los expertos debían describir si estaban de acuerdo con la propuesta inicial o no. En el caso de estar de acuerdo se puntuaba con un punto, y en caso contrario con cero puntos, y además debían realizar una nueva propuesta.

Se consideraron intervenciones validadas cuando el 60% o más del panel de expertos estaban de acuerdo.

Artículo 4: Coordination and continuity of care for cancer screening: performance measurement and reporting.

Este se realizó mediante dos fases. La primera fase consistió en una revisión bibliográfica y la segunda en el consenso del grupo de expertos.

Fase 1. Revisión bibliográfica: Se realizó una búsqueda en la base documental PubMed, utilizando las palabras clave: *"continuity", "coordination", "indicators", "screening", "nurs*", "patient navigat*"* y *"evaluation"* para detectar todos aquellos documentos publicados hasta junio de 2016. Los indicadores identificados en esta fase se entregaron al grupo de expertos para que los valorara. Este grupo de expertos se compuso por nueve profesionales que trabajaron directamente en la elaboración del listado.

Fase 2. Consenso interno: El objetivo de esta segunda fase fue revisar los indicadores obtenidos a partir de la revisión de la literatura y proponer un listado final de indicadores consensuados para posteriormente adaptarlos al programa de cribado de cáncer.

Artículo 5: Cross-sectional survey on awareness of colorectal cancer and a screening programme for primary health care professionals in Catalonia, Spain.

El diseño de este estudio consistió en una encuesta transversal, cuya población de estudio fueron los 350 (178 médicos y 172 enfermeras) profesionales de atención primaria de L'Hospitalet de Llobregat.

Se utilizó un cuestionario para recopilar información sobre los procedimientos de cribado de CCR, las características demográficas y profesionales de los participantes. Las preguntas se clasificaron como correctas, incorrectas, no sabe/no contesta o no contestada. Cada pregunta correcta se puntuó con un punto, y las incorrectas con cero puntos. Se creó una nueva variable para medir el conocimiento sobre el cribado de cáncer colorrectal con valores de 0 (peor) a 12 (mejor).

El cuestionario se entregó personalmente a cada uno de los profesionales con el fin de obtener el máximo número de participantes.

Se realizó un análisis descriptivo, se estimaron las diferencias de las respuestas del cuestionario comparando las proporciones y sus intervalos de confianza del 95%. Se utilizó el método de t Student para comparar las diferentes puntuaciones sobre el conocimiento del programa de cribado. Y se calculó el modelo multivariable de regresión logística para estimar la odds ratio y su intervalo de confianza al 95%.

Artículo 6: Impacto de una intervención informativa sobre el programa de cribado de cáncer colorrectal en profesionales de atención primaria.

Se trata de un ensayo clínico controlado y aleatorizado por conglomerados, que se realizó en los 12 centros de atención primaria de L'Hospitalet de Llobregat. Debido al reducido tamaño de la población de estudio, se entregó el cuestionario a toda la población.

Se aleatorizaron los centros y se realizó una sesión informativa presencial en seis de los 12, donde se trataban los aspectos más importantes del CCR, circuitos y procedimientos del cribado actuales, así como hábitos de vida saludables para la prevención del CCR.

Se utilizó el mismo cuestionario que el estudio anterior, que se volvió a entregar después de la intervención para comparar los resultados y evaluar el impacto.

4. RESULTADOS

4.1. Artículo 1

Benito, L., Binefa, G., Lluch, M.T., Vidal, C., Milà, N., Puig, M., Roldán, J., García, M. (2014) Defining the role of the nurse in population-based cancer screening programs. *Clinical Journal of Oncology Nursing*, 18(4), E77-83.

Online Exclusive Article

Defining the Role of the Nurse in Population-Based Cancer Screening Programs:

A Literature Review

Llucia Benito, RN, MSc, Gemma Binefa, MD, MPH, Teresa Lluch, RN, PhD, Carmen Vidal, MD, MPH,
Núria Milà, MA, Montserrat Puig, PhD, Juan Roldán, PhD, and Montse García, PhD

Nurses are pivotal in cancer prevention and early detection, but the nurse's role in cancer screening programs has been described only in very general terms without specification of activities needed to develop the role. To identify the set of activities that compose the role of the cancer screening nurse, the authors of the current article performed a critical descriptive literature review to document nursing involvement in cancer screening, covering articles published from 2000–2012. A total of 726 potentially relevant studies were identified, and 22 of those were included in the review. Nurses carry out follow-up, coordinate treatment, ensure continuity throughout the process, provide up-to-date and pertinent information to facilitate patient knowledge and choice, work to ensure coordination among the various levels of care, provide ongoing training, lead research and publications concerning daily practice, and collaborate in investigation oriented toward early detection. The literature revealed that the nurse's role in cancer screening involves case management as the main activity as well as, exceptionally, carrying out diagnostic tests.

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Key words: cancer screening; population-based; nurse role; nursing

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Screening programs are designed to carry out systematic tests or explorations to identify disease in its early stages or precursor lesions in an asymptomatic population (Wilson & Jungner, 1968). These programs aim to improve prognosis by enabling diagnosis at the earliest possible stage (Brawley & Kramer, 2005). Existing evidence from randomized, controlled trials indicates that cancer screening programs should be set up only for breast, colorectal, and cervical cancers (von Karsa et al., 2008).

Screening is advisable within the context of organized programs that can guarantee quality, accessibility, access, and information about benefits and adverse effects to the population being screened. A well-organized program entails a multidisciplinary team of professionals, a defined screening structure, a rigorous system of evaluation of the process and its results, and feedback from evaluation of the participants and the professionals involved (Lynge, Törnberg, von Karsa, Segnan, & van Delden, 2012). Population-based screening programs were launched following pilot programs designed to evaluate the feasibility of extending this activity to a larger scale. The pilot projects have led to the conclusion that population-based programs are feasible if progressively set up to guarantee maximum quality (von Karsa et al., 2008).

Nurses play a pivotal role in cancer prevention and early detection (Jennings-Dozier & Mahon, 2002; Lester, 2007); however, few studies have defined the nurse's role in cancer screening. Those that do were published more than 20 years ago and focused on opportunistic screening, which is a nonsystematic activity that is usually performed on request or in conjunction with a consultation for a different medical concern (Coxhead, 1993; Frank-Stromborg, 1986; Malik, 1993; Miller, Baines, & Turnbull, 1991).

The authors have consulted several organizations, which include the International Society of Nurses in Cancer Care, Union for International Cancer Control, European Oncology Nursing Society, National Comprehensive Cancer Network, and Guidelines International Network, as well as the European guidelines for quality assurance in cancer screening (Arbyn et al., 2008; Perry et al., 2006; Segnan, Patnick, & von Karsa, 2010). One recommendation was that a nurse should be incorporated as part of the multidisciplinary team for cancer screening and note which goals should be achieved by the nurse. However, the guidelines fail to describe the activities to be undertaken to fulfill this recommendation.

Overall, the role of the nurse in cancer screening programs has been described in very general terms that do not include constituent activities, and previous articles do not note the activities to develop this role. Because of that, an update of the literature is timely. The authors undertook a review of the literature to identify the set of activities that compose the role of the nurse in cancer screening and to document nursing's involvement in cancer screening.

Methods

The first step was to obtain the scope of the literature using electronic databases and the key words *nurse role, nursing role,* or *nurse's role* and *cancer screening*. In this review, the role concept was defined as the set of activities that the nurse performs. The databases included were MEDLINE®, CINAHL®, and SCOPUS. An electronic search of websites concerning cancer screening programs nationally and internationally was undertaken for relevant materials or citations. In addition, reference lists from selected papers were scanned for further relevant studies.

Articles were screened with the overall goal of finding those focused on defining the role of the nurse in cancer screening. Articles were published in English or Spanish from January 2000 to June 2012; those without mention of nurse activities in cancer screening were excluded (see Figure 1). A critical descriptive review of the published articles was performed.

Search Outcome

A total of 726 articles were identified as potentially relevant. Evaluation of the articles was carried out in several stages. The preliminary selection was made based on article titles. The related abstracts were reviewed, and some papers were selected for a complete reading. Duplicate articles were removed from the review, and an additional 25 reports were identified as being relevant to the study. In addition, two documents found on different websites were included. A total of 72 articles were read in entirety, and 22 were included in the study, yielding the description of nursing activity presented here. The abstracts were reviewed independently by two of the authors. Full papers for selected abstracts were retrieved. Each of the articles was assessed independently by the same review authors against the inclusion criteria.

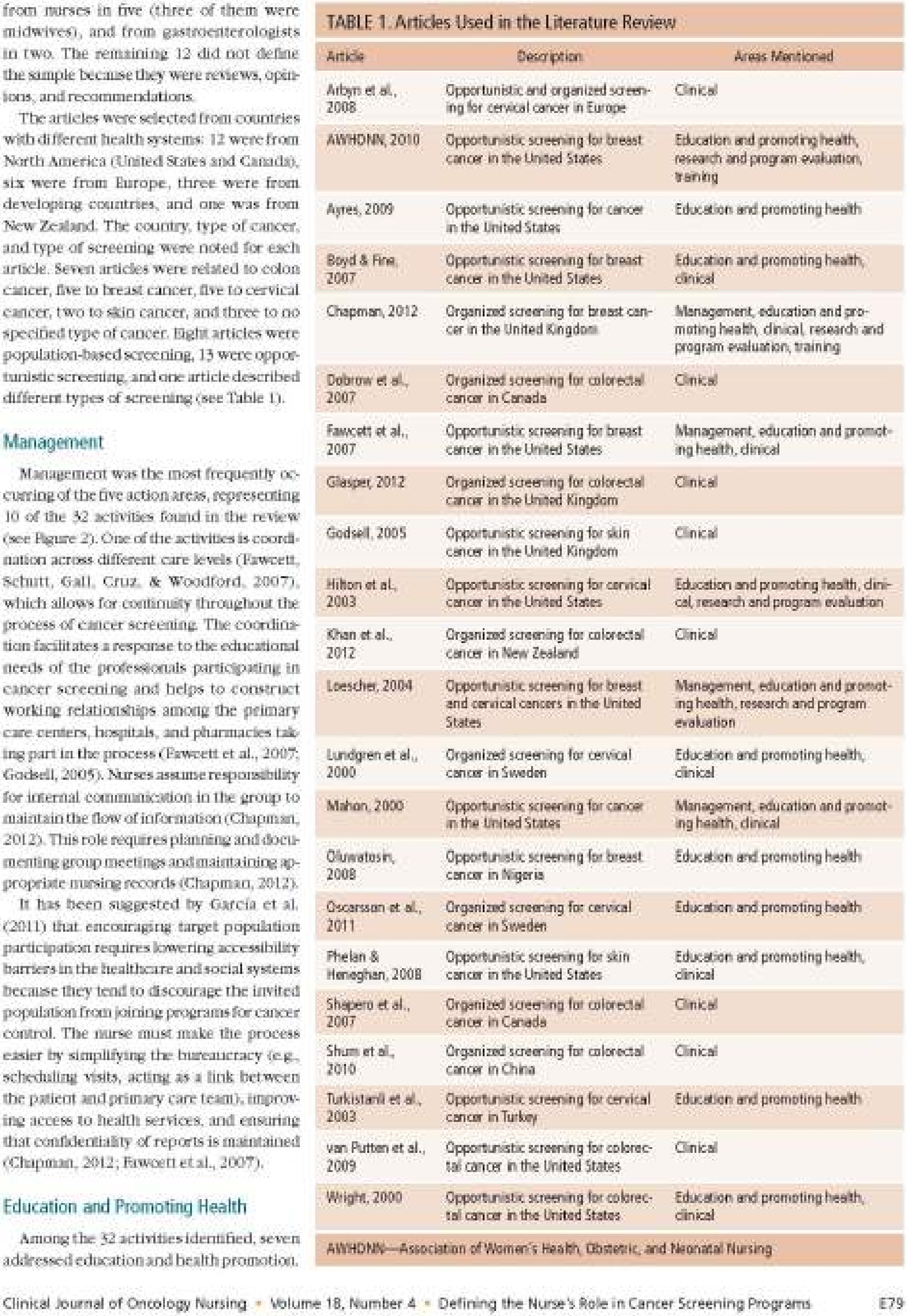
A content analysis was conducted to classify all of the activities found in the 22 articles selected into five action areas of nursing (i.e., clinical, education and promotion of health, management, training, and research and evaluation of screening) (von Karsa et al., 2008; Watson, 1999). Three experts in cancer prevention classified the activities, and the three reviewers resolved any disagreements by consensus. The kappa coefficient overall percentage of agreement or effective percentage of agree has been defined by Landis and Koch (1977) as nearly perfect for a kappa index of 0.81–1. The kappa index was calculated to measure the degree of agreement among the experts, with a kappa index of 0.87 between expert 1 (E1) and expert 2 (E2), of 0.83 between E1 and expert 3 (E3), and of 0.87 between E2 and E3. After the initial classification, the definitive classification (EF) was determined through consensus among the three experts. Very high kappa indexes were obtained: E1 versus EF = 0.92; E2 versus EF = 0.95; E3 versus EF = 0.9.

FIGURE 1. Literature Review Process

Activities were also classified in terms of the type of work competence involved. Generic work competence allows for common exercise of duties in diverse occupations and productive activities and is applicable to all domains of nursing. Specific work competence refers to know-how and technical procedures linked to specific productive functions or, in this case, competencies appropriate for cancer screening.

Results

The 22 selected articles had different study designs. Six were descriptive studies, five were scientific recommendations, four were expert opinion, four were qualitative studies through interview, and three were nonsystematic reviews. The study samples also were diverse, arising from patient screenings in three studies,



from nurses in five (three of them were midwives), and from gastroenterologists in two. The remaining 12 did not define the sample because they were reviews, opinions, and recommendations.

The articles were selected from countries with different health systems: 12 were from North America (United States and Canada), six were from Europe, three were from developing countries, and one was from New Zealand. The country, type of cancer, and type of screening were noted for each article. Seven articles were related to colon cancer, five to breast cancer, five to cervical cancer, two to skin cancer, and three to no specified type of cancer. Eight articles were population-based screening, 13 were opportunistic screening, and one article described different types of screening (see Table 1).

Management

Management was the most frequently occurring of the five action areas, representing 10 of the 32 activities found in the review (see Figure 2). One of the activities is coordination across different care levels (Fawcett, Schutt, Gall, Cruz, & Woodford, 2007), which allows for continuity throughout the process of cancer screening. The coordination facilitates a response to the educational needs of the professionals participating in cancer screening and helps to construct working relationships among the primary care centers, hospitals, and pharmacies taking part in the process (Fawcett et al., 2007; Godsell, 2005). Nurses assume responsibility for internal communication in the group to maintain the flow of information (Chapman, 2012). This role requires planning and documenting group meetings and maintaining appropriate nursing records (Chapman, 2012).

It has been suggested by García et al. (2011) that encouraging target population participation requires lowering accessibility barriers in the healthcare and social systems because they tend to discourage the invited population from joining programs for cancer control. The nurse must make the process easier by simplifying the bureaucracy (e.g., scheduling visits, acting as a link between the patient and primary care team), improving access to health services, and ensuring that confidentiality of reports is maintained (Chapman, 2012; Fawcett et al., 2007).

Education and Promoting Health

Among the 32 activities identified, seven addressed education and health promotion.

TABLE 1. Articles Used in the Literature Review

Article	Description	Areas Mentioned
Arbyn et al., 2008	Opportunistic and organized screening for cervical cancer in Europe	Clinical
AWHONN, 2010	Opportunistic screening for breast cancer in the United States	Education and promoting health, research and program evaluation, training
Ayres, 2009	Opportunistic screening for cancer in the United States	Education and promoting health
Boyd & Fine, 2007	Opportunistic screening for breast cancer in the United States	Education and promoting health, clinical
Chapman, 2012	Organized screening for breast cancer in the United Kingdom	Management, education and promoting health, clinical, research and program evaluation, training
Dobrow et al., 2007	Organized screening for colorectal cancer in Canada	Clinical
Fawcett et al., 2007	Opportunistic screening for breast cancer in the United States	Management, education and promoting health, clinical
Glasper, 2012	Organized screening for colorectal cancer in the United Kingdom	Clinical
Godsell, 2005	Opportunistic screening for skin cancer in the United Kingdom	Clinical
Hilton et al., 2003	Opportunistic screening for cervical cancer in the United States	Education and promoting health, clinical, research and program evaluation
Khan et al., 2012	Organized screening for colorectal cancer in New Zealand	Clinical
Loescher, 2004	Opportunistic screening for breast and cervical cancers in the United States	Management, education and promoting health, research and program evaluation
Lundgren et al., 2000	Organized screening for cervical cancer in Sweden	Education and promoting health, clinical
Mahon, 2000	Opportunistic screening for cancer in the United States	Management, education and promoting health, clinical
Oluwatosin, 2008	Opportunistic screening for breast cancer in Nigeria	Education and promoting health
Oscarsson et al., 2011	Organized screening for cervical cancer in Sweden	Education and promoting health
Phelan & Heneghan, 2008	Opportunistic screening for skin cancer in the United States	Education and promoting health, clinical
Shapero et al., 2007	Organized screening for colorectal cancer in Canada	Clinical
Shum et al., 2010	Organized screening for colorectal cancer in China	Clinical
Turkistanli et al., 2003	Opportunistic screening for cervical cancer in Turkey	Education and promoting health
van Putten et al., 2009	Opportunistic screening for colorectal cancer in the United States	Clinical
Wright, 2000	Opportunistic screening for colorectal cancer in the United States	Education and promoting health, clinical

AWHONN—Association of Women's Health, Obstetric, and Neonatal Nursing

Management

- Ensuring access to appropriate educational material and guaranteeing availability (3 studies)
- Acting as a link between the patient and the primary care team (2 studies)
- Building working relationships with various healthcare agencies (2 studies)
- Ensuring confidentiality of reports is maintained according to guidelines (2 studies)
- Participating in multidisciplinary team meetings and in the decision-making process (1 study)
- Ensuring that data related to the screening assessment process are retained on a screening record (1 study)
- Facilitating patient access to healthcare services (1 study)
- Monitoring the process of providing care (1 study)
- Improving and ensuring coordination (1 study)
- Participating as a key member of the screening team[a] (1 study)

Education and Promoting Health

- Providing verbal and written information throughout the process (8 studies)
- Providing education to the population (8 studies)
- Explaining and expounding the benefits of screening (4 studies)
- Providing health-promotion and disease-prevention activities (4 studies)
- Encouraging the population to participate in cancer screening (1 study)
- Conveying the importance of follow-up and risk evaluation[a] (1 study)
- Providing education to the population on methods of prevention (1 study)

Clinical

- Performing diagnostic tests for screening programs[a] (12 studies)
- Identifying the physical, social, and psychological needs of patients (2 studies)
- Ensuring that people with positive results receive appropriate follow-up[a] (2 studies)
- Contacting patients and informing them of the results[a] (2 studies)
- Providing emotional support (1 study)

Research and Program Evaluation

- Ensuring evaluation of the efficacy of nursing functions (1 study)
- Reviewing the literature and applying the evidence to practice (1 study)
- Evaluating the screening program[a] (1 study)
- Critically analyzing the results of investigations related to screening[a] (1 study)
- Offering volunteers for clinical trials of breast cancer (1 study)
- Participating in reviews and annual audits based on the results of the program (1 study)
- Performing investigations of cancer screening[a] (1 study)
- Conducting research on prevention and early detection that will have useful application in clinical practice[a] (1 study)

Training

- Training patients on breast abnormalities[a] (1 study)
- Identifying the needs for personal development and gaining access to appropriate training (1 study)

[a] Requires specific competence levels

FIGURE 2. Activities According to Five Action Areas of Nursing

One of the activities in this area involves developing, implementing, and evaluating a means of guaranteeing that all stakeholders have access to education on cancer prevention (Loescher, 2004). People are informed of their options concerning the management of their individual risk of developing cancer and of the limitations, benefits, and risks of each screening strategy (Association of Women's Health, Obstetric, and Neonatal Nursing [AWHONN], 2010; Hilton et al., 2003; Loescher, 2004; Oluwatosin, 2008). Nurses should provide up-to-date, pertinent information on all aspects of cancer with the aim of facilitating user knowledge and choice (AWHONN, 2010; Boyd & Fine, 2007; Chapman, 2012; Hilton et al., 2003; Lundgren et al., 2000; Mahon, 2000; Oscarsson, Dahlberg, & Tydén, 2011; Turkistanli, Sogukpinar, Saydam, & Aydemir, 2003). That activity was referenced in eight articles. Other activities in this category include encouraging participation in cancer screening (Oscarsson et al., 2011), conveying the importance of follow-up and risk evaluation (Mahon, 2000), and providing health promotion and disease prevention activities (Ayres, 2009; Chapman, 2012; Loescher, 2004; Oluwatosin, 2008).

Nurses in cancer screening offer fundamental education in the prevention of cancer, including means of prevention, strategies, and early detection and screening services. Nurses provide that education in the context of the cultural background of the individuals, their families, and patient and family beliefs about health (AWHONN, 2010; Ayres, 2009; Chapman, 2012; Fawcett et al., 2007; Loescher, 2004; Oluwatosin, 2008; Phelan & Heneghan, 2008; Wright, 2000).

Clinical

Of the 32 activities identified, five were classified in the clinical area. The main clinical activity identified in cancer screening was to carry out diagnostic tests (Boyd et al., 2007; Dobrow et al., 2007; Glasper, 2012; Godsell, 2005; Hilton et al., 2003; Khan, Khan, & Owen, 2012; Lundgren et al., 2000; Shapero et al., 2007; Shum, Lui, Choi, Lau, & Ho, 2010; van Putten, van Leerdam, & Kuipers, 2009; Wright, 2000). The articles referred to colorectal, breast, skin, and cervical cancer screenings. The activity includes performing diagnostic testing, providing information to patients and their families about procedures and results, obtaining informed consent, recording procedures, and routing the patient for additional services when necessary. The nurse is the contact for the patients throughout the process, performing follow-up and monitoring the process from the beginning (Fawcett et al., 2007; Phelan & Heneghan, 2008).

Research and Program Evaluation

This category represents eight of the selected activities. According to the articles reviewed, the cancer screening nurse should lead research and publications about daily practice. The research and publications should include projects related to user satisfaction, the implications of improvements in the program scheme, evaluation of nursing activity, and other factors that may encourage or discourage participation in screening (Loescher, 2004). Ensuring efficacy in nursing function represents an activity in the research and program evaluation area.

Public Health England suggested that nurses must collaborate in driving the design and development of studies aimed at identifying and evaluating new strategies for early detection and for promoting participation, as well as measuring the physical and psychological impact of early detection (Chapman, 2012). Additional nursing activities include the critical analysis of results for cancer screening investigations and participating in audits to evaluate the results of cancer screening programs (Hilton et al., 2003).

Training

Training represents two of the five areas selected for the study. AWHONN (2010) noted that cancer screening programs must be developed to provide ongoing training for professionals and create specialized educational programs in nursing practice to integrate prevention and early detection into clinical practice (Chapman, 2012).

Work Competencies

Classification of the type of work competence showed 22 generic activities and 10 specific activities. According to the information collected in the current article, the cancer screening nurse should perform activities that require crosscurricular competencies.

Discussion

The current review was initiated to delineate the activities of the nursing professional in cancer screening programs. The most relevant finding in the study is that the role of the nurse in cancer screening involves the management of cases and the performance of diagnostic tests as primary activities.

Case management is a collaborative process of assessment, planning, facilitation, and advocacy for options and services to meet an individual's health needs through communication and available resources to promote high-quality, cost-effective outcomes (Case Management Society of America, 2010; Ross, Curry, & Goodwin, 2011). The case manager nurse works in conjunction with the reference professionals of the patient, providing added value and organizing the contributions of the interdisciplinary team without replacing any of them. The definition of case management fits well with the role and activities of the cancer screening nurse, as noted in the current literature review. It also encompasses the activities that compose the five areas.

Other important findings in this review include observations that the cancer screening nurse performs follow-up and support, coordinates treatment, ensures continuity throughout the process, and works to provide pertinent and up-to-date information on all aspects of cancer prevention to foster knowledge and to help patients make informed choices. The screening nurse should ensure coordination among the different levels of healthcare professionals, schedule ongoing and timely training on the prevention and early detection of cancer, train nurses in communication techniques, provide leadership in research and publication on day-to-day practice, and collaborate in research for cancer screening programs. Although the articles reviewed mentioned only two activities regarding training (one related to familiarity with breast anomalies and one related to the need for personal development), a wide range of training possibilities exists.

Identifying potential activities performed by cancer screening nurses is the first step in assessing the impact of their roles because researchers can then explore how they affect patients and outcomes. Further research is needed to measure the amount of work related to each activity and to prioritize the activities according to relevance. Nurses do not perform all of the described activities; activities will be determined by the type of screening (i.e., opportunistic or population-based) and on the basis of the time available for screening (i.e., exclusive time for screening or shared time with other healthcare activities).

Implications for Practice

- Take the lead for coordination and communication in cancer screening programs.
- Measure the amount of work needed for screening activities and prioritize according to relevance.
- Provide up-to-date and pertinent education to all patients and their families on cancer screening.

Limitations

One of the limitations of this review is that most of the publications were not original reports but were nonsystematic reviews or expert opinions. In addition, the articles examined were primarily from North American countries and used opportunistic screening programs. As a result, some of the activities noted are not applicable to population-based screening programs, such as a nurse performing diagnostic testing. Many studies have shown that diagnostic tests performed by trained nurses for screening colorectal, breast, and cervical cancer are as safe and effective as those carried out by other healthcare providers (Boyd et al., 2007; Dobrow et al., 2007; Glasper, 2012; Godsell, 2005; Hilton et al., 2003; Khan et al., 2012; Lundgren et al., 2000; Shapero et al., 2007; Shum et al., 2010; van Putten et al., 2009; Wright, 2000). Some authors suggested limiting the activities of the screening nurse to performing tests, which is a somewhat reductionist view because nurses are capable of performing well in many other domains.

Implications for Practice

This article describes the activities involved in the nurse's role in cancer screening programs. The definition of the role is the first step in developing indicators to assess nurse performance in cancer screening. Additional research is needed to measure the workload of the activities and to prioritize them according to their relevance. Nurses must be in the lead when it comes to coordination and communication with patients with cancer and their relatives to improve cancer screening. The nurse should be a core member of the multidisciplinary team for organized cancer screening programs. Collaboration and multidisciplinary strategies can have important benefits for patients.

Conclusion

The role of the cancer screening nurse is best understood in the context of a multidisciplinary team. The role involves considerable interaction with other professionals, with some overlapping in the process of cancer screening. For that reason, a central component for nurses is coordination and collaboration with other members of the team. The authors conclude that the management of screen-detected cases involves coordination among provider services and resources, avoiding duplication in tests and procedures, and making better use of time. Case management aids in planning and guarantees that patients' rights are respected and their decisions honored, and it improves resource management to yield financial benefit. Healthcare providers should promote the inclusion of nurses in population-based cancer screening programs to guarantee optimal care of the patient and his or her family throughout the screening process.

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4.2. Artículo 2

Benito, L., Binefa, G., Vidal, C., Lluch, M.T., Puig, M., Padrol, I., García, M. (2016) Identifying nursing activities in population-based colorectal and breast cancer screening programs in Spain: A Delphi Study. *Collegian*, [Epub ahead of print].

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Identifying nursing activities in population-based colorectal and breast cancer screening programs in Spain: A Delphi study

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ABSTRACT

Background: Guidelines for quality assurance in cancer screening recommend that nurses be included on multidisciplinary teams for population-based cancer screening programs, however there are no current documents describing the activities of nurses in these programs.
Objectives: To identify nursing activities performed in cancer screening programs in Spain from the perspective of professionals involved in those programs.
Methods: A national two-round Delphi study was conducted in a population of sixty-eight cancer screening experts who were invited to participate and asked to identify nursing activities in cancer screening from a list of 24 possible activities. This list was obtained from a review article that was adapted for this study. Individuals were also asked to report the importance and frequency of these activities.
Results: Forty-seven experts participated, and they identified 25 activities performed by colorectal cancer screening nurses and 17 performed by breast cancer screening nurses. These activities were primarily in the areas of patient management, education and health promotion. All activities selected by breast cancer screening professionals were also selected by colorectal cancer screening professionals.
Conclusions: The most important and frequent working practices of cancer screening nurses include acting as a link between the user and the primary care team, providing users with information and explaining that information, and resolving users' concerns. The main responsibilities that were identified included registering all nursing activities during the process of cancer screening and keeping all patient data confidential.

1. Background

Health care in Spain is organized as a national health system, and all Spanish citizens receive universal coverage. Health care is provided free of charge at the point of delivery. However, the most relevant feature of the organization of health care in Spain is that it is highly decentralized, and responsibility is delegated to the health authorities in the country's 17 regions and two autonomous cities. These regional health authorities have the power to plan and organize their health services, and the Ministry of Health plays a coordinating role and has responsibility over some key areas, such as basic legislation and the package of benefits covered by the health service across Spain (Borràs, Colomer, Soria, & López, 2010).

Population-based screening programs for cancer are implemented and organized according to the characteristics of the health system. The adoption of population-based screening programs for breast cancer (BC) and colorectal cancer (CRC) has increased throughout Europe, and particularly in Spain, over the last fifteen years (Bulliard et al., 2014). The only population-based cancer

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screening programs implemented in Spain are for CRC and BC. All Spanish regions have a cervical cancer screening program, although they are generally opportunistic (Ricardo-Rodrigues et al., 2015).

Currently, all regions of Spain have population-based BC screening programs. Navarre was the first to implement such a program in 1990, and the remaining regions progressively followed. All of these programs have attained 100% coverage, target women between 50 and 69 years of age, and offer a biennial mammogram (Ascunce, Delfrade, Salas, Zubizarreta, & Ederra, 2013).

To date, twelve of the 17 Spanish regions have initiated CRC screening programs, and 8 of these regions have produced results of at least one screening round. The remaining regions have initiated this activity. The programs that are currently operating target men and women between 50 and 69 years of age except for Cantabria, which starts the target age at 55 years (Cancer Screening Network, 2013).

Screening programs in Spain follow the criteria detailed in the European guidelines for quality in screening (Perry et al., 2006; Segnan, Patnick, & von Karsa, 2010) and are coordinated by a national cancer screening network. This network is responsible for ensuring that screening programs follow common methodological criteria and utilize compatible information systems so they can be evaluated, and their results can be compared. However, the territorial organization of Spain, which is characterized by widely decentralized power, has led to different applications of the cancer screening policies (Ascunce et al., 2010).

A well-organized program entails a multidisciplinary team of professionals, a defined screening structure, a rigorous system for evaluating the process and its results, and the provision of feedback to the professionals involved (Lynge, Törnberg, von Karsa, Segnan, & van Delden, 2012). Several institutions, including the European Oncology Nursing Society, and the European guidelines for quality assurance in cancer screening recommend that nurses be included on multidisciplinary teams for population-based cancer screening (Arbyn et al., 2008; Perry et al., 2006; Segnan et al., 2010). Although these guidelines note the goals to be achieved, they do not describe the activities that should be undertaken to achieve those goals.

1.1. *Purpose of the study*

To identify the activities performed by cancer screening nurses, we conducted a literature review to document nurses' involvement in cancer screening (Benito et al., 2014). However, most publications included in this review were not original reports. Rather, they were non-systematic reviews or expert opinions. In addition, the examined articles were primarily from North American countries and investigated opportunistic screening programs. As a result, some of the identified activities were not applicable to population-based screening programs. To contextualize these activities in a population-based screening program, this study consulted screening professionals to identify the activities performed by cancer screening nurses. These activities were selected based on the literature review. The aim of the study was to identify nursing activities performed during cancer screening programs in Spain from the perspective of professionals involved in these programs.

2. Methods

2.1. *Study design*

The Delphi technique was used to gain expert consensus, which refers to the extent to which participants agree on a particular issue (Jones and Hunter, 1995). The process began with a list of proposed items for debate from a literature review under taken to identify the activities of nurses in cancer screening programs. This review was initiated to delineate the activities performed by nursing professionals in cancer screening programs and identified a total of 32 activities (Benito et al., 2014). The research team modified and adapted some of these activities to clarify concepts, adapt them to the study language (Spanish) and contextualize them in a population-based screening program. As a result, the 32 activities were consolidated into 24 activities.

2.2. *Sample and setting*

Rather than using a random sample representative of the target population, the Delphi technique employs "experts" as panel members (Watson, McKenna, Cowman, & Keady, 2008). The participants were selected and considered to be experts based on their knowledge of and experience with cancer screening.

We identified all contacts for the cancer screening programs of the different regions through the Spanish Network of Cancer Screening Programs website (http://www.cribadocancer.com) and contacted them to obtain information on the cancer screening programs and the nurses who work in these programs. We contacted only CRC and BC screening professionals, which are population-based screening. In Spain the cervical cancer screening is an opportunistic screening, and for that reason was excluded from the study. The opportunistic approach does not systematically invite the entire target population. Individuals are invited to undergo the screening test when they have contact with the health system (public or private). They might make the decision on their own or because they attend a health center for a different reason and are identified as a member of the target group.

The literature does not provide clear guidance regarding the optimal panel size, although panels of 20–50 participants are most frequently recommended (Endacott, Clifford, & Tripp, 1999). The size of the expert panel for a Delphi study is determined by a number of factors, including the content under consideration, the degree of uncertainty or controversy in the literature, and the availability of resources (Coleman, Hudson, & Maine, 2013). With these factors in mind, we aimed to convene an expert panel of at least 30 cancer screening professionals in Spain.

2.3. *Data collection*

2.3.1. *Procedure*

Contacts identified in the Spanish Network of Cancer Screening Programs provided data on 41 responsible parties and 27 nurses involved in cancer screening programs. All 68 cancer screening professionals were invited to participate in the first Delphi survey questionnaire. Some of these professionals were engaged in both CRC and BC screening programs. All 68 potential panelists were invited to participate via an e-mail informing them of the purpose of the study, the process that would be followed and the estimated duration of the study. They were informed that the study was part of a research project investigating the activities of cancer screening nurses in Spain from the perspective of professionals involved in cancer screening programs. Panelists did not know the identities of the other members on the panel. Participation in the study was voluntary, and no financial or other remuneration was offered.

This study employed a two-stage Delphi survey because the literature has shown that participants often become fatigued after three rounds (Walker and Selfe, 1996). The study included two online questionnaires, with the first administered in October 2013 and the second in July 2014. Only participants who completed the first questionnaire were invited to participate in the second. The survey was pre-tested for comprehension, and its wording and layout were slightly adapted.

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2.3.2. *First questionnaire*

All participants were mailed a two-part questionnaire. In the first part, participants were asked to provide data on cancer screening program characteristics, including the program's dedication to screening (full-time or part-time), the type of screening performed at their workplace, whether nursing professionals were involved in screening, and the type of screening involving professional nursing. Respondents were also asked to report their personal and professional background (age, gender, professional category, head of the screening program, work area, and years of practice in cancer screening). In the second part of the questionnaire, participants were asked to select nursing activities in cancer screening from a list of 24 activities (Benito et al., 2014). If they worked in programs that did not have nurses, they were asked to select those activities they believed that should be part of the nurse profile.

In addition, in the first questionnaire, participants were asked to provide suggestions for rewording activity statements they considered unclear and to list activities they believed were not addressed in the questionnaire. Two weeks after the initial mailing, reminder e-mails were sent to participants who did not respond. After 3 weeks, responses were analyzed, summarized and used to generate the second questionnaire.

2.3.3. *Consensus*

Although the appropriate level of consensus has been extensively discussed in the literature, it continues to be an arbitrary decision (Watson et al., 2008). In the present study, 75% was deemed to be an appropriate cut-off point for consensus. In other words, at least 75% of participants had to agree that a particular item merited core status (McKenna and Hasson, 2002). The selected activities that achieved consensus were included in the second questionnaire, and the results were analyzed according to the type of screening (BC or CRC).

2.3.4. *Second questionnaire*

This questionnaire aimed to establish consensus regarding the importance of nursing activities and how often these activities were performed. The participants received an identification number that allowed the first and second questionnaires to be linked.

This questionnaire comprised two lists of activities that emerged from the data analysis of the first questionnaire: CRC screening activities and BC screening activities. Two versions of the second questionnaire were administered. The first was sent to professionals in programs with nurses, and the second was sent to professionals in programs without nurses. The first version of the questionnaire asked about the importance and frequency of the activities performed by nurses, while the second only asked about the importance of these activities.

The questionnaire asked the panel to rate the importance of each activity on a five-point Likert-type scale ranging from 1 ("not at all important") to 5 ("extremely important"). In addition, the panelists were asked "How frequently do nurses perform this activity?", and they responded on a 7-category scale anchored by "never" and "every day". A Likert scale was utilized for this questionnaire because it is a familiar tool used in surveys and is considered to be "user friendly" (Keeney, Hasson, & McKenna, 2001; Keeney, Hasson, & McKenna, 2006; Polit and Beck, 2008). Reminder e-mails were sent, and 34 individuals responded to the second questionnaire survey.

2.4. *Data analysis*

Descriptive statistics [means, standard deviations (SDs) and frequencies] were used to analyze the demographic variables. Frequencies were used to rank the importance of the activities for the second questionnaire. The two questionnaires were analyzed separately. SPSS version 19.0 was used for all quantitative analyses.

2.5. *Ethical considerations*

The study protocol was approved by the Clinical Research Ethics Committee of the Bellvitge University Hospital (PR268/13), and all involved parties followed the ethical requirements set forth in the Spanish Organic Law on Protection of Personal Data (15/1999 of December 13).

3. Results

3.1. *Response rate*

Forty-seven experts, who represented 69.1% of the 68 cancer screening professionals, participated in the study. The non-response rates were 30.9% (21/68) for the first questionnaire and 27.7% (13/47) for the second questionnaire. No statistically significant differences in the experts' characteristics were detected among either the respondents of the first questionnaire or those who completed both questionnaires.

Table 1 shows selected professional and sociodemographic characteristics of the study participants. The majority of individuals who responded to the questionnaires were medical doctors and coordinators of the screening units. They worked in both screening and other care activities. The type of screening performed in the workplace was primarily BC screening, and a nurse was involved in the program. The mean number of years of screening experience was 8.95 (5.49SD) years. Overall, 46.8% of CRC screening professionals and 66% of BC screening professionals reported that nurses were involved in their cancer screening program. The study participants were from Aragon, Balearic Islands, Basque Country, Cantabria, Catalonia, Ceuta, Galicia, La Rioja, Madrid, Murcia and Valencia Community. This represents 70.6% (12/17) of the Spanish regions.

3.2. *Results of the first questionnaire*

Table 2 shows the results of the first questionnaire. CRC screening professionals eliminated five activities from the initial list of 24 and proposed six new activities. Deleted activities related to verifying whether those who do not meet the inclusion criteria are at risk for developing cancer, referring individuals with a higher risk of developing cancer to the corresponding screening, performing diagnostic tests for cancer screening programs, volunteering for clinical trials related to cancer prevention, and reviewing the literature and leading the implementation of evidence-based practice (Table 2).

The BC professionals eliminated 13 of the initial activities and added six new ones. Deleted activities related to verifying whether those who do not meet the inclusion criteria are at risk for developing cancer; referring individuals with a higher risk of developing cancer to the corresponding screening; evaluating the nursing activities during the screening process; leading nursing cancer screening research; providing users with information about the positive results of the screening test; providing education about healthy lifestyle choices to prevent cancer; performing diagnostic tests for cancer screening programs; volunteering for clinical trials related to cancer prevention; designing and implementing strategies to motivate the target population to participate in cancer screening programs; developing educational materials for the target population and ensuring their availability; identifying the physical, social and psychological needs of the target population; participating

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Table 1
Characteristics of the expert panel.

		First questionnaire	
		n	%
Answered questionnaire	No	21	30.9
	Yes	47	69.1
Professional category	Doctor	27	57.4
	Nurse	20	42.6
Program coordinator	Yes	29	61.7
	No	18	38.3
Dedication to cancer screening program	Only activity	14	29.8
	Shared with other work activities	33	70.2
Type of screening	Colorectal	12	25.4
	Breast	26	55.4
	Both	9	19.2
Nurse participation in the program	No	8	17.0
	Yes, for colorectal	8	17.0
	Yes, for breast	17	36.2
	Yes, for both	14	29.8
Participating regions	Catalonia	32	68.1
	Basque Country	4	8.6
	Cantabria	2	4.3
	Madrid	2	4.3
	Aragon	1	2.1
	Balearic Islands	1	2.1
	Ceuta	1	2.1
	Galicia	1	2.1
	La Rioja	1	2.1
	Murcia	1	2.1
	Valencia Community	1	2.1

Table 2
Nursing activities in cancer screening selected after the first questionnaire.

Nursing activities selected by CRC screening professionals	Nursing activities selected by BC screening professionals	Monitoring and supporting users during the diagnostic and therapeutic processes	Added activities
		Identifying and monitoring cases detected through screening and intervals	
		Encouraging the continued process of screening	
		Explaining and administering the diagnostic test to users	
		Identifying the target population (EDCP-Management Unit)	
		Training professionals involved in the screening process	
		Acting as a link between the user and the primary care team	
		Building working relationships with various healthcare agencies	
		Referring individuals with a positive screening test result for diagnosis	
		Registering all nursing activities during the process of cancer screening	
		Participating in program team meetings and decision-making processes	
		Keeping the data of participants of cancer screening confidential	
		Providing users with information about the benefits and risks of early cancer detection	
		Resolving users' concerns about report results	
		Providing users with information about proper surveillance	
		Evaluating nursing activities during the screening process	
		Being part of the cancer screening program research team	
		Receiving training related to early cancer detection	
	Leading nursing research on cancer screening		Activities excluded by BC professionals
	Providing users with information about positive screening test results		
	Providing education on healthy lifestyle choices to prevent cancer		
	Designing and implementing strategies to motivate the target population to participate in the cancer screening program		
	Developing educational materials for the target population and ensuring their availability		
	Identifying the physical, social, and psychological needs of users		
	Participating in the evaluation of the cancer screening program		
Verifying whether those who do not meet the inclusion criteria for program participation are at risk for developing cancer			Activities excluded by CRC and BC professionals
Referring individuals with a greater risk of cancer to the corresponding screening programs			
Performing diagnostic tests for screening programs			
Offering to volunteer for BC clinical trials			
Reviewing the literature and leading the application of evidence-based practice			

EDCP: Early Detection Cancer Program; BC: Breast cancer; CRC: Colorectal cancer.

in the evaluation of cancer screening programs; and reviewing the existing literature and applying evidence to clinical practice (Table 2).

Two activities were not included in the final core activities of the BC screening but nearly reached 75% consensus: evaluating nursing activities during the screening process (70.59%) and participating in the evaluation of cancer screening programs (74.29%) (Table 3). Finally, 25 activities were identified for CRC screening nurses and 17 for BC screening nurses (Tables 2 and 3).

The activities were classified into the following categories: 1) patient management; 2) education and health promotion; 3) clinical; 4) research and program evaluation; and 5) training (Benito

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Table 3
Percentage of consensus of selected nurses' activities in cancer screening programs.

Areas	Nursing activities selected by CRC screening professionals n %		
Patient management n = 9 (36%)	Acting as a link between the user and the primary care team	17	80.9
	Building working relationships with various healthcare agencies	19	90.5
	Referring individuals with a positive screening test result for diagnosis	17	80.9
	Registering all nursing activities during the process of cancer screening	17	80.9
	Participating in program team meetings and decision-making processes	20	95.2
	Keeping the data of participants of cancer screening confidential	20	95.2
	Monitoring and supporting users during the diagnostic and therapeutic processes	–	Added
	Identifying and monitoring cases detected through screening and intervals	–	Added
	Encouraging the continued process of screening	–	Added
Education and health promotion n = 8 (32%)	Providing users with information about the benefits and risks of early cancer detection	20	95.2
	Providing users with information about positive screening test results	17	80.9
	Resolving users' concerns about report results	20	95.2
	Providing users with information about proper surveillance	20	95.2
	Providing education on healthy lifestyle choices to prevent cancer	18	85.7
	Designing and implementing strategies to motivate the target population to participate in the cancer screening program	17	80.9
	Developing educational materials for the target population and ensuring their availability	18	85.7
	Explaining and administering the diagnostic test to users	–	Added
Research and evaluation n = 4 (16%)	Evaluating nursing activities during the screening process	15	75.0
	Leading nursing research on cancer screening	16	76.2
	Being part of the cancer screening program research team	19	90.5
	Participating in the evaluation of cancer screening programs	20	95.2
Clinical n = 2 (8%)	Identifying the physical, social, and psychological needs of users	16	76.2
	Identifying the target population (EDCP-Management Unit)	–	Added
Training n = 2 (8%)	Participating in training related to early cancer detection	17	80.9
	Training professionals involved in the screening process	–	Added

Areas	Nursing activities selected by BC screening professionals		
Patient management n = 9 (52.9%)	Acting as a link between the user and the primary care team	30	85.7
	Building working relationships with various healthcare agencies	28	80.0
	Referring individuals with a positive screening test result for diagnosis	27	77.1
	Registering all nursing activities during the process of cancer screening	31	88.2
	Participating in program team meetings and decision-making processes	30	85.7
	Keeping the data of participants of cancer screening confidential	33	94.3
	Monitoring and supporting users during the diagnostic and therapeutic processes	–	Added
	Identifying and monitoring cases detected through screening and intervals	–	Added
	Encouraging the continued process of screening	–	Added
Education and health promotion n = 4 (23.5%)	Providing users with information about the benefits and risks of early cancer detection	28	80.0
	Resolving users' concerns about report results	31	88.2
	Providing users with information about proper surveillance	28	80.0
	Explaining and administering the diagnostic test to users	–	Added
Research and evaluation n = 1 (5.9%)	Being part of the cancer screening program research team	27	77.1
Clinical n = 1 (5.9%)	Identifying the target population (PDPCM-Management Unit)	–	Added
Training n = 2 (11.8%)	Receiving training related to early cancer detection	30	85.7
	Training professionals involved in the screening process	–	Added

EDCP: Early Detection Cancer Program; BC: Breast cancer; CRC: Colorectal cancer

et al., 2014). Of the 25 CRC screening activities, 36% (9 activities) belonged to the area of patient management, 32% (8 activities) to education and health promotion, 16% (4 activities) to research and program evaluation, 8% (2 activities) to clinical, and 8% (2 activities) to training. Of the 17 selected BC screening activities, 52.9% (9 activities) belonged to the area of patient management, 23.5% (4 activities) to education and health promotion, 11.8% (2 activities) to training, and 5.9% (1 activity) each to research and clinical (Table 3).

Differences were observed among occupational groups. Respondents who were nurses did not select activities related to conducting research on screening, receiving training on early cancer detection, participating in program team meetings, designing and implementing strategies to encourage the target population to participate in screening, identifying users' needs, providing users with information about positive screening test results, developing educational materials for the target population and ensuring their availability, or participating in the evaluation of cancer screening programs.

3.3. *Results of the second questionnaire*

The second questionnaire asked about the frequency and importance of the activities identified in the first round.

3.3.1. *Importance of the activities*

Of the 25 activities selected by the CRC panel, 17 were classified as extremely or very important by more than 75% of the panelists. Activities that were not considered to be the most important were those related to assessing activities, performing health education and developing educational materials, training professionals, identifying the needs of the target population, and identifying cases and building working relationships (Fig. 1). Of the 17 activities selected by the BC screening panel, 15 were classified as extremely important or very important. The activities that were not considered to be the most important were those related to training professionals in the process of screening and identifying the target population (Fig. 2).

3.3.2. *Frequency of activities*

The results on the frequency of each activity are shown in Figs. 1 and 2. The CRC panel experts selected 10 activities that

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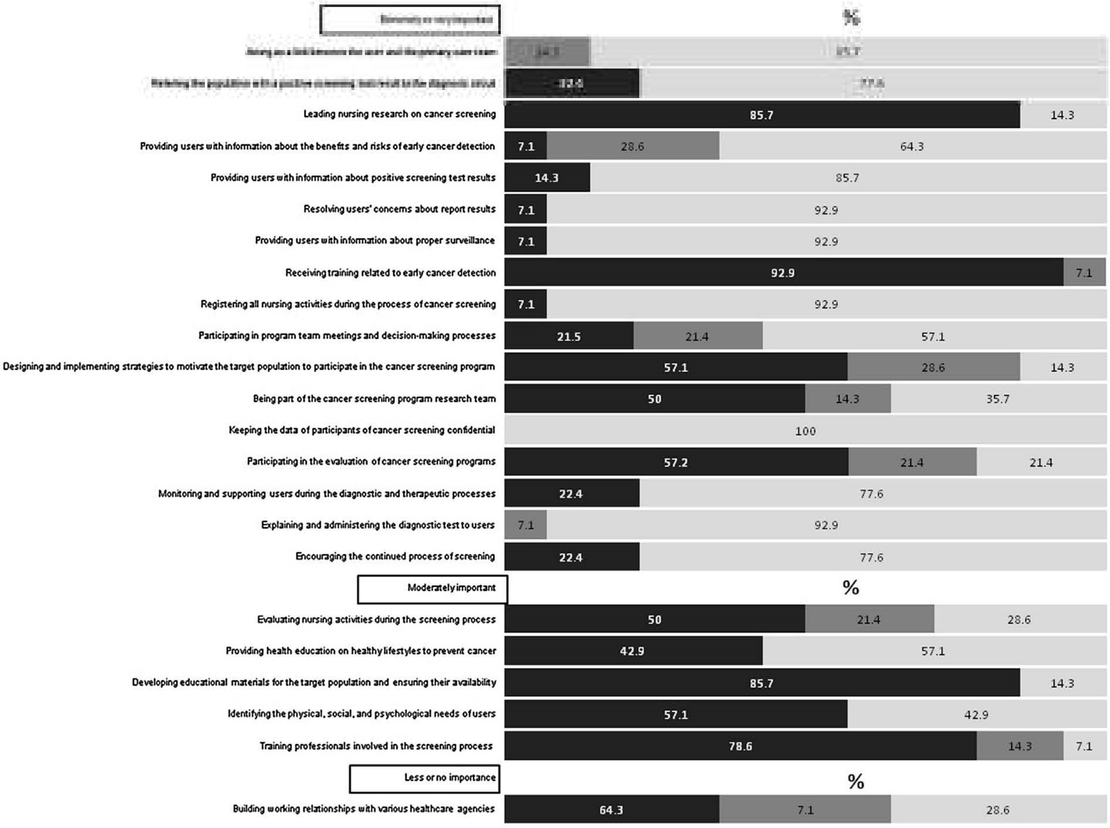

Fig. 1. Frequency and importance of nursing activities in CRC screening programs.

■ At most twice per year. ▨ Once per month. □ At least twice per week

Footnote: The activities “Identifying the target population (PDPCM-Management Unit)” and “Identifying and monitoring cases detected through screening and intervals” did not reach the 75% consensus and therefore there were not placed in any category of “Importance”.

were performed more than once per week. These activities were mainly related to acting as a link between the user and the primary care team; referring individuals with a positive screening test result for diagnosis; providing information about positive screening test results; reporting results on the diagnostic test and conducting proper surveillance; registering all nursing activities during the process; and keeping participants' data confidential (Fig. 1).

BC panel experts selected seven activities with this same frequency, which were primarily related to referring individuals with a positive screening test result for diagnosis; keeping participants' data confidential; encouraging the continued process of screening; identifying and monitoring cases detected through screening and intervals; explaining and administering the diagnostic test to the users; and monitoring and supporting users during the diagnostic and therapeutic processes (Fig. 2). The activities performed less frequently in both screening programs were related to training and teaching and to research (Figs. 1 and 2).

4. Discussion

This paper identifies nursing activities related to BC and CRC screening in Spain from the perspective of cancer screening program experts. The findings from this study indicate that the most important and frequent activities consisted of acting as a link between the user and the primary care team, providing users with information related to the cancer screening process, resolving users' concerns, registering all nursing activities during the process of cancer screening, and as responsibility; keeping all participant data confidential.

The final consensus resulted in 25 activities performed by CRC screening nurses, and 17 activities performed by BC screening nurses. The identified activities serve as the core of the cancer screening nurse's role and as an initial protocol for assessment. From the activities identified in this study, we could differentiate those that are working practices and those that are responsibilities, such as keeping data confidential, participate in the evaluation of the program or in team meetings, and registering all nursing activities.

This is the first study to identify nursing activities performed in population-based cancer screening programs that are described by Spanish health professionals responsible for conducting BC and CRC screening programs. The identification of the core activities is a starting point for the development of indicators and outcome measures that, in turn, are necessary for evaluating nursing care in cancer screening programs and ensuring the quality of the programs.

Identifying the activities performed by cancer screening nurses allows us to determine cancer screening nurses' competencies. To empower nurses in their role, competencies should be defined to ensure the development of evidence-based practices and the provision of comprehensive, personalized care and quality practices. Based on these definitions, a training plan can then be developed for nurses who are working in or wish to work in a cancer screening program. Cancer screening nurses should continually reassess their

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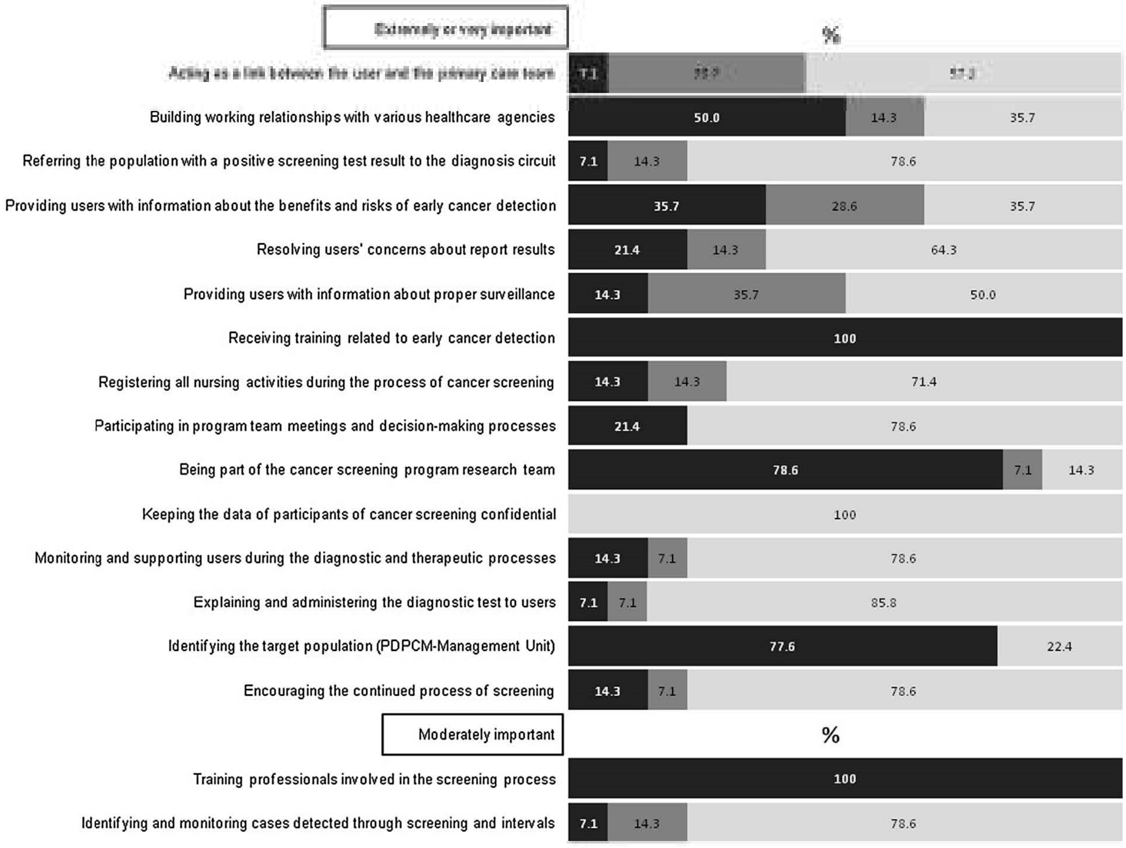

Fig. 2. Frequency and importance of nursing activities in BC screening programs.
■ At most twice per year, ▨ Once per month, □ At least twice per week

competencies and identify their needs for additional knowledge, skills, personal growth, and integrative learning experiences.

All activities selected by BC screening professionals were also selected by CRC screening professionals. The study results showed that CRC screening nurses perform some activities that BC screening nurses do not perform. These activities were mainly related to leading nursing research, evaluating the cancer screening program and nursing activities, providing information about test results, providing education on healthy lifestyle choices, designing and implementing strategies to encourage participation in screening, developing educational materials, and identifying users' needs.

The activities selected by nurses differed from those selected by screening unit coordinators. This was likely due to a social desirability bias because the coordinators reported the activities that nurses were expected to perform, while nurses reported the activities that they actually performed.

The top activities can be grouped into two dominant areas (patient management and education and health promotion) that focus on user information, referrals to appropriate programs, and monitoring. The activities that cancer screening nurses performed were mainly patient management activities. For CRC screening, these accounted for 36% of all activities, which is very similar to the result reported in a previous study (Benito et al., 2014). However, for BC screening, patient management activities represented a greater percentage, comprising approximately 53% of all activities.

There is a significant difference between the percentage of research and evaluation activities discussed in theory, based on the literature review, and those performed in practice, as detected by this study. According to one study (Benito et al., 2014), 25% of activities should focus on evaluation and research. However, the current study found that these activities comprised between 6% and 16% of all activities.

CRC screening nurses engaged in a higher percentage of activities related to research and evaluation than did BC screening nurses. This result may be due to the later implementation of CRC screening and a new definition of the nursing role linked to the integration of nursing programs in universities. In the 1980s, nursing began to consolidate as a discipline, and various professional groups worked to develop a body of knowledge. This resulted in a new framework for defining nurses' responsibilities in health care. Before then, nursing education had been eminently practical. However, during these years, there was a substantial shift in nursing education toward a curriculum that places equal weight on theory and clinical practice. Nursing graduates must be trained to provide integral care to people faced with any health situation and to use the appropriate methodology for a given situation. They must also be able to develop management, teaching and research activities (Martínez Martín, 2007). In Spain, BC screening was implemented in the 1990s, while CRC screening did not begin until 2000.

Although we provided participants with information on the Delphi technique, sent reminder e-mails in each round, and provided feedback after round 1, the attrition rate between the first and second questionnaires was 27.7%. This rate is consistent with other Delphi study response rates, with response rates to round 1 questionnaires ranging from 15% to 80% (Barrett, Kristjanson, Sinclair, & Hyde, 2001; Bond and Bond, 1982; Browne, Robinson,

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& Richardson, 2002; Daniels and Ascoud, 1999; Kirkwood, Wales, & Wilson, 2003; Mcilfatrick and Keeney, 2003; Mullen, 2003; Rudy, 1995; Soanes, Gibson, Bayliss, & Hannan, 2000; Sumsion, 1998).

The limitations of this study are related to the research method and analysis. Although the Delphi method is generally recognized as an effective tool for determining expert consensus, it has also been criticized as being vulnerable to a variety of biases. An important limitation of the Delphi technique lies in the method used to define consensus. There has been considerable discussion of this issue, but there appears to be little agreement regarding how to define consensus (Williams and Webb, 1994). Therefore, the definition of consensus is inherently determined at least partially by the subjective opinion of the researcher.

Another study limitation is that not all regions were represented because the panel comprised only those experts who agreed to participate. Professionals from only eleven of the 17 regions agreed to participate. Because the panel did not include experts from all regions of Spain, the identified activities may not be appropriate for all Spanish screening programs. The coverage rates of cancer screening programs throughout Spain in 2012, before starting the study, were 100% for BC and 17% for CRC. Therefore, not all regions could be represented in CRC screening programs (Cancer Screening Network, 2013). Of the 17 regions with the active breast cancer screening program, nine of them participated. Of the 14 regions with a working colorectal cancer screening program, seven of them participated (50%).

Catalonia accounted for 68% of all participants. The reason for this high representation is that although there is only one cancer screening program in Catalonia, there are different technical offices that manage it. The research team thought it would be interesting to invite all professionals from the different offices to include all procedures used throughout that region.

For the potential benefit of CRC screening to be realized, quality must be optimal at each step of the process, including the identification of and personal invitations to the target population; performance of the screening test; and, if necessary, the diagnostic work-up, treatment, surveillance and aftercare of screen-detected lesions (Arbyn et al., 2008; Perry et al., 2006; Segnan et al., 2010). Quality assurance of the screening process requires a robust system of program management and coordination that ensures that all aspects of the service are being performed adequately. As part of the multidisciplinary cancer screening team, nurses should be included in this quality assurance program.

Although there is little up dated literature describing nurses' activities in this type of program, the available articles that do present results are similar to these findings. The National Health Service Breast Screening Programme presents quality assurance guidelines for nurses in BC screening, which state that a nurse's role in this area is primarily related to most of the activities identified in this study. These guidelines also identified providing users with information related to the cancer screening process, registering all nursing activities during this process, and keeping all data of the participants confidential as key nursing activities (Chapman, 2012).

There are a number of studies in the literature on having nurses perform endoscopies that suggest that when nurses perform endoscopic procedures, particularly lower endoscopies, outcomes and adverse events are in line with those of physicians (Day, Siao, Inadomi, & Somsouk, 2014). However, this activity was not selected by the cancer screening professionals in our study because Spanish law does not allow nurses to perform these procedures.

Based on the activities identified in this study, the training requirements for nurses in CRC and BC screening programs include an in-depth understanding of CRC and BC and their screening processes and advanced communication skills. Appropriate courses should be available to nurses involved in CRC and BC screening programs to address these issues, including adequate training to help make informed decisions about CRC and BC screenings (Segnan et al., 2010). The results of this study can be used to develop competencies statement and training plans for nurses.

Because this study collected information on only the type, frequency and importance of each activity, insufficient information was available to identify the time each activity required. Future studies could record the time spent performing each activity. There is a clear need for research on nursing care in cancer screening programs in Europe. There is also a need to develop tools to assess and monitor nursing care in cancer screening programs. The identification of these activities, together with the findings in the literature and the views of professionals, can aid in the evaluation of nursing care (Chapman, 2012).

Author's contributions

Llucia Benito and Montse Garcia designed the study to which all the authors made contributions. Llucia Benito and Montse Garcia defined the analysis strategy and performed the statistical analysis. All of the authors contributed to the interpretation of the results. Llucia Benito and Montse Garcia wrote the first draft of the manuscript to which all the authors made contributions. All authors had full access to all of the data (including statistical reports and tables) in the study and can take responsibility for the integrity of the data and the accuracy of the data analysis. All the authors decided to submit the article for publication and Montse Garcia acts as the submission's guarantor.

Conflict of interest

No conflict of interest has been declared by the authors.

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4.3. Artículo 3

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Identifying Nursing Interventions in a Cancer Screening Program Using Nursing Interventions Classification Taxonomy

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Search terms:
Cancer screening, nurse, NIC taxonomy

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PURPOSE: This study aimed to investigate which Nursing Interventions Classification (NIC) labels correspond to specific nursing interventions provided during cancer screening to establish a nursing documentation system.

METHOD: This descriptive study was conducted to identify and classify the interventions that cancer screening nurses perform based on an initial list.

FINDINGS: The initial list was grouped into 15 interventions that corresponded to four domains and eight classes.

CONCLUSION: The study found expert consensus regarding the duties of cancer screening nurses and identified 15 interventions that should be implemented in clinical practice for cancer screening care, according to the NIC taxonomy.

IMPLICATIONS: This study is the first step in developing indicators to assess nursing performance in cancer screening, and it helps to establish the core competency requirements for cancer screening nurses.

Conflict of interest:
The authors report no actual or potential conflicts of interest.

Author's contributions:
Llucia Benito, Teresa Lluch, and Montse Puig designed the study to which all the authors made contributions. Anna Falcó checked all of the information referring to the NIC taxonomy. Llucia Benito, Teresa Lluch, and Montse Puig defined the analysis strategy and performed the statistical analysis. All of the authors contributed to the interpretation of the results. Llucia Benito and Montse Garcia wrote the first draft of the article to which all the authors made contributions. All authors had full access to all of the data (including statistical reports and tables) in the study and can take responsibility for the integrity of the data and the accuracy of the data analysis. All the authors decided to submit the article for publication and Llucia Benito acts as the submission's guarantor.

Screening programs are designed to administer systematic tests or explorations to identify a disease in its early stages or precursor lesions in an asymptomatic population (Wilson & Jungner, 1968). These programs aim to improve patient prognosis by providing a diagnosis at the earliest possible stage (Brawley & Kramer, 2005).

Screening is advisable within the context of organized programs that can guarantee quality, accessibility, equal access, and information about the benefits and adverse effects. A well-organized program includes a multidisciplinary team of professionals, a defined screening structure, a rigorous system of evaluating the screening process and its results, and feedback from the participants and professionals involved (Lynge, Törnberg, von Karsa, Segnan, & van Delden, 2012).

Population-based screening programs were launched following pilot programs designed to evaluate the feasibility of expanding the programs. The pilot projects led to the conclusion that population-based programs are feasible if they are progressively constructed to guarantee maximum quality (Von Karsa et al., 2008).

Nurses play a pivotal role in cancer prevention and early detection (Jennings-Dozier & Mahon, 2002; Lester, 2007). However, few studies have defined the nurse's role in cancer screening; those that do were published more than 20 years ago, and they focused on opportunistic screening (Coxhead, 1993; Frank-Stromborg, 1986; Malik, 1993; Miller, Baines, & Turnbull, 1991). Overall, the role of nurses in cancer screening programs has been described in general terms that do not include constituent activities, and previously published article do not include activities to help nurses develop in this role.

Standardized nursing language is a useful tool for describing nurses' roles. This language continues to evolve as a method for systematically documenting nurses' distinct contribution to health care. The availability and use of standardized vocabulary allow the aggregation of data pertaining to common nursing diagnoses, nursing interventions, and health outcomes as a basis for quality improvement, for evaluating the achievement of national and other standards, and for enabling the research and validation of nursing care. Nursing taxonomies have gained popularity as a means of standardizing the language used to classify diagnostic assessments, interventions, and outcomes through evidence-based nursing practice (Müller-Staub et al., 2008).

Currently, some classification systems include the nursing terms used in all healthcare scenarios and specialties. Some examples include the diagnosis classifications described by the North American Nursing Diagnosis Association International (NANDA-I) (Herdman & Kamitsuru, 2014), the interventions described by the Nursing Interventions Classification (NIC) (Bulechek, Butcher, Dochterman, & Wagner, 2012), and the outcomes described by the Nursing Outcomes Classification (NOC) (Moorhead, Johnson, Mass, & Swanson, 2012).

A review of studies describing the use of nursing classification systems in different countries has shown that the NANDA-I, NIC, and NOC are among the most widely used systems (Azzolin et al., 2013). The recent integration of standardized nursing languages, such as the NANDA-I, NOC, and NIC systems, into nursing documentation makes it possible to capture all contextual elements of the nursing care process and to document the nursing care provided to patients. For cancer screening programs, it is imperative that nurses define their services and provide evidence supporting the effectiveness of the interventions that they offer.

In Spain, a study examined the literature to identify the nursing interventions attributed to cancer screening nurses. The results showed 32 activities that were grouped into five areas: management, health education and promotion, clinical, research and program evaluation and training (Benito et al., 2014). A subsequent Delphi study yielded a total of 25 nursing interventions performed in the context of cancer screening in Spain. However, as mentioned above, it is imperative to use standardized language when sharing information and completing electronic registration. Therefore, a study was designed to correlate the nursing activities identified in the previously cited studies with the standardized nursing language classifications.

Purpose

The purpose of this study was to investigate which NIC labels corresponded to nursing interventions in cancer screening to establish a nursing documentation system.

Methods

Study Design

This descriptive study is part of the following line of research: identifying and evaluating the activities of cancer screening nurses. We refer to a population-based screening for breast and colorectal cancer. The targeted population included men (for colorectal cancer) and women (for colorectal and breast cancer) 50–69 years of age.

An analysis was conducted to identify the interventions found in the NIC taxonomy; an initial list of 25 activities performed by the cancer screenings nurse was used. The sixth edition of the NIC was used in this study (Bulechek et al., 2012).

Procedure

The structure of the NIC classification system is followed in this paper (Bulechek et al., 2012). For the 25 initial activities, the linguistically equivalent NIC intervention labels were identified. This process generated the document shown in Table 1. For each activity, an NIC intervention label was identified. Thus, as shown in Table 1, for the 25 activities identified in the Delphi search, a total of 16 NIC labels were identified. From this initial proposal, a template was prepared for delivery to an expert panel.

Settings and Participants

The group of experts consisted of specialists in nursing taxonomy. The Fehring criteria were used to identify professionals as experts (Fehring, 1994). The research team selected five experts who fulfilled the Fehring criteria to serve on the expert group. Letters were sent to the professionals to explain the objectives of the study and to request their participation.

The group consisted of five nurses (mean age, 56.8 years). Three of the group members had PhDs, and two had master's degrees. All group members had teaching and research experience in NIC taxonomy. The Fehring criteria required that all members of the group obtain a score higher than 5 to be considered experts. The mean score was 6.8 (minimum 5, maximum 8) (Fehring, 1994).

The experts had to describe whether they agreed with the initial proposal or not. They also had to evaluate each intervention according to the criterion "Do you think this is the best option?" The response was dichotomous (yes/no), and if they answered no, they were asked to propose a more appropriate option. The "yes" answers were scored "1," and the "no" answers were scored "0."

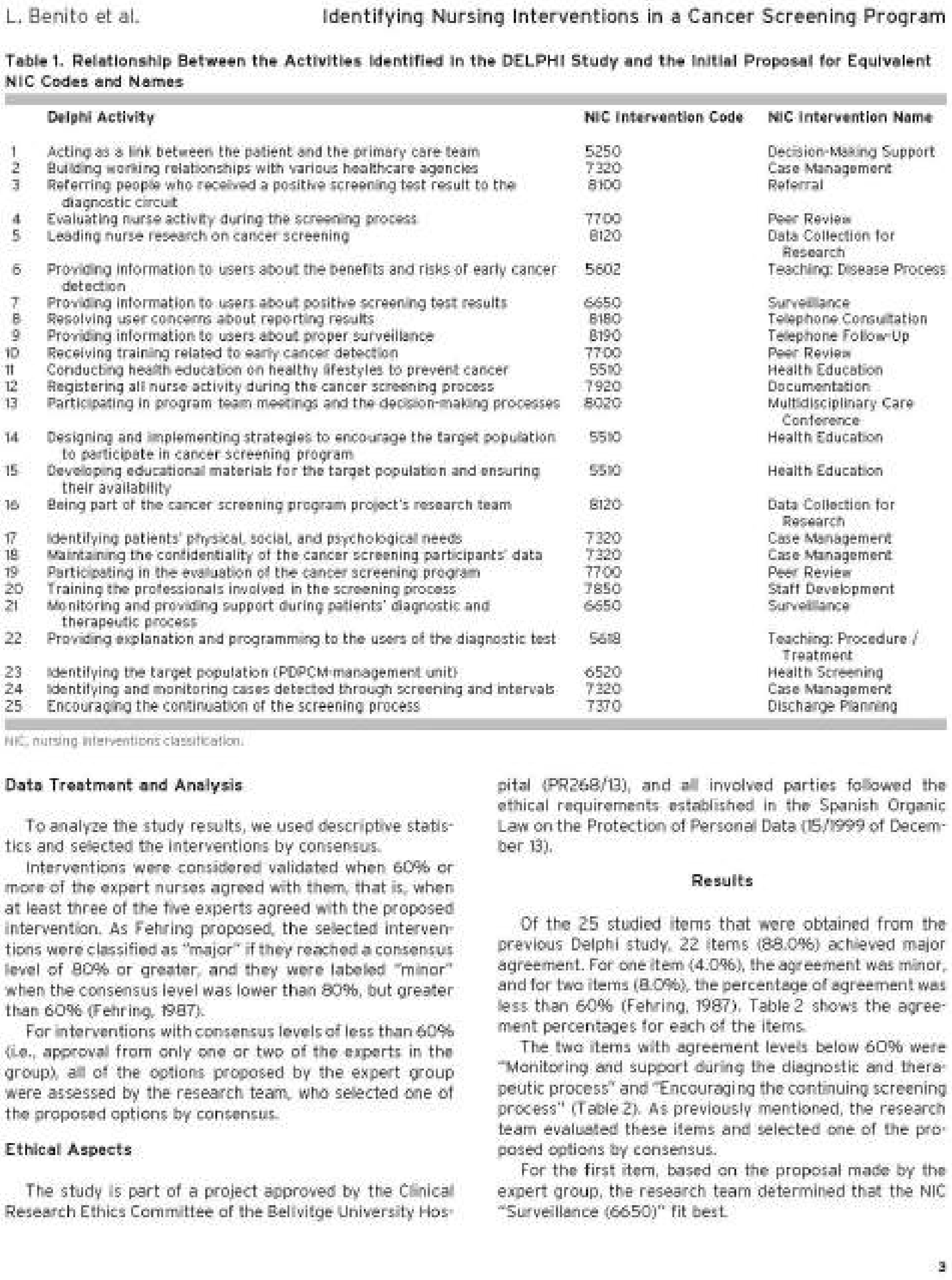

Table 1. Relationship Between the Activities Identified in the DELPHI Study and the Initial Proposal for Equivalent NIC Codes and Names

	Delphi Activity	NIC Intervention Code	NIC Intervention Name
1	Acting as a link between the patient and the primary care team	5250	Decision-Making Support
2	Building working relationships with various healthcare agencies	7320	Case Management
3	Referring people who received a positive screening test result to the diagnostic circuit	8100	Referral
4	Evaluating nurse activity during the screening process	7700	Peer Review
5	Leading nurse research on cancer screening	8120	Data Collection for Research
6	Providing information to users about the benefits and risks of early cancer detection	5602	Teaching: Disease Process
7	Providing information to users about positive screening test results	6650	Surveillance
8	Resolving user concerns about reporting results	8180	Telephone Consultation
9	Providing information to users about proper surveillance	8190	Telephone Follow-Up
10	Receiving training related to early cancer detection	7700	Peer Review
11	Conducting health education on healthy lifestyles to prevent cancer	5510	Health Education
12	Registering all nurse activity during the cancer screening process	7920	Documentation
13	Participating in program team meetings and the decision-making processes	8020	Multidisciplinary Care Conference
14	Designing and implementing strategies to encourage the target population to participate in cancer screening program	5510	Health Education
15	Developing educational materials for the target population and ensuring their availability	5510	Health Education
16	Being part of the cancer screening program project's research team	8120	Data Collection for Research
17	Identifying patients' physical, social, and psychological needs	7320	Case Management
18	Maintaining the confidentiality of the cancer screening participants' data	7320	Case Management
19	Participating in the evaluation of the cancer screening program	7700	Peer Review
20	Training the professionals involved in the screening process	7850	Staff Development
21	Monitoring and providing support during patients' diagnostic and therapeutic process	6650	Surveillance
22	Providing explanation and programming to the users of the diagnostic test	5618	Teaching: Procedure / Treatment
23	Identifying the target population (PDPCM-management unit)	6520	Health Screening
24	Identifying and monitoring cases detected through screening and intervals	7320	Case Management
25	Encouraging the continuation of the screening process	7370	Discharge Planning

NIC, nursing interventions classification.

Data Treatment and Analysis

To analyze the study results, we used descriptive statistics and selected the interventions by consensus.

Interventions were considered validated when 60% or more of the expert nurses agreed with them, that is, when at least three of the five experts agreed with the proposed intervention. As Fehring proposed, the selected interventions were classified as "major" if they reached a consensus level of 80% or greater, and they were labeled "minor" when the consensus level was lower than 80%, but greater than 60% (Fehring, 1987).

For interventions with consensus levels of less than 60% (i.e., approval from only one or two of the experts in the group), all of the options proposed by the expert group were assessed by the research team, who selected one of the proposed options by consensus.

Ethical Aspects

The study is part of a project approved by the Clinical Research Ethics Committee of the Bellvitge University Hospital (PR268/13), and all involved parties followed the ethical requirements established in the Spanish Organic Law on the Protection of Personal Data (15/1999 of December 13).

Results

Of the 25 studied items that were obtained from the previous Delphi study, 22 items (88.0%) achieved major agreement. For one item (4.0%), the agreement was minor, and for two items (8.0%), the percentage of agreement was less than 60% (Fehring, 1987). Table 2 shows the agreement percentages for each of the items.

The two items with agreement levels below 60% were "Monitoring and support during the diagnostic and therapeutic process" and "Encouraging the continuing screening process" (Table 2). As previously mentioned, the research team evaluated these items and selected one of the proposed options by consensus.

For the first item, based on the proposal made by the expert group, the research team determined that the NIC "Surveillance (6650)" fit best.

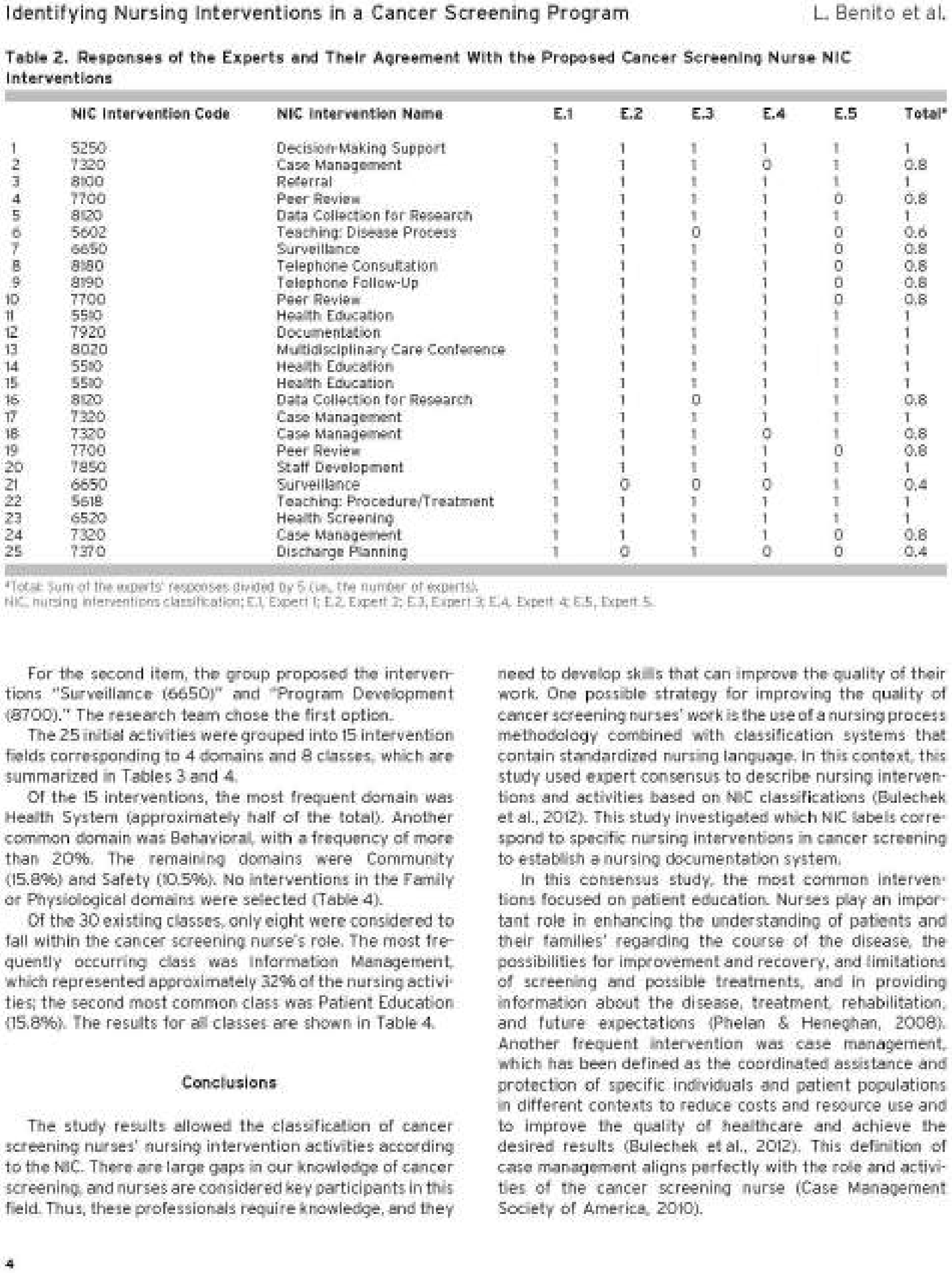

Table 2. Responses of the Experts and Their Agreement With the Proposed Cancer Screening Nurse NIC Interventions

	NIC Intervention Code	NIC Intervention Name	E.1	E.2	E.3	E.4	E.5	Total[a]
1	5250	Decision-Making Support	1	1	1	1	1	1
2	7320	Case Management	1	1	1	0	1	0.8
3	8100	Referral	1	1	1	1	1	1
4	7700	Peer Review	1	1	1	1	0	0.8
5	8120	Data Collection for Research	1	1	1	1	1	1
6	5602	Teaching: Disease Process	1	1	0	1	0	0.6
7	6650	Surveillance	1	1	1	1	0	0.8
8	8180	Telephone Consultation	1	1	1	1	0	0.8
9	8190	Telephone Follow-Up	1	1	1	1	0	0.8
10	7700	Peer Review	1	1	1	1	0	0.8
11	5510	Health Education	1	1	1	1	1	1
12	7920	Documentation	1	1	1	1	1	1
13	8020	Multidisciplinary Care Conference	1	1	1	1	1	1
14	5510	Health Education	1	1	1	1	1	1
15	5510	Health Education	1	1	1	1	1	1
16	8120	Data Collection for Research	1	1	0	1	1	0.8
17	7320	Case Management	1	1	1	1	1	1
18	7320	Case Management	1	1	1	0	1	0.8
19	7700	Peer Review	1	1	1	1	0	0.8
20	7850	Staff Development	1	1	1	1	1	1
21	6650	Surveillance	1	0	0	0	1	0.4
22	5618	Teaching: Procedure/Treatment	1	1	1	1	1	1
23	6520	Health Screening	1	1	1	1	1	1
24	7320	Case Management	1	1	1	1	0	0.8
25	7370	Discharge Planning	1	0	1	0	0	0.4

[a] Total: Sum of the experts' responses divided by 5 (i.e., the number of experts).

NIC, nursing interventions classification; E.1, Expert 1; E.2, Expert 2; E.3, Expert 3; E.4, Expert 4; E.5, Expert 5.

For the second item, the group proposed the interventions "Surveillance (6650)" and "Program Development (8700)." The research team chose the first option.

The 25 initial activities were grouped into 15 intervention fields corresponding to 4 domains and 8 classes, which are summarized in Tables 3 and 4.

Of the 15 interventions, the most frequent domain was Health System (approximately half of the total). Another common domain was Behavioral, with a frequency of more than 20%. The remaining domains were Community (15.8%) and Safety (10.5%). No interventions in the Family or Physiological domains were selected (Table 4).

Of the 30 existing classes, only eight were considered to fall within the cancer screening nurse's role. The most frequently occurring class was Information Management, which represented approximately 32% of the nursing activities; the second most common class was Patient Education (15.8%). The results for all classes are shown in Table 4.

Conclusions

The study results allowed the classification of cancer screening nurses' nursing intervention activities according to the NIC. There are large gaps in our knowledge of cancer screening, and nurses are considered key participants in this field. Thus, these professionals require knowledge, and they need to develop skills that can improve the quality of their work. One possible strategy for improving the quality of cancer screening nurses' work is the use of a nursing process methodology combined with classification systems that contain standardized nursing language. In this context, this study used expert consensus to describe nursing interventions and activities based on NIC classifications (Bulechek et al., 2012). This study investigated which NIC labels correspond to specific nursing interventions in cancer screening to establish a nursing documentation system.

In this consensus study, the most common interventions focused on patient education. Nurses play an important role in enhancing the understanding of patients and their families' regarding the course of the disease, the possibilities for improvement and recovery, and limitations of screening and possible treatments, and in providing information about the disease, treatment, rehabilitation, and future expectations (Phelan & Heneghan, 2008). Another frequent intervention was case management, which has been defined as the coordinated assistance and protection of specific individuals and patient populations in different contexts to reduce costs and resource use and to improve the quality of healthcare and achieve the desired results (Bulechek et al., 2012). This definition of case management aligns perfectly with the role and activities of the cancer screening nurse (Case Management Society of America, 2010).

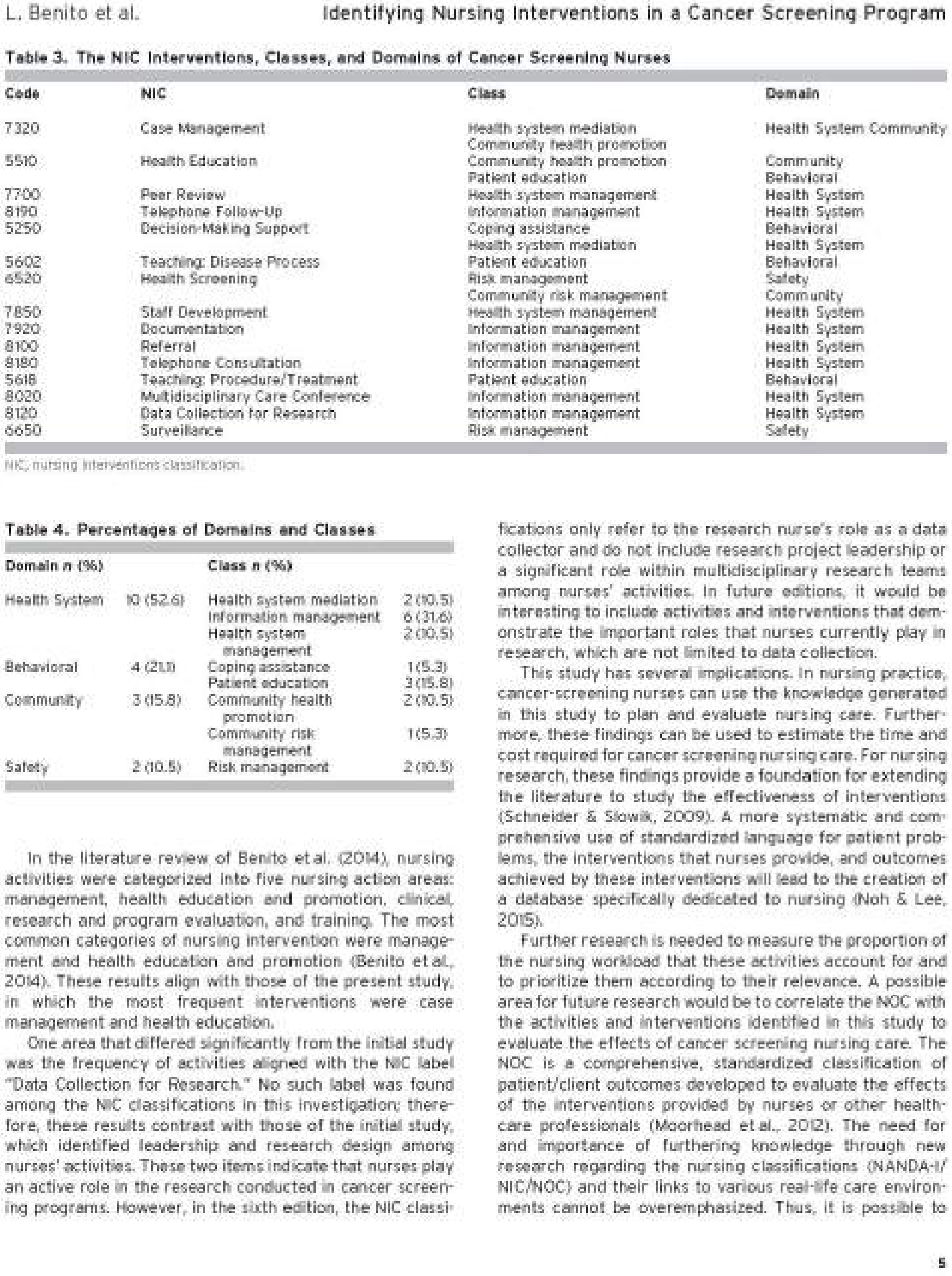

Table 3. The NIC Interventions, Classes, and Domains of Cancer Screening Nurses

Code	NIC	Class	Domain
7320	Case Management	Health system mediation Community health promotion	Health System Community
5510	Health Education	Community health promotion Patient education	Community Behavioral
7700	Peer Review	Health system management	Health System
8190	Telephone Follow-Up	Information management	Health System
5250	Decision-Making Support	Coping assistance Health system mediation	Behavioral Health System
5602	Teaching: Disease Process	Patient education	Behavioral
6520	Health Screening	Risk management Community risk management	Safety Community
7850	Staff Development	Health system management	Health System
7920	Documentation	Information management	Health System
8100	Referral	Information management	Health System
8180	Telephone Consultation	Information management	Health System
5618	Teaching: Procedure/Treatment	Patient education	Behavioral
8020	Multidisciplinary Care Conference	Information management	Health System
8120	Data Collection for Research	Information management	Health System
6650	Surveillance	Risk management	Safety

NIC, nursing interventions classification.

Table 4. Percentages of Domains and Classes

Domain *n* (%)		Class *n* (%)	
Health System	10 (52.6)	Health system mediation	2 (10.5)
		Information management	6 (31.6)
		Health system management	2 (10.5)
Behavioral	4 (21.1)	Coping assistance	1 (5.3)
		Patient education	3 (15.8)
Community	3 (15.8)	Community health promotion	2 (10.5)
		Community risk management	1 (5.3)
Safety	2 (10.5)	Risk management	2 (10.5)

In the literature review of Benito et al. (2014), nursing activities were categorized into five nursing action areas: management, health education and promotion, clinical, research and program evaluation, and training. The most common categories of nursing intervention were management and health education and promotion (Benito et al., 2014). These results align with those of the present study, in which the most frequent interventions were case management and health education.

One area that differed significantly from the initial study was the frequency of activities aligned with the NIC label "Data Collection for Research." No such label was found among the NIC classifications in this investigation; therefore, these results contrast with those of the initial study, which identified leadership and research design among nurses' activities. These two items indicate that nurses play an active role in the research conducted in cancer screening programs. However, in the sixth edition, the NIC classifications only refer to the research nurse's role as a data collector and do not include research project leadership or a significant role within multidisciplinary research teams among nurses' activities. In future editions, it would be interesting to include activities and interventions that demonstrate the important roles that nurses currently play in research, which are not limited to data collection.

This study has several implications. In nursing practice, cancer-screening nurses can use the knowledge generated in this study to plan and evaluate nursing care. Furthermore, these findings can be used to estimate the time and cost required for cancer screening nursing care. For nursing research, these findings provide a foundation for extending the literature to study the effectiveness of interventions (Schneider & Slowik, 2009). A more systematic and comprehensive use of standardized language for patient problems, the interventions that nurses provide, and outcomes achieved by these interventions will lead to the creation of a database specifically dedicated to nursing (Noh & Lee, 2015).

Further research is needed to measure the proportion of the nursing workload that these activities account for and to prioritize them according to their relevance. A possible area for future research would be to correlate the NOC with the activities and interventions identified in this study to evaluate the effects of cancer screening nursing care. The NOC is a comprehensive, standardized classification of patient/client outcomes developed to evaluate the effects of the interventions provided by nurses or other healthcare professionals (Moorhead et al., 2012). The need for and importance of furthering knowledge through new research regarding the nursing classifications (NANDA-I/NIC/NOC) and their links to various real-life care environments cannot be overemphasized. Thus, it is possible to

expand our understanding of these classification systems and to assess their use in patient care. Therefore, the identification of the elements of nursing diagnoses, outcomes, and interventions using standardized languages is important for advancing the nursing profession and improving the education of nursing students.

This study has some limitations. In terms of content validity, one limitation is the definition of "expert" that we used. Fehring suggested using seven criteria to determine the quality of experts. According to Fehring, a minimum score of 5 is required for a participant to be considered an expert, and in this study, all members of the expert group fulfilled this condition (Fehring, 1994).

The examination of cancer screening nurses' interventions in this study limits the generalization of the results because the study focused on intervention nurses who participated in organized, population-based programs. This study did not consider any opportunistic or unorganized screening programs.

The present study used consensus to define cancer screening nurses' role, which consisted of 15 interventions implemented in clinical practice to provide cancer screening care, according to the NIC taxonomy. We believe that the application of the NIC taxonomy in clinical practice will allow the effectiveness of nursing interventions to be assessed with greater scientific rigor.

Implications for Nursing Knowledge

- This study provides comprehensive knowledge about the care that cancer screening nurses provide to patients. Patient interventions that are unique to cancer screening nursing care have been identified and documented using standardized nursing languages from data warehouses. This information is useful when allocating nursing staff and resources and the development of education programs for nurses and students, all of which help nurses to provide better patient care.
- This study also describes the nursing interventions involved in cancer screening programs. Defining these interventions is the first step in developing indicators to assess nursing performance in cancer screening.
- The information also helps establish the core competency requirements for cancer screening nurses. Moreover, it provides important evidence for determining the cost of nursing interventions delivered to people undergoing cancer screening.

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4.4. Artículo 4

Benito, L., Espinosa, J., Binefa, G., Vidal, C., Lluch, M.T. Puig, M., Fernández, M., Padrol, I., García, M. Coordination and continuity of care for cancer screening: performance measurement and reporting.

TITLE: Coordination and continuity of care for cancer screening: performance measurement and reporting

INTRODUCTION:

Population cancer screening programs aim to detect the disease early to reduce morbidity and mortality from cancer and/or increase the quality of life of individuals affected by this condition[1]. Population screening is a process that is organized and integrated into the health system, in which all process activities are planned, coordinated, monitored, and evaluated within a framework of continuous quality improvement, while ensuring the principles of efficiency and equity[2]. In these screening programs, it is important to perform adequate quality control in order to analyze the expected balance between the beneficial and adverse side effects for the population included in the screening process. This quality control system demands a thorough evaluation of the entire process and its outcomes as well as obtaining feedback from the assessment by the participants and professionals involved[3,4]. The evaluation of a screening program should be an activity inherent to the screening process. It should never be construed as a control system but as a system that allows the analysis and gathering of information about what we do and how we do it and, if necessary, identifies the areas to improve, change, or properly use.

Indicators are one of the basic elements of the assessment, allowing us to evaluate the means (structure), actions (processes), and outcomes. The use of indicators is a breakthrough in management because it allows discovering relevant aspects of care, making comparisons, proposing objectives, and promoting a culture of evaluation and improvement of care[5].

In this context, the first European guidelines were developed in the early 1990s for the quality of screening programs for breast cancer and in 2010 for colorectal cancer. The aim of these guidelines was to establish evidence-based recommendations for the quality assurance best practices to be followed by population cancer screening programs. To achieve this objective, a series of indicators were identified for evaluating how these screenings are performed. Population programs for the early detection of colorectal and breast cancer, implemented in Spain, follow European guidelines[6,7]. The Ministry of Health of Spain, together with the autonomous communities and several scientific societies, has defined a basic common portfolio of public services for screenings, including population screening programs for breast, colorectal, and cervical cancers. While breast cancer screening is performed in approximately 100% of the territory, colorectal cancer screening is still under implementation and is expanding in most autonomous communities[8].

European guidelines on cancer screening quality recommend that screening teams should be multidisciplinary and include nurses[6,7]. A study conducted with professionals involved in cancer screening in Spain reported that 83% of the cancer screening units include a nurse[9].

The same study also found that nursing activities mainly dealt with promoting coordination and continuity of care during cancer screening[9]. Participants of cancer screening programs are cared for by various professionals and different levels of care, which can make coordination difficult. Thus, the concepts of coordination and continuity of care become greatly important.

Healthcare coordination involves all services related to health care, regardless of where they are received, so that these services are synchronized and a common goal is reached without creating conflicts[10,11].

Continuity of care, in turn, is the result of coordination from the viewpoint of the patient; it is defined as the degree of coherence and unity of experiences in the care received by the patient over time[12,13].

Objective: European guidelines for the quality of screening programs for breast and colorectal cancer, as well as more-local reference documents, describe process, structure, and outcome indicators. However, none of them specifically evaluate coordination and continuity of care during the cancer screening process. Therefore, it is important to add indicators that would differentiate whether care has been provided in a coordinated and continuing manner. In this study, we identify and adapt care quality indicators related to the coordination and continuity of the cancer screening process to assess nursing care in cancer screening programs.

METHODOLOGY:

The indicators proposed in this study were selected in two phases. The first phase consisted of a literature review, and the second comprised an expert consensus process.

Phase 1. Literature Review: A search was conducted in PubMed using the keywords "*continuity", "coordination", "indicators", "screening", "nurs*", "patient navigat*"* and *"evaluation"*, to discover all related documents published until June 2016. Four search strategies were carried out as shown in Figure 1.

Using these different search strategies, 214 articles were retrieved, as shown in figure 1. Different webpages were also consulted to discover guidelines and working papers to ensure that the right material on the subject was selected. Through this search, 11 more documents were selected. The resulting 225 documents were included if they met all inclusion criteria: (1) studies that measured continuity or coordination (2) studies that measured one or more outcomes of continuity or coordination (3) studies of any design (4) studies in English or Spanish.

In the first stage of the review, a detailed double blinded assessment of titles and abstracts was performed by two independent reviewers to determine whether each item met the pre-determined requirements for inclusion. After this phase 79 documents were selected (figure 1).

Later, the full text of the references potentially eligible to assess were evaluated whether they met the inclusion criteria for review, and 14 were selected. These 14 documents were delivered to the group of experts for evaluation[14-27].

Group of experts: The group comprised nine professionals, who prepared the list. Five were experts in cancer screening; two, in quality indicators; and two, in nursing care. All had more than five years of experience in their field.

Phase 2. Internal Consensus: The objective of this phase was to review the indicators obtained from the literature review, propose a final list of agreed-upon indicators, and subsequently adapt them to the cancer-screening program. It was determined that the indicators should be relevant, concrete, objective, valid, sensitive, specific, and efficient to achieve a consensus on the indicators[28]. The group extracted 118 indicators from these 14 documents. At the first meeting, the 118 indicators obtained from the literature review were reviewed, and 54 were removed because they did not measure continuity or coordination. At a second meeting the expert group excluded duplicates and those which were not feasible and not relevant. Finally, 7 indicators were excluded because were not adaptable to cancer screening program.

Dimensions analyzed:

After the key indicators were selected, they were classified according to the dimension of coordination or continuity of care to which they belonged. Based on the definition of Starfield and Terraza, coordination consists of clinical management coordination and informational coordination. Clinical management coordination refers to coordination between the professionals and services involved in the care of cancer screening participants. Informational coordination refers to the transfer and use of participant clinical information, which is necessary to coordinate activities between providers[10,11].

The classification proposed by Reid was used for continuity of care. Continuity of care includes the following types: informational continuity, management continuity, and relational continuity. Informational continuity is the perception of the information held by different levels of care and its transfer. Clinical management continuity is the perception by the participant that the care received is coordinated, complementary, and not duplicated. Relational continuity is the perception by the participant of the relationship established with the professionals involved in the screening process[12,28].

Indicator characteristics: After the indicators were identified and classified, each was described, stating whether it was a structure, process, or outcome indicator[29]. For each indicator, the following items were specified[29]:

- Formula: mathematical expression used to quantify the indicator;
- Explanation of terms: clarification of any term that may be ambiguous or open to different interpretations in the formula;
- Population: description of the specific group measured by the indicator;
- Source of information: source or location of the information or data necessary to quantify the indicator; and
- Guiding standard: desirable level of indicator performance. This item was defined as the guiding standard because these indicators have never been

measured in this area; therefore, indicator standards used in other areas were applied.

Ethical considerations: The study protocol was approved by the Clinical Research and Ethics Committee of Bellvitge University Hospital (PR124/14), and all parties involved followed the ethical requirements of the Spanish Organic Law on Protection of Personal Data (15/1999 December 13).

RESULTS

This study identified indicators to measure coordination and continuity of care in cancer screening because previous studies had reported that nursing activities were mainly involved in the promotion of these two aspects. Table 1 lists each of the activities previously defined by our team[9], including the area to which they belong (Table 1). This table shows that almost 67% (16/24) of nursing activities in cancer screening include promoting coordination and continuity of care.

According to the expert consensus process, seven possible indicators were selected and adapted out of the 14 indicators. Table 2 shows the indicators selected, detailing their type and dimension. Regarding the type of indicator, out of the seven so obtained, five are considered process indicators, and the other two outcome indicators.

Regarding the dimension, four indicators relate to coordination of care (two to clinical management coordination and two to informational coordination), and three indicators relate to continuity of care (one to clinical management continuity, one to informational continuity, and one to relational continuity).

The final list of indicators selected is depicted in table 3. This table lists and describes the characteristics of each of these seven indicators.

Figure 2 shows these indicators within the cancer screening process.

DISCUSSION

The results of this study provided a common set of indicators to evaluate the coordination and continuity of care for cancer screening and to consequently assess the contribution of nursing care in cancer screening programs. The identification and adaptation of these quality indicators will help to identify areas for improvement and measure the effect of coordination and continuity of care; in addition, they may also be used as a tool to guide efforts to improve quality. Measurements of the processes and outcomes of care is an essential component of efforts to improve the quality of patient care.

The evidence available and theoretical background suggest that coordination of care is one of the areas of organizational practice that has a direct and significant impact on health outcomes, costs, and patient satisfaction[30]. In particular, coordination of care may avoid duplication of tests, visits, and treatments; inappropriate referrals; medical or prescription errors; inconsistencies in care plans; and misdiagnosis (quality of care)—all with a direct effect on access to services and continuity of care[31,32].

In this regard and to improve the coordination of care, different strategies have been implemented in recent decades to manage the care of patients who require close collaboration between different levels of care, and case management is one of the most widespread of these strategies[33]. Case management is an advanced nursing practice that is aimed at the population presenting (or likely to present) complexity in the process and requiring continuity of care[34]. The nurse, from a cross-sectional perspective, integrates input from other professionals, services, and resources to promote the autonomy of the individual. The nurse works together with the various professionals of the screening process involved in the care of the participant, provides additional value, and integrates the collective contributions[33].

To achieve this coordination among professionals, the transmission of information becomes essential to produce continuity of care[33], which is why the selected indicators are aimed at evaluating the transmission of information during the screening process.

The nurse, as a member of the multidisciplinary team of cancer screening programs, should play a key role in improving the quality of care during cancer screening—providing coordination and continuity of care[34].

This study is one of the first in the field of population cancer screening programs that proposes a conceptual framework for evaluating quality of care and indicators to measure the performance of the entire process. The collection of data to create the indicators involves an administrative burden for population programs and professionals. Therefore, great care has been applied in the selection of the required data, considering the effort involved in calculating each of the indicators.

Notably, the availability of data in the health system, including information on the outcomes of nursing care, would provide valuable and complementary information to current indicators of cancer screening programs. A scorecard with a set of indicators to monitor nursing care would be an essential management tool that would give an overview of all the care provided in cancer screening. This knowledge can help establish efficient health policies and, at the same time, encourage the participation of nurses in the planning of cancer screening programs. Ensuring that patients receive only the most beneficial care (and not more care than necessary) can have positive implications for the quality of care and sustainability of the health system.

This study is to be understood as a first step in the development of care-sensitive indicators in our practice. An internal consensus document has been created for our cancer-screening-program technical office, which serves as the starting point. However, more research and reviews of these outcomes are still required. Therefore, future studies should consider establishing a working group of experts in evaluation methods and another group for the analysis, monitoring, and planning of improvement in different areas to assess the validity and reliability of these indicators so they can be used in other screening programs, whether at the national or international level.

Even so, the indicators of a screening program should not be considered fixed because, as scientific evidence changes and clinical practice guidelines are updated, indicators should adapt to changes via periodic reviews and adjustments.

The scorecard or set of indicators presented in this study has certain limitations that must be considered. The most noteworthy is that the reliability of the outcomes is dependent on the reliability of the data sources[35].

Therefore, it should be recognized that a specific system for gathering and recording information regarding care in screening programs is essential to keep us aware (through defined key indicators) and to show the contribution that nursing professionals offer to participants in terms of health outcomes.

In conclusion, we believe that this study is an important innovation because it identified key indicators from nursing activities in cancer screening aimed at promoting the coordination and continuity of care. The evaluation of the indicators is crucial for quality improvement and should allow establishing a measuring system common to all population cancer-screening programs to allow the comparison of outcomes.

Figure 1: Flowchart of the literature review process and indicator's selection process

Figure 2: Flowchart of the cancer screening program and indicators of the coordination and continuity of care.

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Table 1: Activities and areas of action of the cancer screening nurse

Area	Activity
Promotion of coordination and/or continuity of the cancer screening process	To act as a liaison between the participant and the primary care team To build working relationships with different levels of care To refer the population with a positive screening test to the diagnostic health circuit To participate in team meetings and the decision-making process To train the professionals involved in cancer screening To monitor and provide support to participants during the diagnostic and therapeutic process To identify and monitor interval cases and cases detected through screening To encourage continuity in the screening process To provide participants with information about the benefits and risks of early cancer detection To provide participants with information on the positive results of screening tests To answer questions from participants on the screening results report To provide participants with information on necessary follow-up To provide education about healthy lifestyles to prevent cancer To explain the procedure and administration of the diagnostic test to participants To identify the physical, social, and psychological needs of participants To record all nursing activities during cancer screening
Research and evaluation of cancer screening	To participate in the evaluation of cancer screening programs To evaluate nursing activities during the screening process To lead nursing research on cancer screening To be a member of the research team of the cancer screening program
Training	To receive training related to early cancer detection
Implementation/planning	To identify the target population To design and implement strategies to motivate the target population to participate in cancer screening To develop educational materials for the target population and ensure their availability

Table 2: Quality indicators of the coordination and continuity of care

Dimension	#	Indicator name	Type
COORDINATION OF CARE			
Management coordination	❶	Adequacy of the referral of the screening program participants to other health circuits	Process
	❷	Waiting time for a referral to other health circuits	Process
Informational coordination	❸	Reporting of the participants’ screening results	Process
	❹	Understanding of the screening program by the professionals involved in the process	Process
CONTINUITY OF CARE			
Management continuity	❺	Participants’ satisfaction with the screening process	Outcome
Informational continuity	❻	Delivery of the screening process report to the participant	Outcome
Relational continuity	❼	Participants’ understanding of the information regarding the screening program	Process

Table 3: Description of the indicators

Formula	Explanation of Terms	Population	Source of information	Guiding standard[33]
① **Adequacy of the referral of the target population from the screening program to different health circuits** To ensure the continuity and quality of care, it is important to measure the extent to which participants are being referred, following the criteria established in the clinical practice guidelines or protocols.				
$\frac{\text{Number of participants who meet the criteria for follow-up in the referral units due to moderate or high risk}}{\text{Total number of participants referred}}$	Percentage of participants referred from the cancer screening program to the following units: - Genetic counseling units - Primary Care These participants meet the referral criteria due to moderate or high risk, according to a multidisciplinary clinical protocol based on evidence.	Participants in the cancer screening program	Medical history or records in a structured clinical and administrative database	Eighty percent of the referred participants should meet the follow-up criteria

❷ Waiting time for a referral to other health circuits

Delayed referral to the appropriate health circuit can contribute to worsening the prognosis and increasing the anxiety of the participants.

Referrals that do not meet population risk criteria stated by the screening program are sent to the following units:

- Genetic counseling units
- Primary Care

Number of participants whose interval between risk classification and communication of the referral is ≤ 7 calendar days Total number of participants referred	Risk classification: time when the participant communicates the family and/or personal history to us, which allows us to classify the case into moderate or high population risk. Interval: number of calendar days between the date of contact and communication of the referral to the participant.	Participants in the cancer screening program	Medical history or records in a structured clinical and administrative database.	80% percent of participants should experience a time interval of ≤ 7 days

❸ Reporting of the participants' screening results Complete clinical documentation allows better monitoring of participants by the professionals involved in their care and improved communication among professionals and care services or centers.				
Number of full reports, updated in the established time interval and included in health system records Number of participants who completed the screening process	A complete and updated report contains the following: • Screening test results • Diagnostic test results • Follow-up recommendations • Screening program contact information Completed screening process: all the information necessary has been obtained to close the process, whether from screening test or diagnostic test results. Once this process is complete, the report should be available within four weeks.	Screening program participants	Medical history or records in a structured clinical and administrative database	Eighty percent of closed cases should have a complete and updated report in the health records system

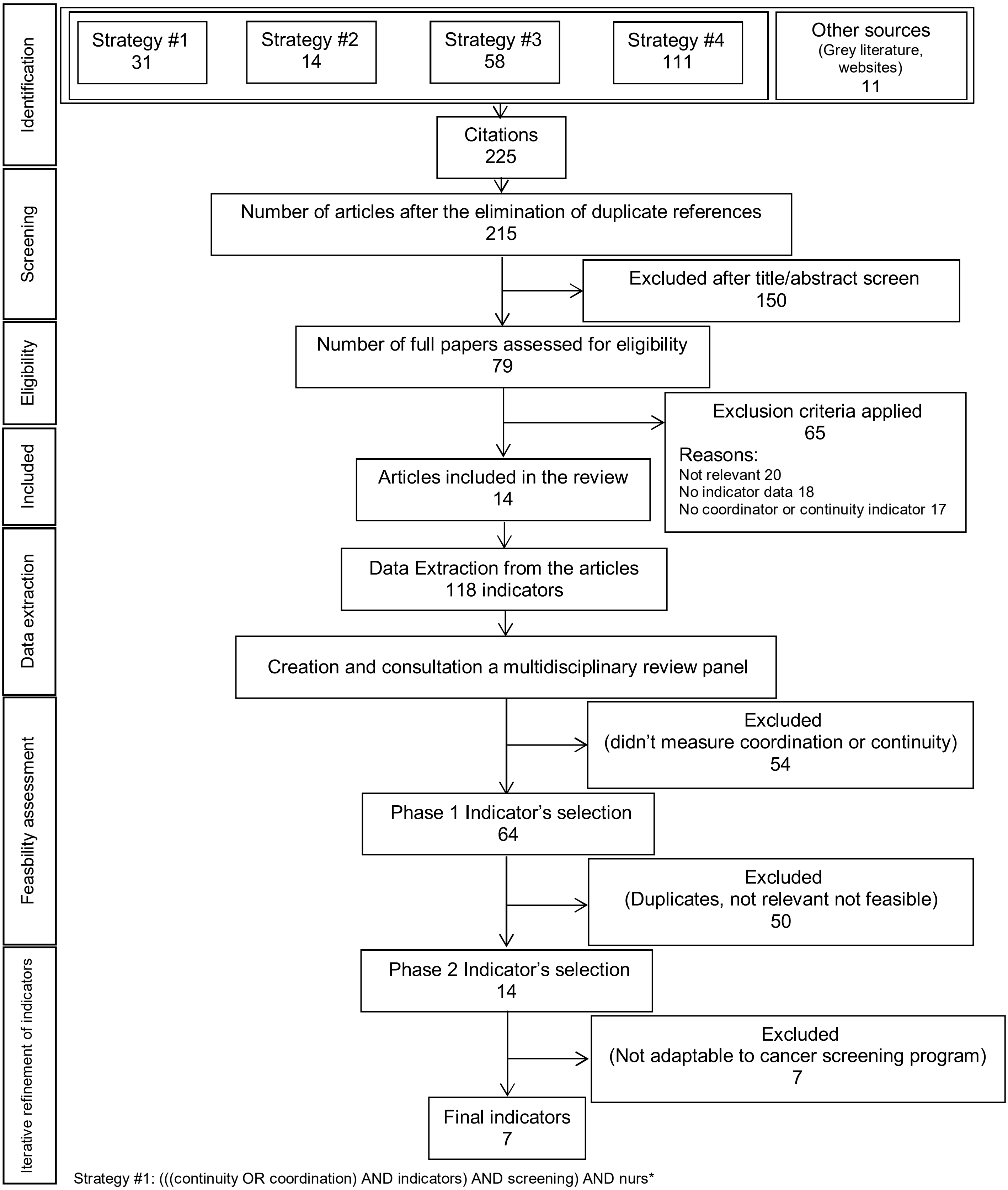
<table>
<tr><td colspan="5">**❹ Understanding of the screening program by the professionals involved in the process**
The understanding of the information by the professionals involved in the screening process is a way to measure quality, ensuring process continuity in these programs. The complexity of the health circuits and activities makes it necessary to analyze whether the professionals understand the care process and the information received.</td></tr>
<tr><td>Number of professionals who score ≥ 7/10 on the questionnaire regarding understanding the information received about the program
Number of professionals surveyed</td><td>The questionnaire on understanding should include the following:
a) criteria for participation in the screening program
b) procedures for the screening and diagnostic test
c) monitoring to be performed after the diagnostic test
d) cancer screening program health circuits</td><td>Professionals involved in the screening process.
Given that the population comprises more than 1000 professionals and assuming a sampling error of 5% and 95% confidence level, a sample of 278 participants is required.</td><td>Ad hoc questionnaire aimed at professionals involved in the screening process, to be administered every five years.</td><td>Percentage of professionals who score less than 7.
Acceptable: 75%
Desirable: 100%</td></tr>
</table>

❺ **Participants' satisfaction with cancer screening** Measuring satisfaction with the care provided in the program, perceived by participants, is the outcome measure most commonly used in the field of health management. This outcome measure complements the usual measures in cancer screening programs.				
Number of participants who score the screening process as ≥ 7/10. Number of participants surveyed in the program	The satisfaction of participants will be measured via a questionnaire with a minimum score of 0 and a maximum score of 10. The questionnaire will contain various items, including the following: a) overall satisfaction with the care provided in the program b) satisfaction with the information received in the program c) perception of coordination among the professionals involved in the screening process d) perception of communication among the professionals involved in the screening process e) perception of the waiting times	Participants in the screening program. Given that the population comprises more than 500,000 people and assuming a sampling error of 5% and 95% confidence level, a sample of 385 participants is required.	Ad hoc questionnaire addressed to program participants, to be administered every five years.	Percentage of participants who score the program as ≥ 7. Acceptable: 75% Desirable: 100%

<table>
<tr><td colspan="5">⑥ Delivery of the screening process report to the participants
The delivery of adequate and timely information to the participants contributes to the transmission of information between levels of care and serves as reinforcement to inform the participants about their screening process. The report ensures continuity of care and is an excellent instrument for health education and for reducing patient anxiety.</td></tr>
<tr><td>Number of participants who answered that they received the screening process report
Number of participants surveyed</td><td>In the questionnaire regarding participant satisfaction, a question will be added to determine whether they received the screening process report. The report may have been delivered by postal mail, by electronic mail, or in person.</td><td>Participants in the screening program. Given that the population comprises more than 500,000 people and assuming a sampling error of 5% and 95% confidence level, a sample of 385 participants is required.</td><td>Ad hoc questionnaire aimed at participants involved in the screening process, to be administered every five years.</td><td>Percentage of participants who answer that they received the screening process report.
Acceptable: 75%
Desirable: 100%</td></tr>
</table>

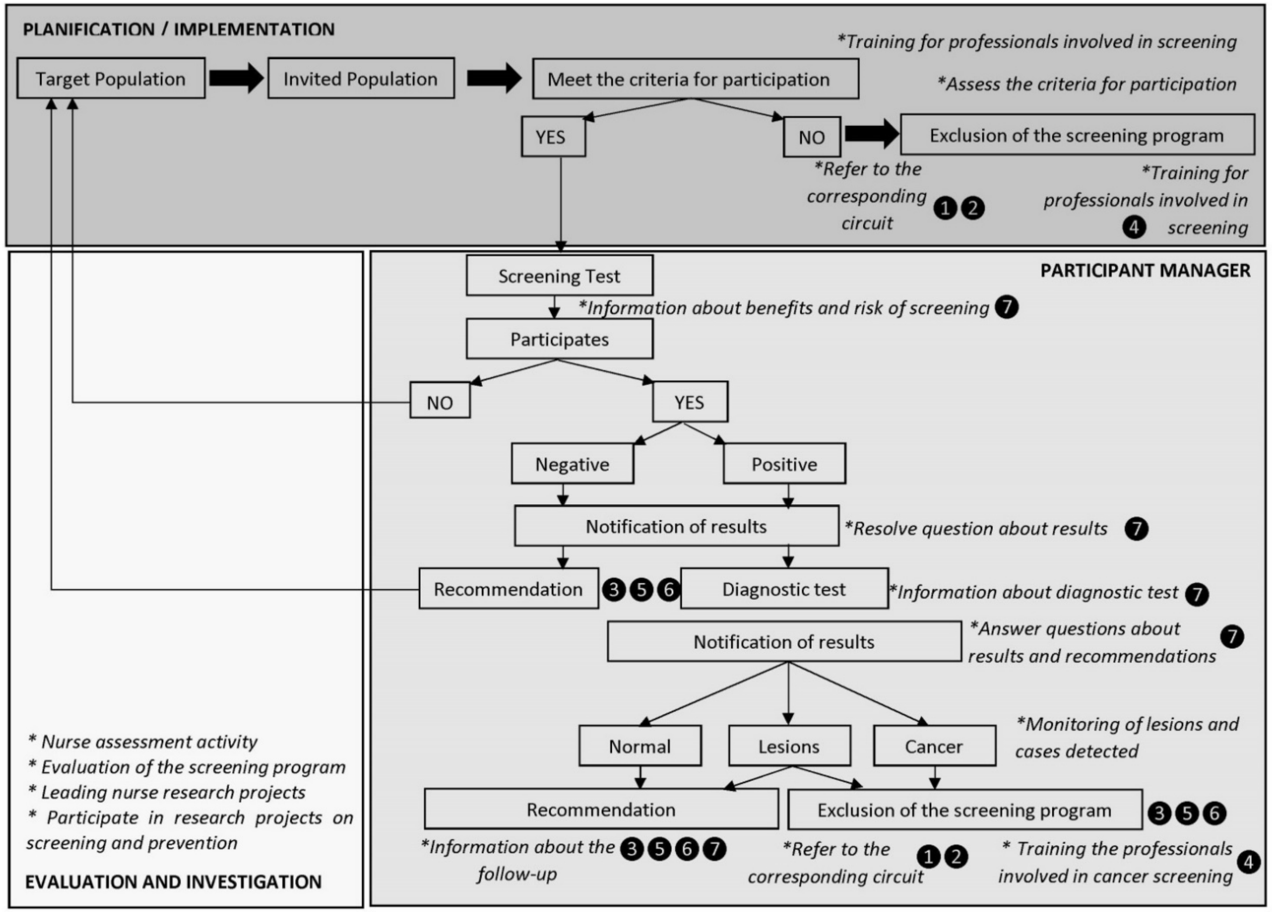
<table>
<tr><td colspan="5">❼ Participants’ understanding of the information regarding the cancer-screening program: Understanding the information received is a way of measuring quality. The complexity of the health circuits and care activities makes it necessary to analyze whether participants understand the care process and the information received.</td></tr>
<tr>
<td>Number of participants who score ≥7/10 on the questionnaire regarding the understanding of the information received in the program
Number of participants surveyed</td>
<td>The questionnaire on understanding should include the following:
a) perceived cancer risk of the participants
b) importance of preventive strategies
c) benefits and risks of early detection
d) diagnostic test procedure</td>
<td>Given that the population comprises more than 500,000 people and assuming a sample error of 5% and 95% confidence level, a sample of 385 participants is required.</td>
<td>Ad hoc questionnaire addressed to program participants, to be administered every five years</td>
<td>Percentage of participants who score ≥ 7.
Acceptable: 75%
Desirable: 100%</td>
</tr>
</table>

Figure 1: Flowchart of the literature review process and indicator's selection process



Strategy #1: (((continuity OR coordination) AND indicators) AND screening) AND nurs*
Strategy #2: (((patient navigat*) AND (evaluation OR indicator)) AND screening) AND nurs*,
Strategy #3: ((patient navigat* AND nurs*) AND (coordination OR continuity))
Strategy #4: (((continuity [Title/Abstract]) OR coordination [Title/Abstract]) AND screening [Title/Abstract]) AND nurs* [Title/Abstract].

Figure 2: Flowchart of the cancer screening program and indicators of the coordination and continuity of care.



* Activities and areas of action of the cancer screening nurse.

Indicators selected: ❶ Adequacy of the referral of the screening program participants to other health circuits ❷ Waiting time for a referral to other health circuits ❸ Reporting of the participants' screening results ❹ Understanding of the screening program by the professionals involved in the process ❺ Participants' satisfaction with the screening process ❻ Delivery of the screening process report to the participant ❼ Participants' understanding of the information regarding the screening program

4.5. Artículo 5

Benito, L., García, M., Binefa, G., Milà, N., Vidal, C., Lluch, M.T., Puig, M. and The primary care-screening working group (2016) Cross sectional survey on awareness of colorectal cancer and its screening program of primary health care professionals in Catalonia, Spain. *European Journal of Cancer Care,* 25(6):992-1004.

European Journal of Cancer Care

Original Article

Cross-sectional survey on awareness of colorectal cancer and a screening programme for primary health care professionals in Catalonia, Spain

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BENITO L., GARCÍA M., BINEFA G., MILA N., VIDAL C., TERESA LLUCH M., PUIG M. & THE PRIMARY CARE-SCREENING GROUP (2016) *European Journal of Cancer Care*
Cross-sectional survey on awareness of colorectal cancer and a screening programme for primary health care professionals in Catalonia, Spain

This study aimed to assess whether primary health care professionals have accurate information regarding colorectal cancer (CRC) screening procedures, surveillance recommendations and referral strategies. This cross-sectional descriptive study was based on a survey conducted among primary health care professionals in Barcelona, Spain. The questionnaire was used to gather information regarding CRC screening procedures as well as demographic and professional characteristics of the study subjects. A CRC and screening awareness score (ranging from 0 to 12) was created based on the survey questions. The response rate was 58.9% (206/305). The estimated mean score (standard deviation) was 8.43 (SD: 1.30). For four questions, more than 60% of the answers were incorrect: one related to risk factors, two concerning follow-up colonoscopy, and one related to surveillance. Only 30.8% of the participants believed that they were responsible for determining the appropriate surveillance intervals and for scheduling colonoscopies. Although the professionals had sufficient knowledge of CRC screening, professional knowledge of some aspects related to the major non-modifiable risk factors for the disease and surveillance colonoscopy procedures could be improved. Frequent communication with professionals is necessary to maintain updated screening-related information. Possible methods for facilitating communication could include continuous briefings, regular message reminders or educational websites.

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European Journal of Cancer Care, 2016

Keywords: colorectal cancer, screening, primary health care, nurse, general practitioner.

INTRODUCTION

Organised colorectal cancer (CRC) screening programmes have been increasingly adopted throughout Europe over the last 15 years (Benson *et al.* 2008). In Spain, CRC screening programmes are implemented and managed on a regional basis. Although the first population-based pilot screening programme for CRC in Spain was implemented in 2000 (Peris *et al.* 2007), it was not until 2009 that Spain's National Health System (NHS) Cancer Strategy recommended the implementation of CRC screening programmes throughout the Spanish territory (Ministry of Health 2009). Currently, 12 of Spain's 17 regions have initiated screening programmes, and eight are able to provide data from at least one screening round (Spanish Network of Cancer Screening Programs 2010).

Because of their frequent contact with the public, general practitioners (GPs) and nurses can play an important role in cancer screening and prevention (McIlfatrick *et al.* 2014). GPs and nurses have been identified as the preferred source of information regarding CRC, and they have the greatest influence on patients' decisions regarding testing; in fact, the motivation levels of primary health care professionals have been associated with increased screening rates (Thomas & Clarke 1998). GPs and nurses can facilitate informed choices by patients who participate in CRC screening, and this role requires health care professionals to have access to relevant, accurate and complete information (Launoy *et al.* 1993). To improve participation, several sets of guidelines have recommended that primary health care professionals be involved in implementing screening programmes (Pye *et al.* 1988; Winawer *et al.* 1997; Jepson *et al.* 2000; Camilloni *et al.* 2013).

Despite their important role, several studies have shown that professionals are not always well informed about CRC screening practices (Woodrow *et al.* 2006; Ramos *et al.* 2010). None of these studies collected information about post-polypectomy surveillance recommendations or referral strategies to assess whether GPs and nurses have adequate information regarding the whole screening process.

Since 2000, two screening test strategies have been used. For the first to third rounds (biennial invitation of the target population to participate in a cancer screening programme), a guaiac FOBT (gFOBT) was used as the screening test (hema-screenTM; Immunostics, Ocean, NJ, USA). A faecal immunochemical test (FIT) was initially introduced to evaluate the feasibility and acceptability of the screening programme, and the FIT remained the only strategy for further screening rounds (from the fifth round onwards).

During the first three screening rounds (2000–2008), surveillance colonoscopies (colonoscopies performed after the first polypectomy) were performed and monitored by the CRC screening programme. By the fourth round (2009), primary health care professionals were responsible for monitoring surveillance colonoscopies. Since 2009, primary health care professionals have been expected to schedule the first surveillance colonoscopy at the interval recommended by the screening programme and to schedule and determine the interval for all subsequent surveillance colonoscopies.

The technical office develops protocols that are delivered to primary health care professionals (GPs and nurses). Furthermore, regular meetings (at least one meeting every 2 years) are conducted to report changes and explain the results of previous rounds. Although all of these actions occur, the multiple protocol modifications can lead to confusion for the professionals who implement the programme. For that reason, we chose to analyse whether primary health care professionals are familiar with the current screening characteristics and procedures. This study thus aimed to assess whether GPs and nurses had accurate information regarding CRC screening procedures, post-polypectomy surveillance recommendations and referral strategies.

METHODS

Screening procedure

A biennial screening programme for CRC using faecal occult blood testing (FOBT) was launched at Hospitalet de Llobregat, Catalonia, in 2000. The target population included men and women aged 50–69 years who lived in the screening area.

All patients with a positive FOBT undergo follow-up colonoscopies (colonoscopies performed after a positive FOBT) for diagnostic confirmation. Risk stratification of adenomas is based on the number, size and histological characteristics of resected and evaluated lesions. Each patient is then classified according to the following results: normal colonoscopy, hyperplastic polyp, low-risk adenoma, intermediate-risk adenoma, high-risk adenoma

Table 1. Risk classification of colorectal lesions and surveillance strategy for each degree of risk

	Characteristics		Screening/surveillance interval	
Risk stratification	2000–2010	2011 European Guidelines	2000–2010	2011 – Present European Guidelines
Normal	No polyps or IBD	No polyps or IBD	FOBT or colonoscopy (according to age) in 10 years	FOBT or colonoscopy (according to age)
Hyperplastic polyps	Hyperplastic polyps irrespective of their location	Hyperplastic polyps at sigma or rectum <10 mm	FOBT or colonoscopy (according to age) in 10 years	FOBT or colonoscopy (according to age)
Low-risk adenoma	1–2 adenomas <10 mm Tubular histology Low-grade dysplasia	1–2 adenomas <10 mm Tubular histology Low-grade dysplasia	Colonoscopy in 5 years	FOBT in the next round (if ≤69 years old) Colonoscopy in 5 years (if >69 years old)
Intermediate-risk adenoma		3–4 adenomas <10 mm 1 adenoma ≥10 and <20 mm Villous or tubulovillous histology High-grade dysplasia pTis Intraepithelial or intramucosal carcinoma Serrated adenoma Hyperplastic polyp located at the rectum or sigma ≥10 mm Hyperplastic polyp located in colon		Colonoscopy in 3 years
High-risk adenoma	Adenoma ≥10 mm villous or tubulovillous histology >2 adenomas	≥5 adenomas 1 adenoma ≥20 mm	Colonoscopy in 3 years	Colonoscopy in 1 year
In situ carcinoma	High-grade dysplasia pTis Intraepithelial or intramucosal carcinoma	See *Intermediate-risk adenoma*	Colonoscopy in 1 year	Colonoscopy in 3 years
Cancer	Invasive adenocarcinoma	Invasive adenocarcinoma	Refer to gastroenterologist	Refer to gastroenterologist
IBD	Ulcerative colitis or Crohn's disease	Ulcerative colitis or Crohn's disease	Refer to gastroenterologist	Refer to gastroenterologist

IBD, Inflammatory bowel disease; FOBT, faecal occult blood testing; recommendations based on a complete colonoscopy (caecal intubation) and adequate colon cleansing. The interval was shortened by half in cases of inadequate colon cleansing (Segnan *et al.* 2010).

or cancer (Binefa *et al.* 2013) (Table 1). Surveillance colonoscopies should have been recommended to patients when pre-neoplastic lesions were removed during the follow-up colonoscopy. To inform these patients, the screening technical office sent a letter with the follow-up colonoscopy results and a recommendation for the first surveillance colonoscopy.

Primary health care professionals are responsible for scheduling the first surveillance colonoscopy and for determining the appropriate interval for second and subsequent surveillance colonoscopies (Fig. 1).

Study design

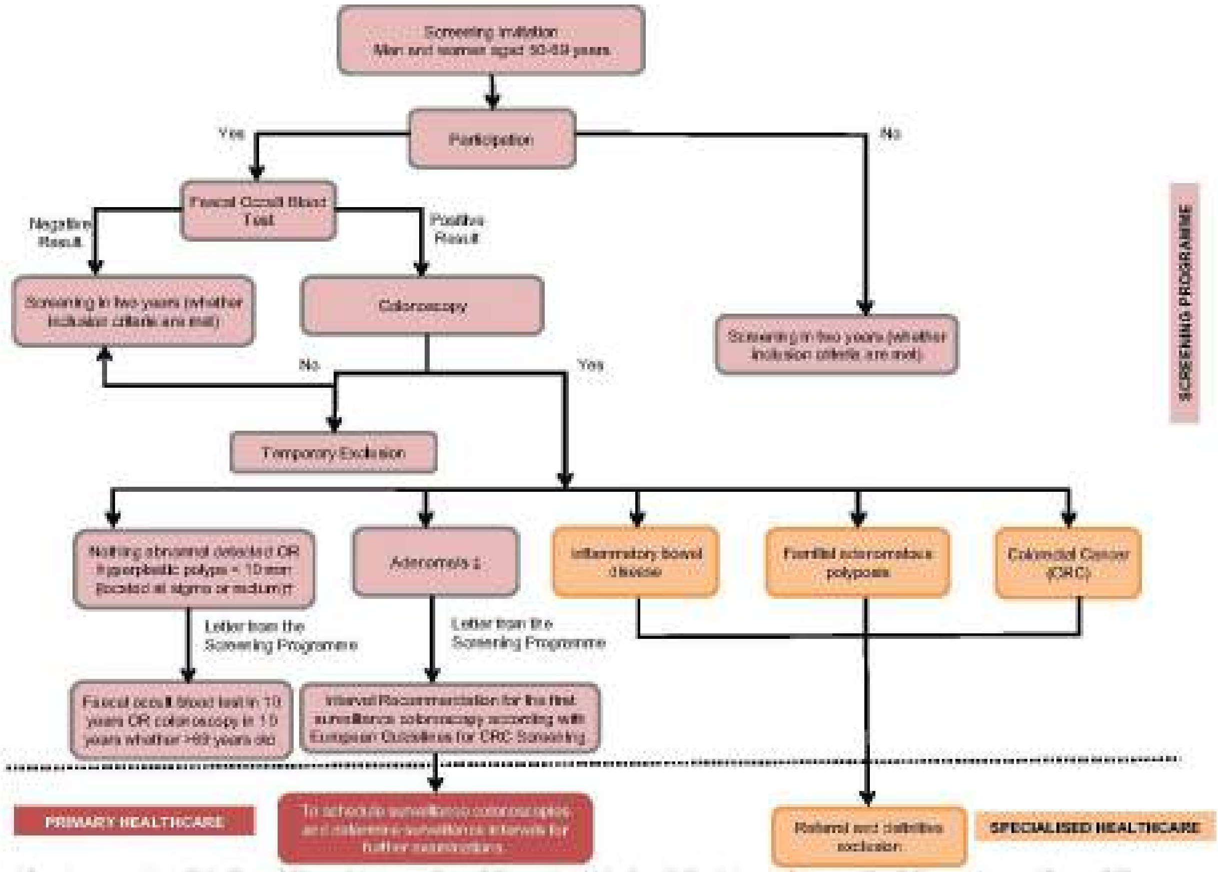
This study was a cross-sectional survey of the primary health care professionals (GPs and nurses) at Hospitalet de Llobregat (Barcelona, Catalonia).

Population

At Hospitalet de Llobregat, all 350 professionals who were engaged in primary health care at the time of the study (178 GPs and 172 nurses) were invited to participate. We included primary health care professionals at all 12 health care centres of Hospitalet de Llobregat.

Variables

The study employs variables related to the professionals' characteristics (sex, health care centre, professional category and years of experience). We also gathered information regarding CRC and its risk factors (cancer, screening procedures, follow-up colonoscopy and surveillance recommendations and procedures) as well as referral strategies to assess whether GPs and nurses had adequate



† Screening recommendation: FOBT in 10 years if <69 years; Colonoscopy in 10 years if ≥69 years. ‡ Low risk: 1 or 2 small (<10 mm) adenomas. Surveillance: FOBT if ≤69 years, colonoscopy in five years if >69 years; Intermediate risk: 3 or 4 small adenomas OR at least 1 adenoma ≥10 mm. Surveillance: three years colonoscopy; High risk: ≥5 adenomas OR 1 adenoma ≥20 mm. Surveillance: colonoscopy after 12 months.

Figure 1. Flow chart of colorectal cancer screening programme.

information regarding the CRC screening programme. This information was obtained using 13 multiple choice questions.

We also gathered information for variables related to the primary health care centre characteristics (the adult population, the eligible population and the number of professionals in the health care centre) and for two contextual variables (the percentage of people with less than primary studies within the health care centre and the rate of participation in CRC screening). A variable describing the involvement of the health care centre with the screening programme was also added. This variable was created based on whether the primary health care centres supported the screening programme to increase uptake (i.e. phone calls to non-participants). A list for each primary health centre containing the people who had not already participated in the screening programme was prepared. Primary health care professionals were asked to contact these individuals to inform about the CRC screening programme. We considered centres to have a high level of involvement if they agreed to contact those individuals and a low level of involvement if they did not.

Questionnaire

An *ad hoc* questionnaire was created, and it consisted of 17 questions: 13 related to CRC and screening awareness and four questions pertaining to the personal and professional characteristics of the study subjects (Appendix 1).

The questionnaire was pre-tested in *ad hoc* interviews with volunteers to assess its comprehension, time length and overall feasibility. We also collected information regarding CRC epidemiology and CRC screening processes, consistent with other questionnaires used to study knowledge of cancer screening among primary health care professionals (Klabunde *et al.* 2003; Federici *et al.* 2005; Bell *et al.* 2006; Birkenfeld & Niv 2006; Hannon *et al.* 2008). Our study also collected information on post-polypectomy surveillance recommendations and referral strategies to assess whether GPs and nurses had adequate information regarding the CRC screening programme.

The questions were classified as follows: correct, incorrect, do not know/no opinion or unanswered. Each correct answer was scored with one point, and incorrect answers were given no points. We created a new variable (score) called *Colorectal Cancer and Screening Awareness* to measure screening knowledge on the basis of the questionnaire responses, and the values for this variable ranged was from 0 (worst) to 12 (best). This score was based on the first 12 questions of the questionnaire, which concerned general CRC knowledge, CRC risk factors, CRC screening characteristics and procedures, and surveillance.

From the 12 questions, three different scores were also created. *Colorectal cancer:* The first score included only questions related to CRC (questions 1 and 2 on the questionnaire). *Screening awareness:* The second score included questions pertaining to general aspects of screening (questions 3–7). *Follow-up screening:* The third score included questions related to the follow-up after a FOBT (questions 8–11) (Appendix 1).

The survey also contained a question related to surveillance colonoscopy (question 12 in Appendix 1). The remaining question, regarding who answered the patient when he or she had any question regarding the monitoring to be performed, was not considered in calculating the different scores (question 13 in Appendix 1).

Data collection

The questionnaires were personally delivered to each professional, with the goal of reaching the maximum number of participants, and they completed the questionnaires individually at their own health care centres. The questionnaires were delivered from 10 February to 20 June 2013. To encourage professionals to participate in the study, two reminder emails were sent, and a meeting was held in each health care centre.

Analysis

An exploratory analysis of the non-response rate was performed. Although missing values were detected in six of the questions, the non-response rates for each question were lower than 20%; therefore, no questions were invalidated. We performed an item-by-item analysis considering the following variables: the health care centre, percentage of people with less than primary studies, rate of CRC screening participation, participation in previous rounds, experience and professional category.

Descriptive analysis was performed. Differences were estimated for the questionnaire responses by comparing proportions and their 95% confidence intervals (CIs). The *t*-test method was used to compare the average knowledge scores. A $P < 0.05$ was considered significant.

Multivariate logistic regression models were used to estimate the odds ratios (ORs) and their 95% CIs for cancer screening knowledge and follow-up. To perform this analysis, the variable *Colorectal Cancer and Screening Awareness* was dichotomised for a categorical variable (poor knowledge: score from 0 to 8; good knowledge: score from 9 to 12).

Ethics

All participants were assured of the confidentiality of the information provided and the use of data exclusively for the study. The study protocol was approved by the Clinical Research Ethics Committee of the Bellvitge University Hospital (PR205/11), and all involved parties followed the ethical requirements established in the Spanish Organic Law on Protection of Personal Data (15/1999 of 13 December).

RESULTS

Sample characteristics

The health care centres were divided into two groups based on the number of GPs and nurses who worked there: one group of six health care centres with 30 or fewer professionals and a second group of six health care centres employing more than 30 professionals. Table 2 shows the characteristics of the 12 health care centres.

The overall response rate for the questionnaire was 58.9% (206/350 health professionals), and the rate ranged from 31.6% to 90% for each health care centre. Ten of twelve health care centres had a response rate higher than 50%. Table 3 shows the distribution of primary health care professionals who agreed to answer the survey and those who refused, according to selected variables. Significant differences between centres with more than 30 professionals and those with 30 or fewer professional were found. The centres with fewer workers were more likely to participate than were the centres with more professionals (71.9% vs. 50.2%). No other statistically significant differences were detected, but women participated more than men (62.5% vs. 47.0%), and professionals from centres with a high level of involvement participated more than professionals from centres with a low level of involvement (67.3% vs. 55.6%) (Table 3).

Of the 206 respondents, 105 were nurses (51.0%), and 101 were GPs (49.0%). Of these respondents, 41.3% came

Table 2. Characteristics of primary health care centres

	Adult population (17 and over), *n* (%)	Eligible population, *n* (%)	Fifth round % of screening participation*	% of people with less than primary studies†	Number of professionals in the centre‡	Involvement with the CRC screening programme§	Study participants¶, *n* (%)
Centre 1	6737 (3.3)	1906 (3.0)	36.9	20.34	≤30	High	9 (90.0)
Centre 2	8884 (4.4)	3272 (5.1)	42.7	20.23	≤30	Low	12 (85.7)
Centre 3	11 955 (5.9)	4815 (7.5)	33	24.64	>30	Low	16 (51.6)
Centre 4	17 822 (8.8)	5018 (7.8)	44.2	14.62	≤30	High	15 (51.7)
Centre 5	11 955 (5.9)	5000 (7.8)	32.7	24.64	≤30	Low	22 (81.5)
Centre 6	22 491 (11.1)	5334 (8.3)	27.2	20.63	>30	Low	24 (66.7)
Centre 7	21 442 (10.6)	5545 (8.7)	30.2	20.35	>30	Low	19 (57.6)
Centre 8	17 822 (8.8)	5777 (9.0)	38.1	14.62	≤30	High	27 (90.0)
Centre 9	24 428 (12.0)	6273 (9.8)	23	24.87	>30	Low	18 (51.4)
Centre 10	16 938 (8.3)	6582 (10.3)	41.4	16.16	≤30	High	15 (51.7)
Centre 11	21 772 (10.7)	6710 (10.5)	21.5	18.73	>30	Low	17 (44.7)
Centre 12	20 954 (10.3)	7781 (12.2)	35.9	13.01	>30	Low	12 (31.6)
Total	203 200	64 013					206

*% of screening participation refers to the percentage of people who participated in CRC screening in the last round.

†% people with less than primary studies refers to the percentage of people with less than primary studies within the health care centre.

‡Number of professionals in the health care centre refers to the number of people (GPs and nurses) working in the health care centre.

§Involvement with the CRC screening programme is based on whether the primary health care centres gave support to the screening programme to increase uptake.

¶GP and nurses who agreed to participate in our study.

Table 3. Characteristics of survey respondents vs. non-respondents

	Respondents		Non-respondents	
	n (%)	95% CI	n (%)	95% CI
Sex				
Female	167 (81.1)	75.7–86.4	100 (69.4)	61.9–77.0
Male	39 (18.9)	13.6–24.3	44 (30.6)	23.0–38.1
Profession type				
Nurses	105 (51.0)	44.1–57.8	67 (46.5)	38.4–54.7
GPs	101 (49.0)	42.2–55.9	77 (53.5)	45.3–61.6
Number of professionals in the health care centre				
≤30	100 (48.5)	41.7–55.4	39 (27.1)	19.8–34.3 *
>30	106 (51.5)	44.6–58.3	105 (72.9)	65.6–80.2
Percentage of people with less than primary studies within the health care centre				
13–19	86 (41.7)	35.0–48.5	78 (54.2)	46.0–62.3
20–21	64 (31.1)	24.7–37.4	29 (20.1)	13.6–26.7
>22	56 (27.2)	21.1–33.3	37 (25.7)	18.6–32.8
Percentage of CRC screening participation within the health care centre				
21–31	78 (37.9)	31.2–44.5	64 (44.5)	36.3–52.6
32–37	59 (28.6)	22.5–34.8	47 (32.6)	25.0–40.3
38–45	69 (33.5)	27.0–39.9	33 (22.9)	16.1–29.8
Involvement with the CRC screening programme				
High	66 (32.0)	25.7–38.4	32 (22.2)	15.4–29.0
Low	140 (68.0)	61.6–74.3	112 (77.8)	70.9–61.6
Overall	206		144	

*Statistically significant.

from health care centres with 30 or fewer professionals and 58.7% from health care centres with more than 30 professionals. In total, 81.1% of the participants were women, and 84.5% had more than 5 years of experience in primary health care.

The highest percentage of missing responses was 10.7% for the question related to the risk of developing CRC when having a hyperplastic polyp compared with the risk of having other colonoscopic outcomes.

Colorectal cancer and screening awareness total

The average score was 8.43 with a standard deviation of 1.30; the range was 5–12. Differences between the study variables and total scores were analysed and were found only between the professional categories ($P < 0.016$) [nurses: 7.90 (1.26) vs. GPs: 8.36 (1.23)]. No associations were found among knowledge, years of work experience, and the contextual variables (the number of professionals per health care centre, the percentage of people with less than primary studies within the health care centre and the CRC screening rate within the health care centre).

Correct and incorrect answers

In addition to the total score, we analysed the percentage of correct and incorrect answers to the 12 questions that determined the total score, as shown in Table 4.

More than 80% of the respondents answered 8 of the 12 questions correctly.

For four questions, more than 60% of the answers were incorrect: one was related to risk factors (question 2), two questions addressed follow-up colonoscopy (question 10 and 11), and another question was related

Table 4. Frequency of correct and incorrect answers to questions related to screening knowledge

	Questions Colorectal Cancer Screening Awareness	Correct	Incorrect	Do not know/did not answer
Colorectal cancer	1. Frequency of CRC among both sexes	178 (86.4)	28 (13.6)	0 (0)
	2. CRC major non-modifiable risk factors	55 (26.7)	147 (71.4)	4 (1.9)
Screening awareness	3. Age range of the target population for CRC screening	168 (81.5)	37 (18)	1 (0.5)
	4. Availability of a CRC screening programme in town	202 (98.1)	4 (1.9)	0 (0)
	5. Screening test used in the CRC screening programme	204 (99)	2 (1)	0 (0)
	6. CRC screening interval	170 (82.5)	36 (17.5)	0 (0)
	7. Diagnostic procedure used in the CRC screening programme	196 (95.1)	7 (3.4)	3 (1.5)
Follow-up screening	8. Follow-up after a negative result on the screening test	195 (94.7)	10 (4.9)	1 (0.5)
	9. Follow-up after a positive result on the screening test	199 (96.6)	7 (3.4)	0 (0)
	10. Follow-up after a negative result on the diagnostic procedure	48 (23.3)	148 (71.8)	10 (4.9)
	11. Risk of progression of a hyperplastic polyp located in the sigmoid colon vs. rectum	59 (28.6)	125 (60.7)	22 (10.7)
Surveillance	12. Adherence to successive surveillance colonoscopies	62 (30.1)	125 (60.7)	19 (9.2)
	Overall	1736 (70.2)	676 (27.3)	60 (2.4)

Values are expressed in *n* (%).

to surveillance (question 12). Some answers to these questions were more likely to be chosen: 67.8% of the respondents answered that the main non-modifiable CRC risk factor was family history, 47.1% answered that the follow-up after a normal result was a new colonoscopy after 5 years and 41.3% erroneously answered that a person with a hyperplastic polyp in the rectum or sigmoid colon had the same CRC risk as a person with a low-risk adenoma.

The percentage of GPs who correctly answered that CRC was the most common cancer in both sexes was higher than the corresponding percentage of nurses [GPs: 96.0% (95% CI: 92 99%) vs. nurses: 77.1% (95% CI: 69 85%)]. No differences were observed for the remaining questions. The results revealed no significant differences in the number of correct answers provided based on primary health care experience, professional experience or centre type.

The percentage of correct answers on the questions related to CRC scores was less than 60%, and the percentage of correct answers related to the screening awareness score was more than 90%. The percentage of correct answers for questions related to follow-up screening was 60.8%, and that for questions related to surveillance was only 30.1% (Fig. 2).

Question related to surveillance colonoscopy

The survey also contained a question asking how the health care centres ensured that patients in whom preneoplastic lesions were detected received successive surveillance colonoscopies (second and subsequent surveillance colonoscopies). Of the respondents, 16.9% believed that patients are notified by the primary health care centre of such a visit; 13.9% believed that the GP is responsible for successive surveillance. Both answers were correct; therefore, 30.8% answered this question correctly. Second, 62.2% answered that patients visit a primary health care centre following the interval recommended in the letter sent by the screening programme, and 7% did not know. We analysed differences within health care centres (the degree of agreement of professionals working in the same health care centre) to measure the level of consensus related to surveillance colonoscopies. The degree of agreement ranged from 44.4% to 82.6%.

In the item-by-item analysis, differences were found according to professional category: 24.0% (95% CI: 15.6 32.4%) of the nurses believed that the GPs are responsible for successive surveillance, whereas only 4% (95% CI: 0.1 7.8%) of the GPs held this belief.

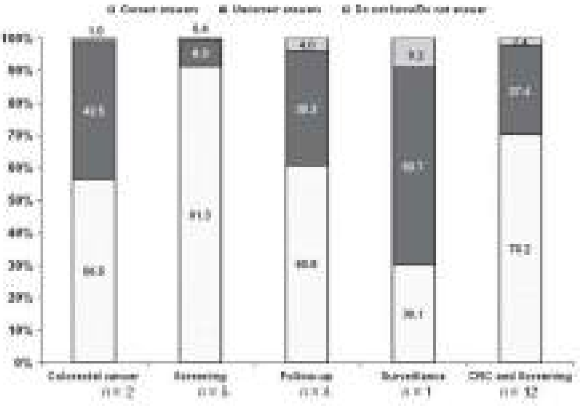


Figure 2. Corrected, uncorrected and do not know/did not answer questionnaire responses.

The questionnaire also sought to determine professional perceptions of whether patients should specifically consult GPs or nurses if they have questions. Of the respondents, 67.3% answered that patients could ask both GPs and nurses.

Table 5 shows the results of the multivariate analysis. Professionals with more than 10 years of experience were twice as likely to earn better CRC and screening awareness scores than professionals with 10 or fewer years of experience (OR: 2.01; 95% CI: 1.09 3.70%).

DISCUSSION

This paper analyses whether GPs and nurses have accurate information regarding CRC screening procedures, post-polypectomy surveillance recommendations and referral strategies. We have explored the knowledge of GPs and nurses in a region in Spain undergoing several modifications to the relevant screening protocol. The findings of this study suggest that although professionals are knowledgeable about CRC screening characteristics, some aspects could be improved. These results are consistent with other studies conducted with primary health care professionals. Birkenfeld & Niv (2006) measured knowledge about the age range for CRC screening, the aspects of approving the procedure for screening the risk population, the definition of the risk population and the signs and symptoms of CRC. The aspects that were less unknown were questions related to the risk population (only 18% of correct answers) and those related to the CRC symptoms and signs (only 37% of correct answers). Ramos *et al.* 2010 investigated the knowledge of CRC and cancer screening, but the percentage of correct answers was very wide, ranging from 48.9% to 96.3%. In our study, information related to follow-up and surveillance colonoscopies and the major non-modifiable CRC risk factors was the least known among the respondents.

Table 5. Factors associated with CRC screening knowledge and early detection

Colorectal cancer and screening awareness	$OR_{adjusted}$ (95% CI)*
Experience in primary health care (years)	
10 or fewer years	1
More than 10 years	2.02 (1.13–3.61)
Professional	
Nurse	1
GP	1.85 (1.03–3.33)
Percentage of people with unfinished studies within the neighbourhood	
13–19	1
20–21	0.60 (0.30–1.23)
>22	1.48 (0.65–3.36)
Sex	
Females	1
Males	1.05 (0.45–2.44)

CI, confidence intervals.
OR adjusted by the variables included in the model.
Dummy variable: score 0–8 (poor knowledge) and score of 9–12 (good knowledge).
*Results derived from four multivariate logistic regression models.

More specifically, only 30.1% of professionals knew that they were responsible for scheduling surveillance colonoscopies. Inappropriate screening harms healthy individuals and squanders precious resources. One form of overuse is associated with repeat screening and surveillance intervals that are more frequent than recommended, in addition to screening in individuals who would not derive benefit because of advanced age or significant comorbidity. Overuse can unnecessarily increase patient harm from overdiagnosis or cause colonoscopy complications as well as gastroenterologist workload and increased health care costs (Garcia 2015).

Almost 70% of professionals are not aware of some part of their roles in CRC screening, specifically their role related to surveillance colonoscopies. These professionals performed their roles in motivating patients to participate in CRC screening, but they are unaware that they are also responsible for determining the appropriate successive surveillance intervals and for scheduling colonoscopies. Crucially, patients' surveillance requires that professionals remain informed and receive regular training. Surveillance is very important for patients who have had a polypectomy because they have a higher risk of developing CRC.

Although 15 years have passed since the screening programme was implemented, numerous organisational changes have occurred. Specific and regular sessions should be provided to keep professionals updated on current procedures involving individuals who require surveillance colonoscopies.

Communication between the cancer screening programme and primary health care providers is critical to clarify these issues. The results of this study have highlighted difficulties in communicating information related to CRC screening procedures. To improve communication, we propose providing small amounts of information reminding all professionals of the recommended follow-up intervals. Another possible proposal would involve improving access to CRC screening guidelines and establishing CRC screening programme protocols. To facilitate such access, we could create, update and advertise an educational website for primary health care professionals. As a last proposal, *ad hoc* record cards for primary health care professionals could be designed, printed and distributed to describe the appropriate level of surveillance for patients according to the colonoscopy results.

Future research should evaluate the possible improvement of these interventions.

Every professional should have confidence in the belief that the preventive interventions offered to patients are appropriate and that the information is up to date. In this context, primary health care professionals can help to improve coverage by disseminating information and encouraging patient participation and adherence. It is important that doctors and nurses share updated information regarding CRC screening because 67.3% of the respondents indicated that patients ask questions of both doctors and nurses.

As some studies have demonstrated, a large number of screening recommendations for each patient and large numbers of patients in a practice are the major reasons that these services are not provided (Yarnall *et al.* 2003). The addition of even small interventions that require little professional time adds significantly to the workload of GPs and nurses administering to large numbers of eligible patients. In all likelihood, any new screening procedure that a patient receives from a GP or nurse will be performed at the expense of another currently provided service (Lynch *et al.* 2004).

Professionals working in health care centres with large populations and lower education levels were expected to receive lower scores. People with lower socioeconomic status tend to have poorer health (Borrell *et al.* 1999); the presence of higher priority and acute problems in the population might be a reason for lower scores. The findings of this study revealed differences related to the population education level and the involvement of professionals in the screening programme. The presence of higher priority problems in health care centres can hinder the involvement of professionals in screening for cancer.

The other subject for which we found a high error percentage is related to non-modifiable risk factors for CRC; 67.8% of primary health care professionals believed that the main non-modifiable risk factor for CRC is a family history of cancer. The literature, however, suggests that only 5 10% of cases are hereditary and that 15 20% are family-related cancers (Lynch *et al.* 2004). These data indicate that between 70% and 80% of cases are sporadic cancers and that family history is typically not directly involved. Primary health care professionals have a clinical perspective on this population because their activities are primarily conducted with individuals, whereas cancer screening programmes are designed with public health in mind. This difference may explain why the respondents identified a family history of cancer as the major non-modifiable risk factor for CRC rather than age.

The response rate was close to 60%, which is similar to that obtained in other surveys involving GPs (Klabunde *et al.* 2003; Federici *et al.* 2005). Our efforts to obtain responses confirmed how difficult it is to ensure participation from most of the GP population. Although we are satisfied with this result and we did not find any significant differences between compliant and non-compliant professionals in terms of demographic characteristics, a relevant proportion of GPs and nurses (41.1%) refused to participate, and these individuals might have had less knowledge of screening.

Our study had several potential limitations. This research is a cross-sectional study that is susceptible to bias. An important source of potential bias is non-response bias, which we explored by comparing the response and non-response groups. As mentioned in the results, the only significant difference identified was related to the number of professionals working in a health care centre. Professionals in health care centres with fewer workers were more likely to participate in the study. The fact that the questionnaire was issued to professionals individually might have made it difficult to refuse participation at health care centres with fewer workers.

An important indicator of data quality in surveys is the number of questions with missing data (Klabunde *et al.* 2003). In cross-sectional studies, non-response to specific questions results in missing data at the question level. The causes of missing responses are often numerous, and they can be related to design and chance. Accounting for incomplete observations is particularly important in observational analyses with many questions. In our study, no question was missing more than 10.7% of the responses, although 61.5% of the responses had at least one missing value.

The three questions with the highest percentages of non-response were questions related to surveillance after a normal follow-up colonoscopy, CRC risk in patients with hyperplastic polyp located in the colon sigmoid or rectum, and the procedure for ensuring that surveillance colonoscopies are performed. None of the individual non-response rates for these questions exceeded 20%. Notably, a lack of responses identifies relevant information that should be reinforced to ensure complete comprehension (Federici *et al.* 2005).

Implications for practice

Feedback between the CRC screening programme and primary health care professionals is essential to ensure the quality of the screening programme and consistent monitoring criteria to monitor higher risk patients. The professionals who are responsible for ongoing communication with primary health care providers could be screening nurses, as this role coincides with their other duties. Cancer screening nurses serve as links between primary health care and CRC screening programmes (Benito *et al.* 2014). Binomial screening nurses and primary health care nurses may be important in improving communication between primary health care providers and professionals conducting screening programmes. According to the NHS report, nurses assume responsibility for internal communication in the group to maintain the flow of information; this role requires the planning and documentation of group meetings (NHS 2008). Preventive health care is an important aspect of the future of health care (Spruce & Sanford 2012). Nurses are in an ideal position to change the health of patients in a global way. The lack of time available for primary health care consults is a limiting aspect. Therefore, nurses with longer appointment times have adequate time to initiate dialogue about screening participation or surveillance colonoscopies (Blackburn *et al.* 2015). However, nurses may find it challenging to maintain full awareness of how practices are changing and to continually adjust and enhance communication in the screening programmes to ensure continuity throughout the process.

In summary, this study shows that although primary health care professionals are familiar with CRC screening, it is necessary to maintain frequent communication with them to maintain updated screening-related information because some aspects of screening are not well known, especially aspects related to follow-up and surveillance colonoscopy.

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AUTHOR CONTRIBUTIONS

Llucia Benito, Montse Garcia and Gemma Binefa designed the study to which all the authors made contributions. Nuria Mila and Carmen Vidal checked all of the information referring to the CRC screening program. Llucia Benito and Montse Garcia defined the analysis strategy and performed the statistical analysis. All the authors contributed to the interpretation of the results. The Primary Care-Screening Group has contributed to the data collection. Llucia Benito and Montse Garcia wrote the first draft of the manuscript to which all the authors made contributions. All authors had full access to all of the data (including statistical reports and tables) in the study and can take responsibility for the integrity of the data and the accuracy of the data analysis. All the authors decided to submit the article for publication and Montse Garcia acts as the submission's guarantor.

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APPENDIX

QUESTIONNAIRE : COLORECTAL CANCER AND SCREENING AWARENESS TOTAL

Colorectal cancer

1. Colorectal cancer is:

   a. *The most common cancer considering both sexes.*
   b. A rare cancer in both sexes.
   c. It is very common in women but very rare in men.
   d. It is very common in men but very rare in women.

2. What is the main NON modifiable risk factor for colon and rectal cancer?

   a. *Age.*
   b. Gender.
   c. Family history.
   d. Diet.

Screening awareness

3. The age of target population in colorectal cancer screening is:

a. From 40 to 74 years
b. *From 50 to 69 years*
c. Over 50 years
d. From 40 to 60 years

4. Is there a CRC screening programme in your health care centre?

a. *Yes*
b. No
c. No answer/don't know

5. Which is the screening test used for the colorectal cancer early detection?

a. Barium enema
b. Colonoscopy
c. *Faecal occult blood test*
d. Blood test to detect carcinoembryonic antigen (CEA), a tumor marker.

6. How often is the colorectal cancer screening?

a. Yearly
b. *Every 2 years*
c. Every 3 years
d. Every 6 months

7. Which is the confirmation test used for colorectal cancer screening?

a. Barium enema
b. *Colonoscopy*
c. Faecal occult blood test
d. Blood test to detect carcinoembryonic antigen (CEA), a tumor marker.

Follow-up screening

8. According to the protocol, what would be recommend to a person with a negative result on the colorectal cancer screening test?

a. A colonoscopy to rule out any lesion.
b. No more controls are needed over the next 10 years.
c. Repeat cancer screening test to rule out false positives.
d. *Back to attend the next round of screening if it is within the age range of the target population.*

9. According to the protocol, what would recommend to a person who tests positive in the screening test for colorectal cancer?

a. *A colonoscopy to rule out any lesion.*
b. No more controls are needed over the next 10 years.
c. Repeat the test for fecal occult blood to rule out false positives.
d. Back to attend the next round of screening if it is within the age range of the target population.

10. If a Negative result in diagnostic procedure is obtained, according to the protocol would be recommended:

a. A colonoscopy after 10 years if the person is between 70 and 74 years.
b. Back to attend screening after 10 years if the person is less than 69 years.
c. Repeat colonoscopy at 5 years regardless of age.
d. *Both a and b are correct.*

11. An exploration with a hyperplasic polyp (<10 mm) located in sigma or rectum involves:

a. *The same risk of developing a colorectal cancer than normal colonoscopy.*
b. The same risk of developing a colorectal cancer than colonoscopy with high-risk adenomas.
c. The same risk of developing a colorectal cancer than colonoscopy with intermediate-risk adenomas.
d. The same risk of developing colorectal cancer than colonoscopy with low-risk adenomas.

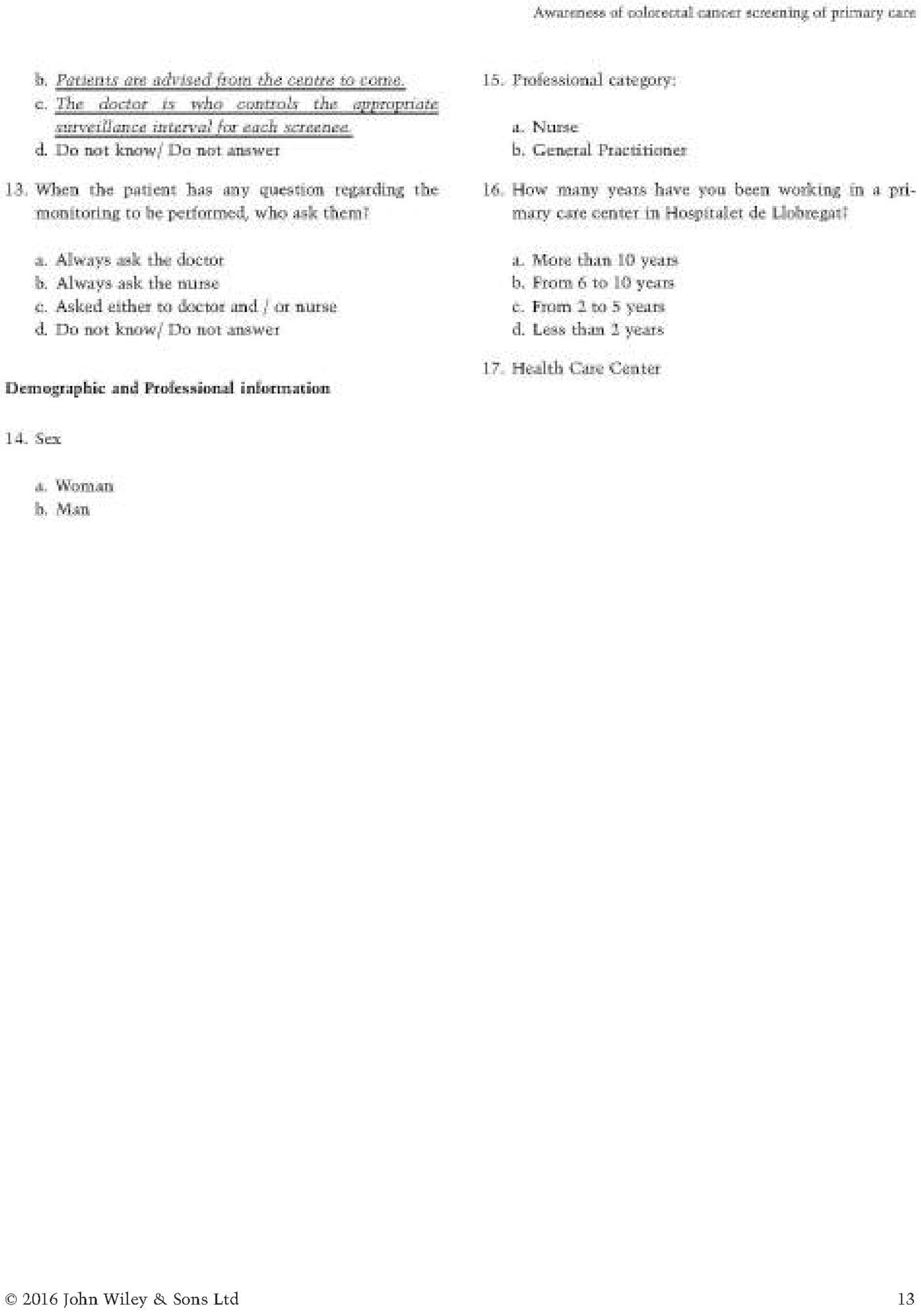
Surveillance

Here are some questions in relation to persons who have participated in colorectal cancer screening and the programme sent them a letter with the follow-up to be performed on the surveillance colonoscopy

When they come to your primary health care centre:

12. How does the centre ensure adherence to successive surveillance colonoscopy (≥ 2nd surveillance colonoscopies)?

a. Patients come to the centre following the recommendation set by the screening programme (letter)



b. *Patients are advised from the centre to come.*
c. *The doctor is who controls the appropriate surveillance interval for each screenee.*
d. Do not know/ Do not answer

13. When the patient has any question regarding the monitoring to be performed, who ask them?

a. Always ask the doctor
b. Always ask the nurse
c. Asked either to doctor and / or nurse
d. Do not know/ Do not answer

Demographic and Professional information

14. Sex

a. Woman
b. Man

15. Professional category:

a. Nurse
b. General Practitioner

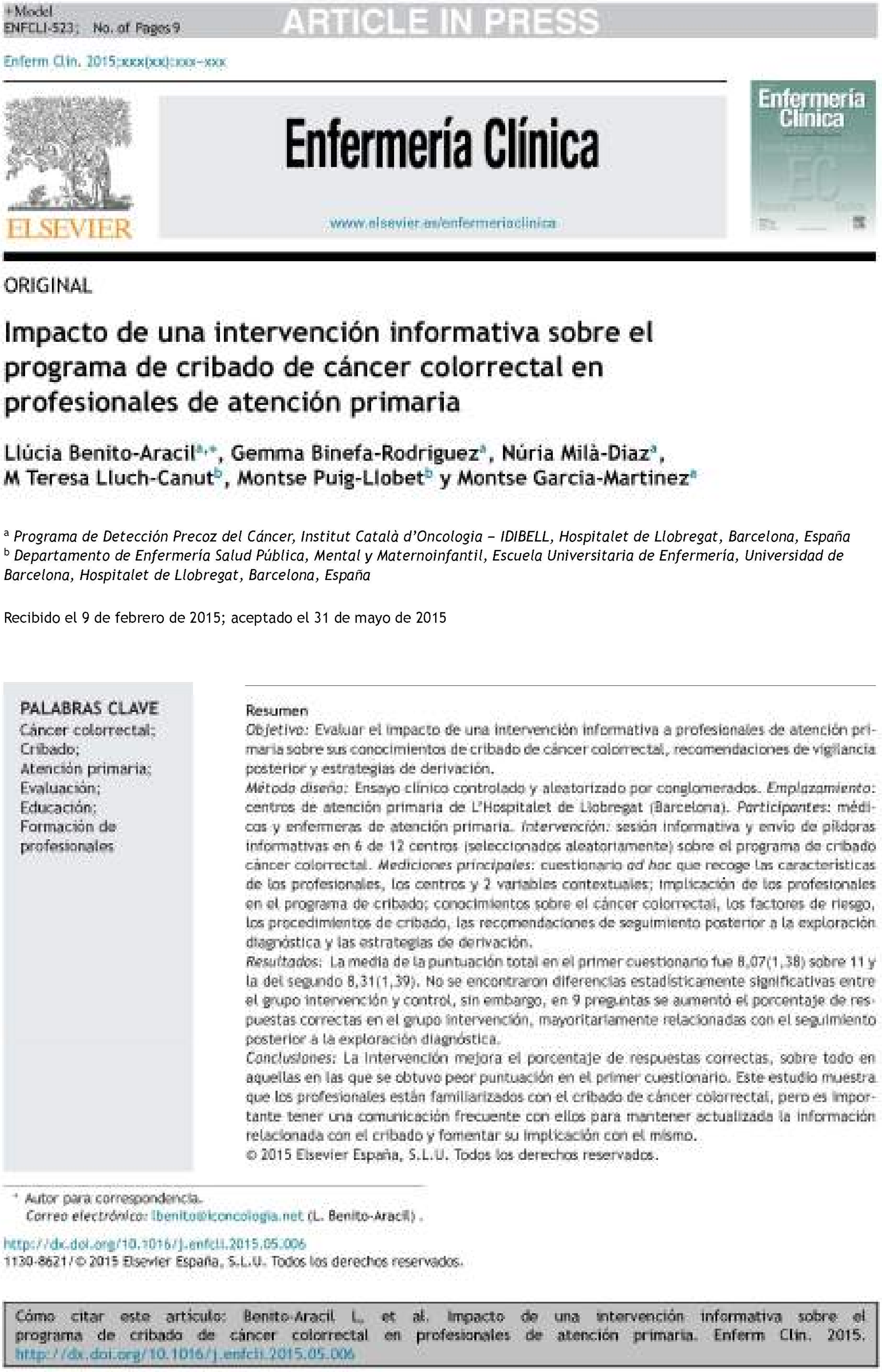
16. How many years have you been working in a primary care center in Hospitalet de Llobregat?

a. More than 10 years
b. From 6 to 10 years
c. From 2 to 5 years
d. Less than 2 years

17. Health Care Center

4.6. Artículo 6

Benito-Aracil, L., Binefa-Rodríguez, G., Milà-Díaz, N., Lluch-Canut, M.T., Puig-Llobet, M., García-Martínez, M. (2015) Impacto de una intervención informativa sobre el programa de cribado de cáncer colorrectal en profesionales de atención primaria. *Enfermería Clínica*, 25(5),223-31.



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ORIGINAL

Impacto de una intervención informativa sobre el programa de cribado de cáncer colorrectal en profesionales de atención primaria

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PALABRAS CLAVE
Cáncer colorrectal;
Cribado;
Atención primaria;
Evaluación;
Educación;
Formación de profesionales

Resumen
Objetivo: Evaluar el impacto de una intervención informativa a profesionales de atención primaria sobre sus conocimientos de cribado de cáncer colorrectal, recomendaciones de vigilancia posterior y estrategias de derivación.
Método diseño: Ensayo clínico controlado y aleatorizado por conglomerados. *Emplazamiento:* centros de atención primaria de L'Hospitalet de Llobregat (Barcelona). *Participantes:* médicos y enfermeras de atención primaria. *Intervención:* sesión informativa y envío de píldoras informativas en 6 de 12 centros (seleccionados aleatoriamente) sobre el programa de cribado cáncer colorrectal. *Mediciones principales:* cuestionario *ad hoc* que recoge las características de los profesionales, los centros y 2 variables contextuales; implicación de los profesionales en el programa de cribado; conocimientos sobre el cáncer colorrectal, los factores de riesgo, los procedimientos de cribado, las recomendaciones de seguimiento posterior a la exploración diagnóstica y las estrategias de derivación.
Resultados: La media de la puntuación total en el primer cuestionario fue 8,07(1,38) sobre 11 y la del segundo 8,31(1,39). No se encontraron diferencias estadísticamente significativas entre el grupo intervención y control, sin embargo, en 9 preguntas se aumentó el porcentaje de respuestas correctas en el grupo intervención, mayoritariamente relacionadas con el seguimiento posterior a la exploración diagnóstica.
Conclusiones: La intervención mejora el porcentaje de respuestas correctas, sobre todo en aquellas en las que se obtuvo peor puntuación en el primer cuestionario. Este estudio muestra que los profesionales están familiarizados con el cribado de cáncer colorrectal, pero es importante tener una comunicación frecuente con ellos para mantener actualizada la información relacionada con el cribado y fomentar su implicación con el mismo.

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KEYWORDS
Colorectal cancer;
Screening;
Primary care;
Assessment;
Education;
Training professionals

Impact of an informative intervention on the colorectal cancer screening program in primary care professionals

Abstract

Objective: To evaluate the impact of an intervention in primary care professionals on their current knowledge about colorectal cancer screening, subsequent surveillance recommendations and referral strategies.

Methods Design: Cluster randomized controlled trial. Location: Primary Care Centers in L'Hospitalet de Llobregat (Barcelona). Participants: Primary Care Professionals (doctors and nurses). Intervention: Training session in six of the 12 centers (randomly selected) about the colorectal cancer screening program, and three emails with key messages. Main measurements: Professionals and centers characteristics and two contextual variables; involvement of professionals in the screening program; information about colorectal cancer knowledge, risk factors, screening procedures, surveillance recommendations and referral strategies.

Results: The total score mean on the first questionnaire was 8.07 (1.38) and the second 8.31 (1.39). No statistically significant differences between the intervention and control groups were found, however, in 9 out of 11 questions the percentage of correct responses was increased in the intervention group, mostly related to the surveillance after the diagnostic examination.

Conclusions: The intervention improves the percentage of correct answers, especially in those in which worst score obtained in the first questionnaire. This study shows that professionals are familiar with colorectal cancer screening, but there's a need to maintain frequent communication in order to keep up to date the information related to the colorectal cancer screening.

¿Qué se conoce?

Los profesionales de AP son las personas de mayor confianza para obtener información y tienen mayor influencia en los pacientes respecto a las decisiones sobre su salud.

Los circuitos y procedimientos del programa de cribado de L'Hospitalet han cambiado en los años de funcionamiento, esto confunde a los profesionales de AP.

La retroalimentación entre el programa de cribado y los profesionales de AP es esencial para garantizar la calidad del programa de cribado y unificar criterios de vigilancia.

¿Qué aporta?

Este estudio muestra que los profesionales de AP están familiarizados con el cribado del CCR.

Es necesario mantener una comunicación frecuente con ellos para mantener actualizada toda la información relacionada con el cribado.

La intervención mejora el porcentaje de respuestas correctas, sobre todo en aquellas en las que se obtuvo peor puntuación en el primer cuestionario.

Introducción

El cribado de cáncer colorrectal (CCR) es un método que ha demostrado ser eficaz al mejorar el pronóstico de un importante número de pacientes con CCR, ya que el diagnóstico precoz reduce la incidencia y la mortalidad. Diferentes estudios han demostrado que el cribado, mediante el test de sangre oculta en heces (TSOH) y la sigmoidoscopia flexible reduce la mortalidad por CCR[1–3].

En el año 2000, se llevó a cabo en Cataluña el primer programa piloto de cribado poblacional de CCR[4] dirigido a hombres y mujeres entre 50-69 años asintomáticos. En 2005, el Sistema Nacional de Salud recomendó la aplicación de programas de cribado piloto[5], y en 2009 se recomendó que los programas de cribado de CCR se implementaran en todo el territorio español[6]. En la actualidad, 13 de las 17 comunidades autónomas de España han puesto en marcha programas de cribado de CCR.

Un elemento crucial para el éxito de los programas poblacionales de cribado es la participación de la población diana, que debe ser como mínimo del 45%, y de manera deseable de 65-70%[7]. El papel de los profesionales de atención primaria (AP) en el aumento de la participación se ha explorado en diferentes estudios[8], ya que las actitudes de estos profesionales pueden influir en la participación[9–11] por su frecuente contacto con la población. Las funciones de los profesionales de AP dentro del programa de cribado son muy diversas: a) promover participación y adherencia al cribado, b) informar sobre beneficios y riesgos, c) valorar los criterios de

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exclusión y categorías de riesgo y considerar si es preciso derivar a unidades especializadas, y d) garantizar la continuidad y el correcto seguimiento de las lesiones detectadas[12].

Los profesionales de AP son las personas de mayor confianza de la población para obtener información sobre salud, y por lo tanto tienen una mayor influencia en los pacientes respecto a las decisiones sobre su salud[13]. Pueden facilitar que los pacientes que participan en el cribado de CCR tomen decisiones informadas y para hacerlo correctamente, los profesionales deben tener acceso a información relevante, precisa y completa[14]. Sin embargo, varios estudios han demostrado que los profesionales no siempre están bien informados sobre las prácticas de cribado de CCR[15,16]. Por ello, y al estar directamente implicados en diversas fases del cribado, es importante que conozcan sus circuitos y procedimientos. Los circuitos y procedimientos del programa de cribado de CCR de L'Hospitalet de Llobregat (Cataluña, España) han ido cambiando en el transcurso de los 13 años de funcionamiento. El método de cribado utilizado, las clasificaciones en función del riesgo y las estrategias de vigilancia según las lesiones detectadas se han modificado a lo largo de estos años para adaptarlas a las directrices europeas, y así garantizar la calidad del cribado y diagnóstico del CCR[7].

Un procedimiento que se ha modificado desde su implantación es la estrategia de vigilancia según las lesiones detectadas. Las personas a las que se les ha detectado algún adenoma en la colonoscopia diagnóstica tienen mayor riesgo de desarrollar CCR, y es importante garantizarles una vigilancia adecuada mediante colonoscopia. El programa de cribado se encarga de informar a estos pacientes, por carta y por teléfono, de cuál es el resultado y el intervalo adecuado para la realización de la primera colonoscopia de seguimiento. Sin embargo, desde 2009, son los profesionales de AP quienes deben programar esta primera colonoscopia de seguimiento en el intervalo recomendado por la carta, y también programar y decidir el intervalo de las colonoscopias de vigilancia posteriores.

Para poder mantener a los profesionales de AP informados, cuando se inicia una ronda de cribado, los profesionales del programa acuden a cada centro de AP para presentar los resultados de participación y tasas de detección de adenomas y cáncer y explicar las novedades surgidas desde la última reunión. A pesar de estas reuniones, las modificaciones del protocolo pueden llevar a confundir a los profesionales, y por ello se decidió realizar el presente trabajo con el objetivo de evaluar el impacto de una intervención informativa continuada (sesión informativa más 3 píldoras informativas) a los profesionales de AP sobre sus conocimientos del cribado de CCR, recomendaciones de vigilancia posterior y estrategias de derivación.

Material y métodos

Población de estudio: el estudio se realizó en los 12 centros de AP de L'Hospitalet de Llobregat (Barcelona) que atienden a una población de 254.000 personas. En el momento del estudio, fueron invitados a participar los 350 profesionales que se dedicaban a AP (178 médicos 172 enfermeras).

Muestra: debido al reducido tamaño de la población de estudio, se entregó el cuestionario a toda población (n = 350). Se calculó el tamaño del efecto mínimo que es probable que se detecte usando el número final de participantes del estudio. Aceptando un riesgo alfa del 0,05 en un contraste bilateral con 64 sujetos en ambos grupos, la potencia del contraste de hipótesis es del 80% para detectar una diferencia de 0,62 puntos en las puntuaciones medias de la puntuación total del cuestionario (variable descrita en el apartado de variables que va de 0-11).

Diseño: ensayo clínico controlado y aleatorizado por conglomerados.

Intervención: se aleatorizaron los centros y se realizó una sesión informativa presencial en 6 de los 12. En esta sesión se trataban los aspectos más importantes del CCR, circuitos y procedimientos del cribado actuales, así como hábitos de vida saludables para la prevención del CCR. La impartía un profesional de enfermería previamente entrenado por el equipo investigador. Posterior a la sesión se enviaron a los participantes, 3 píldoras informativas mediante correo electrónico. Se hizo de manera mensual durante los 3 meses siguientes, y contenían aspectos clave de la sesión.

La intervención se aleatorizó por centros y no por individuos para evitar que la información de la sesión se pasara entre los profesionales del mismo centro y para no alterar la dinámica habitual de las consultas.

Variables: las variables relacionadas con las características de los profesionales fueron: sexo, centro donde trabajan, categoría profesional y años de experiencia. Se recogía información sobre el centro de AP mediante: número de profesionales que trabajan en el centro; porcentaje de la población diana del cribado que tiene un nivel de estudios inferior a los estudios primarios; porcentaje de participación en el cribado. También se añadió una variable que describe la participación de los profesionales del centro en el programa de cribado. Se creó en función de si los profesionales de los centros se involucraron con el programa de cribado para aumentar la captación (llamadas telefónicas a los no participantes).

El cuestionario recogía preguntas sobre conocimientos mediante 11 preguntas que contemplaban aspectos sobre el CCR (pregunta 1 y 2), el cribado (preguntas 3-9), y el seguimiento posterior a la colonoscopia de pacientes a los que se les había detectado algún adenoma (preguntas 10 y 11). Las 2 últimas preguntas eran de respuesta múltiple sobre cómo aseguraban la adherencia al seguimiento mediante colonoscopias y a qué profesional preguntaban los participantes cuando tenían dudas sobre el cribado.

Las preguntas se clasificaron como correctas, incorrectas y NS/NC o sin respuesta. Las respuestas correctas se puntuaron con uno y las incorrectas con 0. A partir de la suma de estas 11 preguntas se creó una variable para medir el conocimiento global sobre el cribado. La puntuación de esta nueva variable iba de 0 (peor) a 11 (mejor).

Instrumento: se diseñó un cuestionario con base en otros instrumentos utilizados para estudiar el conocimiento de los profesionales de AP sobre la detección del cáncer[17-21]. También se recogió información sobre las recomendaciones de vigilancia posterior a la colonoscopia y las estrategias de derivación, aspectos que según la bibliografía revisada[14-21], no han sido estudiados. Se diseñó un cuestionario *ad hoc* por qué queríamos estudiar aspectos específicos del programa de CCR de L'Hospitalet de Llobregat (circuitos,

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procedimientos, etc.). Sin embargo, el cuestionario fue pretesteado en entrevista realizada a voluntarios (muestra de conveniencia en profesionales de la salud) para comprobar su comprensión y duración. De este modo, se realizó una primera evaluación de su aplicabilidad y nos permitió realizar cambios en los enunciados de las preguntas, así como en las categorías de las respuestas para evitar interpretaciones erróneas.

Las preguntas eran de respuesta múltiple y recogían información de los profesionales, sobre sus conocimientos, así como 2 preguntas relacionadas con los circuitos de cada centro de AP.

El cuestionario que se entregó posterior a la intervención incluía 5 preguntas adicionales tipo Likert (1-10) para valorar la sesión recibida (cambio de conocimientos y recomendaciones, claridad de las explicaciones, contenido y utilidad de las sesiones).

El cuestionario definitivo fue completado por los profesionales en los centros sin poder consultar fuentes de información. En enero de 2013 se explicaron los objetivos en los centros de AP y se recogieron los datos previos a la intervención. La intervención se realizó durante los meses de setiembre a octubre de 2013. Las píldoras informativas se enviaron entre diciembre de 2013 y febrero de 2014. En abril inició la recogida del segundo cuestionario y el trabajo de campo finalizó en el mes de julio.

Análisis de datos: se realizó un análisis exploratorio de las preguntas sin respuesta. Aunque se detectaron valores sin respuesta en 6 de las 11 preguntas, la tasa de no respuesta fue inferior al 20% y por lo tanto, no fueron invalidadas.

Se realizó un análisis de las pérdidas por seguimiento. Se compararon las respuestas en el primer cuestionario de los profesionales que contestaron únicamente al primer cuestionario con aquellos que contestaron ambos. Se encontraron diferencias en la pregunta 2 sobre los factores de riesgo del cáncer ($p=0,013$). La puntuación en esta pregunta fue mayor en los profesionales que finalmente no contestaron el segundo cuestionario.

Se compararon los resultados de las variables del grupo intervención y del grupo control antes y después de la intervención así como por perfiles profesionales.

Se realizó el análisis por protocolo, y se consideró para el análisis los individuos que respondieron los 2 cuestionarios.

Las variables se describieron con media, desviación estándar, frecuencias y porcentajes, según su naturaleza. Se realizaron comparaciones de la variable principal mediante la prueba de Wilcoxon y Mann-Whitney según si eran datos independientes o apareados. El nivel de significación adoptado fue $<0,05$. Los datos fueron procesados con el programa SPSS-15. El protocolo del estudio fue aprobado por el Comité Ético de Investigación Clínica del Hospital de Bellvitge (PR205/11).

Resultados

Descripción de la muestra: el primer cuestionario del estudio se entregó a los 350 profesionales de los centros de AP, de los cuales 178 (50,9%) eran médicos y 172 (49,1%) enfermeras. Lo contestaron 206 (101 médicos y 105 enfermeras), que representa el 58,9% de la población inicial. Posteriormente se entregó el segundo cuestionario únicamente a los que ya habían contestado el primero, y respondieron 111 (52 médicos y 59 enfermeras). Esto representa el 31,7% de la población inicial (fig. 1).

Descripción del primer y segundo cuestionario: la media de la puntuación total que obtuvieron los 111 profesionales en el primer cuestionario fue 8,07 sobre 11, con una desviación estándar de 1,38. Este valor aumentó en el segundo cuestionario a 8,32, con una desviación estándar de 1,39, esta diferencia no fue estadísticamente significativa ($p=0,149$).

Se buscaron diferencias entre las variables del estudio y puntuación total, conocimientos sobre el cáncer, cribado y seguimiento (tabla 1). Se encontraron diferencias en relación con la puntuación sobre el cáncer (frecuencia y factores de riesgo) en la variable categoría profesional en el primer cuestionario, donde las enfermeras obtuvieron una puntuación de 0,99 y los médicos de 1,19 ($p=0,009$). También se encontraron diferencias en relación con la puntuación del seguimiento de las lesiones detectadas en el segundo cuestionario. En este caso las enfermeras obtuvieron una puntuación de 0,53 y los médicos de 0,85 ($p=0,02$). No se encontraron otras diferencias.

Se analizó el porcentaje de respuestas correctas e incorrectas de las 11 preguntas que determinaron la puntuación total (tabla 2). El porcentaje de respuestas correctas en el primer cuestionario fue de 73,4 y de 75,6% en el segundo.

Tanto en el primer cuestionario como en el segundo, hubo 3 preguntas con más del 50% de las respuestas incorrectas: una relacionada con los factores de riesgo y las otras 2 con el seguimiento posterior a la colonoscopia de pacientes a los que se les había detectado algún adenoma.

Comparación grupo control y grupo intervención: se comparó el resultado global del segundo cuestionario entre grupo control ($n=47$) y el grupo intervención ($n=64$), y también en relación con cada una de las preguntas del cuestionario, las preguntas relacionadas con el CCR, con el cribado y con el seguimiento posterior a la colonoscopia de pacientes a los que se les había detectado algún adenoma. No se encontraron diferencias estadísticamente significativas en ninguna de ellas (tabla 2).

Las 3 preguntas que en el primer cuestionario tenían un porcentaje de respuestas correctas inferior al 50% mejoraron en el segundo entre 8-9,2% para el grupo intervención (tabla 2).

Comparación antes y después de la intervención: para poder analizar el impacto de la intervención también se compararon los resultados del primer y segundo cuestionario del grupo intervención ($n=64$). Aunque se encontraron diferencias estadísticamente significativas en el grupo intervención entre el primer (7,94) y el segundo (8,38) cuestionario en la puntuación global del cuestionario, fue inferior a 0,62 puntos.

Preguntas relacionadas con el circuito del centro de AP: en relación con la pregunta sobre cómo los profesionales de los centros de AP se aseguraban que los pacientes, a los que se detectaban lesiones preneoplásicas, se realizaban las colonoscopias de seguimiento, el 63,1% de los participantes en el primer cuestionario respondió que los pacientes acuden al centro tras el intervalo recomendado en la carta enviada por los profesionales del programa de cribado. Este

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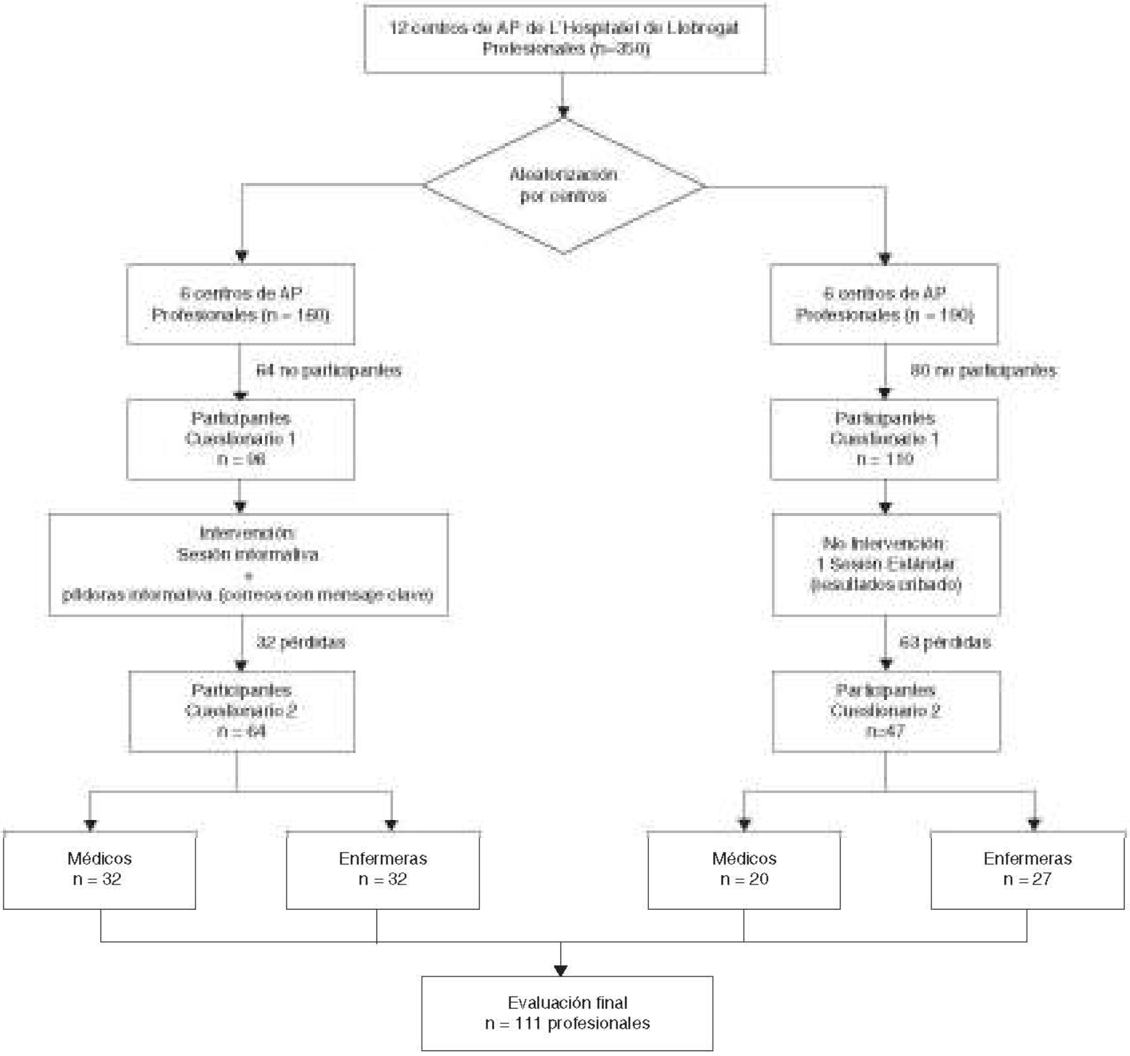

Figura 1 Esquema del estudio.

porcentaje en el segundo cuestionario alcanzó el 81,3% a los que se les realizó la intervención informativa.

Valoración sobre la información recibida: en relación con las preguntas que valoraban la información recibida [rango 1-10], todas obtuvieron puntuación superior a 7, excepto aquella que preguntaba sobre si la sesión produjo un cambio en los conocimientos de los profesionales en la se obtuvo un 6,77 (tabla 3).

Discusión

Este trabajo analizó si una intervención informativa mejoraba el conocimiento de los profesionales de AP sobre el proceso de cribado de CCR y las recomendaciones de seguimiento posterior. Para analizarlo se compararon los resultados del grupo control con el grupo intervención y también los resultados previos y posteriores únicamente del grupo intervención. Los resultados mostraron que, en general, los conocimientos de los profesionales de AP sobre el cribado son adecuados, aunque existen aspectos a mejorar, especialmente aquellos relacionados con los circuitos y procedimientos del programa de cribado. La sesión informativa contribuyó a mejorar algunos de estos aspectos pero no suficientemente.

Dado que los pacientes preguntan sus dudas sobre el cribado de CCR a los profesionales de AP (el 68,5% de los profesionales en el primer cuestionario y un 82,0% en el segundo), es importante que médicos y enfermeras sean capaces de transmitir una información precisa y actualizada. La implicación desde AP puede ayudar a mejorar la cobertura mediante la difusión de información y el fomento de la participación y la adhesión de los pacientes. Además, el profesional de enfermería tiene el conocimiento y el perfil ideal para informar y asesorar al paciente en relación al cribado de CCR.

La intervención diseñada para este estudio no mejoró de forma relevante aquellos aspectos específicos del programa

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Tabla 1 Puntuación total del cuestionario según las variables del estudio

		1r cuestionario				2o cuestionario			
		Intervención n = 64		No intervención n = 47		Intervención n = 64		No intervención n = 47	
		n	Media (DE)	n	Media (DE)	n	Media (DE)	n	Media (DE)
Sexo	Mujeres	54	7,93 (1,48)	37	8,14 (1,29)	54	8,33 (1,48)	37	8,41 (1,40)
	Hombres	10	8,00 (1,49)	10	8,70 (0,95)	10	8,60 (0,84)	10	7,60 (1,17)
Tipo profesional	Enfermeras	32	7,69 (1,55)	27	8,04 (1,28)	32	8,09 (1,33)	27	8,11 (1,25)
	Médicos	32	8,19 (1,35)	20	8,55 (1,45)	32	8,66 (1,43)	20	8,40 (1,57)
N.° de profesionales en el centro	≤ 30	24	8,08 (1,82)	27	7,81 (1,00)	24	8,54 (1,50)	27	7,89 (1,50)
	> 30	40	7,85 (1,23)	20	8,85 (1,31)	40	8,28 (1,34)	20	8,70 (1,08)
% de la población de cribado con nivel de estudios inferior a estudios primarios*	13-19%	24	8,21 (1,32)	41	8,20 (1,12)	24	8,50 (1,10)	41	8,07 (1,37)
	20-21%	40	7,78 (1,54)	0	-	40	8,30 (1,56)	0	-
	> 22%	0	-	6	8,67 (1,97)	0	-	6	9,33 (1,03)
% de participación de la población diana en el cribado de CCR**	21-31%	40	7,85 (1,23)	0	-	40	8,28 (1,34)	0	-
	32-37%	7	7,71 (2,14)	12	8,67 (1,50)	7	8,29 (1,89)	12	8,83 (1,19)
	38-45%	17	8,24 (1,71)	35	8,11 (1,32)	17	8,65 (1,37)	35	8,03 (1,40)
Implicación del centro en el cribado de CCR	Alta	22	7,82 (1,65)	35	8,11 (1,13)	22	8,32 (1,36)	35	8,03 (1,40)
	Baja	42	8,00 (1,38)	12	8,67 (1,50)	42	8,40 (1,43)	12	8,83 (1,19)
		64	7,94 (1,47)	47	8,26 (1,24)	64	8,38 (1,40)	47	8,23 (1,39)
		111	8,07 (1,38)			111	8,32 (1,39)		

DE: desviación estándar.

[*] Se trata de una variable agregada que se refiere al porcentaje de población diana del centro de AP que tiene un nivel de estudios inferior a los estudios primarios.

[**] Se trata de una variable agregada que se refiere al porcentaje de población diana del centro de AP que ha participado en el programa de cribado.

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Tabla 2 Porcentaje de respuestas de las preguntas al cuestionario

	Primer cuestionario		Segundo cuestionario		Segundo cuestionario		Diferencias entre las respuestas correctas entre el primer y el segundo cuestionario	Diferencia entre las respuestas correctas del grupo
			No intervención		Intervención			
	Correcto	Incorrecto	Correcto	Incorrecto	Correcto	Incorrecto		Intervención y No intervención
Preguntas	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Frecuencia del CCR en ambos sexos	94 (84,7)	17 (15,3)	44 (93,6)	3 (6,4)	62 (96,9)	2 (3,1)	-62 (12,2)	18 (3,3)
Factores de riesgo del CCR no modificables	22 (19,8)	88* (79,3)	15 (31,9)	32 (68,1)	18 (28,1)	46 (71,9)	-2 (8,3)	3 (-3,8)
Rango de edad de la población diana del cribado de CCR	95 (85,6)	16 (14,4)	38 (80,9)	9 (19,1)	50 (78,1)	14 (21,9)	-45 (-7,5)	12 (-2,8)
Disponibilidad del programa de cribado de CCR en centro de trabajo	107 (96,4)	4 (3,6)	45 (95,7)	2 (4,3)	62 (96,9)	2 (3,1)	-45 (0,5)	17 (1,2)
Tipo de test de cribado utilizado en el programa de cribado de CCR	109 (98,2)	2 (1,8)	47 (100,0)	0 (0,0)	63 (98,4)	1 (1,6)	-46 (0,4)	16 (-1,6)
Intervalo de cribado de CCR	92 (82,9)	19 (17,1)	37 (78,7)	7* (14,9)	51 (79,7)	7* (10,9)	-41 (-3,2)	14 (1,0)
Tipo de test diagnóstico utilizado en el programa de cribado de CCR	104 (93,7)	6* (5,4)	43 (91,5)	4 (8,5)	60 (93,8)	4 (6,3)	-44 (0,1)	17 (2,3)
Seguimiento después del un resultado negativo en el test de cribado	104 (93,7)	7 (6,3)	47 (100,0)	0 (0,0)	61 (95,3)	3 (4,7)	-43 (1,6)	14 (-4,7)
Seguimiento después del un resultado positivo en el test de cribado	107 (96,4)	4 (3,6)	43 (91,5)	4 (8,5)	62 (96,9)	2 (3,1)	-45 (0,5)	19 (5,4)
Seguimiento después del un resultado normal en el test diagnóstico	24 (21,6)	81* (73,0)	12 (12,5)	35 (74,5)	20 (31,3)	44 (68,8)	-4 (9,7)	8 (18,8)
Riesgo de progresión de un pólipo hiperplásico en sigma o recto	38 (34,2)	63* (56,8)	16 (34,0)	31 (66,0)	27 (42,2)	37 (57,8)	-11 (8,0)	11 (8,2)
Total	(73,4)	(25,1)	(74,8)	(24,6)	(76,1)	(23,0)	(2,7)	(1,3)

[*] En el primer cuestionario hubo 18 profesionales que no respondieron a alguna pregunta y en el segundo cuestionario 9 (6 en el grupo intervención y 3 en el grupo control), por este motivo la suma de los porcentajes no alcanza el 100%.

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Tabla 3 Preguntas de satisfacción en relación con la sesión recibida

	Media	Desviación estándar
Cambio de conocimientos después de la sesión recibida	6,77	1,61
Cambio recomendaciones después de la sesión recibida	7,08	1,78
Claridad de las explicaciones de la sesión	7,54	1,73
Contenido de la sesión recibida	7,59	1,72
Utilidad de la sesión recibida	7,79	1,67

Puntuación: 1-10.

que desconocen los profesionales de AP. Como consecuencia, el equipo investigador diseñó nuevo material informativo haciendo énfasis en los procedimientos y circuitos del programa de cribado. Una importante actividad de las enfermeras a fomentar sería estudiar nuevos formatos para realizar esta formación, diseñarlos e impartirlos teniendo en cuenta los resultados de este estudio.

Como se ha comentado, actualmente los profesionales de AP son los responsables del seguimiento de los usuarios con lesiones detectadas en el programa de cribado, es por ello que sería importante implementar estrategias para que el recordatorio de este seguimiento no recaiga únicamente en el paciente.

La proporción de respuesta final en individuos que contestaron los 2 cuestionarios fue menor a otros estudios[19,21]. Se realizaron importantes esfuerzos para obtener una proporción de respuesta mayor, hecho que confirma la dificultad de conseguir una participación elevada entre los profesionales de la salud en estudios de medidas repetidas.

Se exploró un potencial sesgo de selección de los sujetos mediante la comparación de características sociodemográficas y profesionales entre los participantes y los no participantes y no se encontraron diferencias en el cuestionario inicial. Además, el estudio obtuvo 46,1% de pérdidas de seguimiento entre el primero y el segundo cuestionario, se exploró si había diferencias entre los individuos que habían contestado un único cuestionario respecto a los que habían realizado ambos dado que las pérdidas de seguimiento son una amenaza a la validez interna y externa y conllevan además la pérdida de potencia estadística. Tampoco se encontraron diferencias significativas en ninguna de las variables estudiadas. Por último, se valoró si podría haber habido algún sesgo de información, ninguna de las preguntas tuvo un porcentaje individual de no respuesta igual o superior al 20%. Es necesario hacer hincapié en que la falta de respuesta identifica información relevante que debe ser reforzada para asegurar la comprensión completa[19].

Los hallazgos de este estudio sugieren que, aunque los profesionales conocen las características del programa de cribado de CCR de L'Hospitalet de Llobregat, algunos aspectos pueden ser mejorados. Es importante tener una comunicación frecuente con los profesionales implicados, no solo para mantenerlos al corriente de los resultados y novedades, sino también para que se sientan partícipes del mismo.

Una intervención informativa continuada puede contribuir a mejorar estos aspectos y permitir que los profesionales tengan la información más actualizada de los circuitos del programa de cribado de CCR.

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Conflicto de intereses

Los autores declaran no tener ningún conflicto de intereses.

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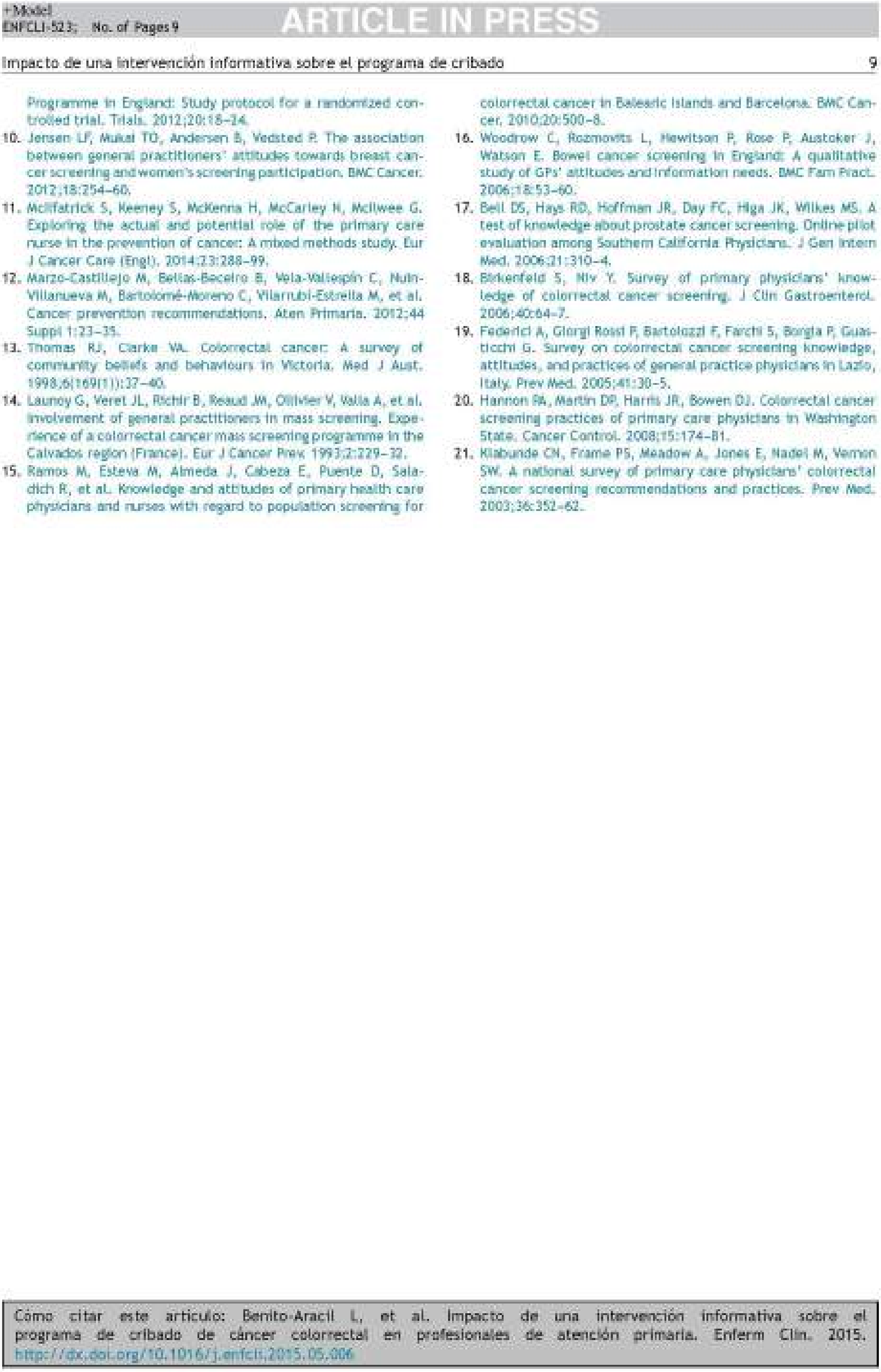

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5. DISCUSIÓN CONJUNTA DE LOS ARTÍCULOS

Los resultados de cada estudio han sido discutidos en los diferentes artículos publicados. No obstante, en este apartado se realiza un resumen de los principales hallazgos y se analizan y discuten sus limitaciones e implicaciones para la práctica.

5.1. Definición del rol de la enfermera

Los resultados más relevantes obtenidos a partir de la revisión bibliográfica fueron que el rol de la enfermera de cribado de cáncer se basa principalmente en la gestión de casos, el seguimiento, soporte e información al paciente. Este rol implica una considerable interacción con diferentes profesionales, por ello un componente importante es la coordinación entre los profesionales implicados en el proceso de cribado (Benito et al, 2014).

Después de la revisión bibliográfica, se contextualizaron los resultados en los programas poblacionales de cribado de CM y CCR del territorio español. Los resultados de este segundo estudio indicaron que las actividades más importantes y frecuentes de la enfermera de cribado de cáncer eran actuar como enlace entre el usuario y los diferentes niveles asistenciales, proporcionar información, resolver dudas relacionadas con el proceso de cribado de cáncer, derivar a los circuitos apropiados, y el seguimiento (Benito et al, 2016a).

Aunque existe poca literatura que describa las actividades de los profesionales enfermeros en estos tipos de programa, los artículos disponibles presentaban resultados similares a estos hallazgos. El *National Health Service Breast Screening Programme* presentó una guía sobre el cribado de CM, en el que se afirma que el papel de una enfermera en esta área se relacionaba principalmente con la mayoría de las actividades identificadas en este estudio (Chapman, 2012).

Para facilitar el registro y el compartimiento de la información, es necesario el uso de lenguaje estandarizado, por este motivo se diseñó un estudio con el fin de correlacionar las actividades de enfermería identificadas previamente con las clasificaciones de lenguaje de enfermería estandarizados. Se identificaron las *Nursing Intervention Clasification* (NIC) (Bulechek, Butcher, Dochterman, y

Wagner, 2012) de aquellas las actividades que formaban parte del rol de la enfermera de cribado de cáncer mediante consenso. Las intervenciones más comunes estaban centradas en la educación del paciente y en la gestión de casos (Benito, Lluch, Falcó, García y Puig, 2015). Las enfermeras juegan un papel importante en la mejora de la comprensión de los participantes con respecto a todo el proceso de cribado de cáncer (Phelan y Heneghan, 2008).

La identificación de las actividades de las enfermeras del cribado de cáncer es el primer paso para el desarrollo de indicadores y medidas de resultado que, a su vez, son necesarios para evaluar los cuidados enfermeros en los programas de cribado del cáncer y garantizar la calidad de los programas.

5.2. Identificación de indicadores de evaluación

La mayoría de las actividades identificadas en los estudios previos se basan principalmente en fomentar la coordinación y la continuidad durante el proceso de cribado. Por ello, se seleccionaron principalmente indicadores dirigidos a la evaluación de la transmisión de la información durante el proceso, que permitieran evaluar la coordinación y continuidad del proceso y, en consecuencia, evaluar la actividad de los cuidados enfermeros en los programas de cribado de cáncer.

Los siete indicadores seleccionados fueron; la adecuación y el tiempo de espera de la derivación de participantes, la entrega y la disponibilidad del informe del proceso, la comprensión de profesionales implicados en el proceso, la satisfacción y la comprensión de participantes.

5.3. Evaluación de los cuidados enfermeros

La evaluación de los indicadores es crucial para la mejora de calidad, y debe de permitir articular un mismo sistema de medida que sea común a todos los programas poblacionales de cribado de cáncer para la comparación de los resultados. Por ello, se elaboró un estudio con el fin de evaluar uno de los indicadores identificados.

Se analizó si los profesionales implicados en el proceso de cribado conocían las características del programa de cribado de CCR de L'Hospitalet de Llobregat y si se transmitía de manera correcta la información. Se concluyó que principalmente conocían los circuitos y aspectos generales del programa de cribado de CCR, aunque existían algunos aspectos podían ser mejorados. Los aspectos que menos conocían eran aquellos relacionados con los factores de riesgo del cáncer, el seguimiento después de la colonoscopia diagnóstica y los circuitos posteriores (Benito et al., 2016b).

Para incrementar el conocimiento sobre el proceso de cribado de CCR y las recomendaciones de seguimiento posterior se diseñó una intervención en forma de sesión formativa a los profesionales de primaria. Sin embargo, los resultados mostraron que esta sesión contribuyó a mejorar algunos de los aspectos, pero no suficientemente (Benito, Binefa, Mila, Lluch, Puig y García, 2015)

La comunicación entre el programa de cribado del cáncer y los profesionales implicados en el proceso de cribado es imprescindible para la transmisión de la información hacia el participante, para mantenerlos al corriente de los resultados y novedades, y también para que se sientan partícipes del mismo. Los resultados de este estudio pusieron de relieve las dificultades que existen para transmitir información relacionada con los procedimientos del cribado.

5.4. Limitaciones

Los resultados, la interpretación y las conclusiones que se derivan de esta tesis están sujetos a la consideración de ciertas limitaciones.
Una de las limitaciones de la revisión bibliográfica fue que la mayoría de las publicaciones no eran originales, sino que eran revisiones no sistemáticas u opiniones de expertos. Además, los artículos seleccionados eran principalmente de países norte americanos y hacían referencia a programas oportunísticos. Por ello, algunas de las actividades no eran aplicables al cribado de CM y CCR en el ámbito español, donde los programas son de carácter poblacional. Para solventarlo, se planteó un estudio Delphi que pretendía contextualizar en el territorio español, las actividades seleccionadas mediante la revisión.

Las limitaciones de este estudio con metodología Delphi estaban relacionadas con las propias características del método. Una limitación importante de esta técnica reside en la definición de consenso, donde no parece haber acuerdo. Por lo tanto, se determina al menos parcialmente, por la opinión subjetiva del investigador (Williams y Webb, 1994).

Otra de las limitaciones fue que no todas las regiones estaban representadas ya que el panel se compuso por aquellos expertos que accedieron a participar. Por este motivo, las actividades identificadas pueden no ser apropiados para todos los programas de cribado españoles. De todas maneras, las tasas de cobertura de los programas de cribado del cáncer en España en 2012, antes de empezar el estudio, fueron del 100% para el programa de CM y del 17% para el cribado de CCR. Por lo tanto, no todas las regiones podían estar representadas en los programas de cribado de CCR (Red de Programas de Cribado de Cáncer, 2013).

En el estudio de identificación de las NIC de la enfermera de cribado de cáncer, se detectó como limitación la dificultad para definir “experto”. Fehring sugirió el uso de siete criterios para determinar la calidad de los expertos. Según Fehring, se requiere una puntuación mínima de 5 para que un participante pueda ser considerado experto, y en este estudio, todos los miembros del grupo de expertos cumplían esta condición (Fehring, 1994).

La identificación de las intervenciones enfermeras en este estudio limita la generalización de los resultados ya que el estudio se centró en los programas de cribado de cáncer poblacionales. No se tuvieron en cuenta los programas de cribado de carácter oportunista.

El estudio sobre los conocimientos de los profesionales en relación al programa de cribado, tuvo varias limitaciones potenciales al tratarse de un estudio transversal. Un posible sesgo es la no respuesta, aunque se analizó mediante la comparación de los grupos de respuesta y no respuesta, y se halló que, la única diferencia significativa fue en el número de profesionales que trabajaban en un centro de atención primaria. Los profesionales de los centros de salud con menos trabajadores participaron más en el estudio. Probablemente, esto fue debido a que el cuestionario se entregó de manera individual, y por lo tanto podía dificultar el rechazo a la participación en los centros con un menor número de trabajadores.

Para el estudio de evaluación de la intervención formativa a los profesionales de primaria también se exploró el potencial sesgo de selección de los sujetos mediante la comparación de características entre los participantes y los no participantes, sin encontrar diferencias.
Además, el estudio obtuvo 46,1% de pérdidas de seguimiento entre el primero y el segundo cuestionario, y también se exploró si había diferencias entre los individuos que habían contestado un único cuestionario respecto a los que habían realizado ambos, dado que las pérdidas de seguimiento son una amenaza a la validez interna y externa y conllevan además la pérdida de potencia estadística. Tampoco se encontraron diferencias significativas en ninguna de las variables estudiadas.

La tasa de respuesta fue cerca de 60% en el primer estudio, que es similar a la obtenida en otros estudios (Federici, Giorgi Rossi, Bartolozzi, Farchi, Borgia, y Guasticchi, 2005; Klabunde, Frame, Meadow, Jones, Nadel, y Vernon, 2003). Sin embargo, la proporción de respuesta final fue menor a otros estudios. Se realizaron importantes esfuerzos para obtener una proporción de respuesta mayor, hecho que confirma la dificultad de conseguir una participación elevada entre los profesionales de la salud en estudios de medidas repetidas.

5.5. Propuestas para la práctica profesional y otras investigaciones

La identificación de las actividades permite determinar las competencias enfermeras en el cribado de cáncer. Para capacitar a los profesionales, las competencias deben ser definidas y así garantizar el desarrollo de prácticas basadas en la evidencia y la prestación de cuidados y prácticas de calidad integral y personalizada. A partir de estas competencias, se puede desarrollar un plan de formación para las enfermeras que trabajen o que deseen trabajar en un programa de cribado de cáncer.

El conocimiento generado a partir de estos estudios se puede utilizar para planificar y evaluar los cuidados de enfermería. Los resultados proporcionan una base para la ampliación de la literatura para estudiar la eficacia de las intervenciones (Schneider y Slowik, 2009).

Se ha obtenido información sobre el tipo, la frecuencia y la importancia de cada actividad, pero no sobre el tiempo que se requiere cada actividad. Estudios futuros podrían registrar el tiempo dedicado a la realización de cada una de estas actividades identificadas, y así priorizarlas en función de su tiempo y relevancia.

La identificación de los indicadores de calidad ayudará a detectar áreas con potencial de mejora y podrán ser utilizados como una herramienta que guie los esfuerzos de mejora de la calidad. La existencia de datos en el sistema de salud con información sobre los resultados de los cuidados enfermeros, proporcionaría información valiosa y complementaria a los indicadores actuales de los programas de cribado de cáncer. Disponer de un cuadro de mando integral que permita monitorizar los cuidados con un conjunto de indicadores es una herramienta de gestión fundamental que dará una visión del conjunto de los cuidados realizados en el proceso de cribado de cáncer. Este conocimiento puede contribuir a establecer políticas de salud rentables, y a la vez fomentar la participación de las enfermeras en la planificación de los programas de cribado de cáncer. Asegurar que los pacientes reciben sólo el cuidado que les beneficie al máximo, y no más de lo necesario, puede tener implicaciones positivas para la calidad de los cuidados y la sostenibilidad del sistema de salud.

Como líneas futuras de investigación se propone constituir un grupo operativo de expertos en metodología de evaluación, y un grupo de análisis, seguimiento y planificación de la mejora de los diferentes ámbitos con la finalidad de evaluar la validez y la fiabilidad de estos indicadores y poderlos usar en otros programas de cribado ya sean de ámbito nacional o internacional.

Es necesario mantener una comunicación frecuente con los profesionales implicados en el proceso de cribado para mantener la información actualizada ya que se desconocen algunos aspectos del cribado, especialmente aquellos relacionados con el seguimiento después de la colonoscopia de cribado. Se debe mejorar la comunicación, por ello es importante proponer y diseñar nuevas vías de comunicación que sean de fácil acceso para los profesionales y posteriormente evaluar la posible mejora de los resultados. Actualmente los profesionales de atención primaria son responsables del seguimiento de los usuarios con lesiones detectadas en el programa de cribado, es por ello que es importante implementar estrategias para que el recordatorio de este seguimiento no recaiga únicamente en el paciente.

6. CONCLUSIONES

Las principales conclusiones de este estudio son:

1. Las actividades de la enfermera de cribado de cáncer son principalmente: actuar como gestora de casos y proporcionar información a los usuarios y los profesionales implicados en el cribado. Su actividad favorece que se mantenga la continuidad y la coordinación durante el proceso de cribado de cáncer.

2. Una de las aportaciones de las enfermeras, clave para garantizar la calidad de los programas de cribado de cáncer, es procurar que se mantenga la coordinación y continuidad del proceso. Sin embargo, la evaluación continuada de los programas de cribado en cáncer no incluye indicadores de coordinación y continuidad.

3. Se proponen indicadores que midan la continuidad y coordinación del proceso de cribado mediante: la adecuación y el tiempo de espera de la derivación de participantes, la entrega y disponibilidad del informe del proceso, la comprensión de los profesionales implicados en el proceso, la satisfacción y la comprensión de participantes.

4. La evaluación continuada de indicadores permite detectar áreas de mejora y tiene como finalidad diseñar e implementar intervenciones que contribuyan a mejorar la calidad de los programas de cribado en cáncer.

5. Los resultados obtenidos de la medición del indicador de comprensión de los profesionales implicados en el proceso revelan que, aunque conocen el proceso de cribado de cáncer colorrectal, hay algunos aspectos que podrían mejorar como son los principales factores de riesgo no modificables del cáncer colorrectal y las recomendaciones de seguimiento posterior al cribado.

6. Para mejorar los aspectos desconocidos sobre el cribado de cáncer colorrectal, se diseñó una intervención educativa basada en píldoras informativas. Esta intervención permitió mejorar ciertas áreas de conocimiento, pero no de forma significativa.

7. Es necesario diseñar e implementar estrategias dirigidas a incrementar el conocimiento de los profesionales de atención primaria respecto al circuito de los programas de cribado de cáncer colorrectal.

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8. ANEXOS

Proceso editorial y correspondencia con las revistas

Proceso editorial y correspondencia del artículo 1 (Clinical Journal of Oncology Nursing).

Respuesta del editor y comentarios de los revisores de Clinical Journal of Oncology Nursing.

Dear Mrs. Benito:

I am pleased to tell you that the reviews of your manuscript are complete and, pending resolution of some concerns of the reviewers, this paper will be accepted for publication in the Clinical Journal of Oncology Nursing. It is important that your paper does not exceed the 3000-word limit for the text and that your references are in APA format. When submitting your revised manuscript, please make sure you include a letter outlining how you have addressed the reviewers' comments.

Reviewer: 1
Comments to the Author
I like the topic but I suggest you submit your manuscript to an independent reviewer to correct grammer, sentence structure, and writing. Some of your references were rather old and should not be included. I was not sure why you were focusing on Spain when you noted that no documents existed in Spain that address this topic.

Reviewer: 2
Comments to the Author
1. On a scale of 1-5 (1= not at all; 5= especially) how do you rate appropriateness of manuscript content level and interest of nurses in clinical practice (3)
2. The information presented is not new, but has defined activities of the nurses' involvement in the cancer screening process. The manuscript provides fairly important comprehensive information to the limited body of literature.
3. The title is representative of the manuscript.
The abstract summarizes the manuscript in a concise manner.
4. The abstract summarized the manuscript in a concise manner.
5. Some ideas are not clearly expressed.
The flow is logical.
6. The information is correct, comprehensive, and current.
7. The writing style is appropriate for nurses who provide direct patient care.
The author voice is objective and unbiased.
8. The mention of Spain was unclear/underdeveloped. This portion of the manuscript is unclear and should be revised for clarity.
9. Omit the Spain section or expand/clarify for understanding the purpose/connection.

10. Technical terms appropriate.
11. Literature search technique is adequately described.
12. Tables
13. Adequate references
14. No information that would be of value for lay audience.
15. The major strength of the manuscript is that it provides an organized definition of nursing activities that are involved in the cancer screening process.
16. The major weaknesses of this manuscript is that it is lacking in evidence based discussions for nurses' contributions to improve outcomes.

Editor's Comments

Please realize the readers of this journal are mostly North Americans but also have global readers so it would be helpful not to have country specific references. Please make sure you describe implications for nursing. Our readers also find it helpful if you can identify credible patient education resources on this topic.

When you log on to view your manuscript, you will note that line and page numbers have been added for reviewing and editing purposes. As the author, you have access to this file and any other file listed on the "files for review" screen.

When you have completed your revisions of the paper, please log back on to the CJON Manuscript Central site, http://mc.manuscriptcentral.com/cjon, and select "Revised Manuscripts," where instructions for resubmitting your paper are provided. Please submit your revised manuscript in its entirety, including author information, tables, figures, etc. Tables and figures may be submitted in separate files. Include a letter that outlines the changes you have made to address the reviewers comments. In addition, please ensure that signed author agreement and biographical sketch forms have been submitted for all authors.

If you have any questions or concerns, or if I can be of any assistance to you in finalizing this manuscript, please do not hesitate to give me a call. I look forward to receiving your revised manuscript.

Sincerely,

Dr. Deborah K. Mayer
Editor, Clinical Journal of Oncology Nursing

Respuesta al editor y a los revisores del Clinical Journal of Oncology Nursing.

POINT BY POINT RESPONSE TO REVIEWERS

We thank very much the useful reviewers' comments and suggestions which have allowed us to improve the manuscript. Our response is as follows:

Reviewer 1

I like the topic but I suggest you submit your manuscript to an independent reviewer to correct grammar, sentence structure, and writing.

We thank this reviewer for his/her appreciation of the importance and interest in our work.

The text has been thoroughly reread, and also it has been sent to a company specialize in editing and proofreading scientific manuscripts. The manuscript has been edited in order to correct the grammar, sentence structure and writing and also to clarify some ideas expressed.

Some of your references were rather old and should not be included.

When possible, references have been updated.

The reference: Shapiro S. (1999). History In: Kramer Barnet S., Prorok G., Phillips C. (Eds.), Cancer screening, theory and practice. Marcel Dekker, New York, pp 1-12.

has been replaced by: Brawley O. W., Kramer B. S. (2005) Cancer screening in theory and in practice. Journal of Clinical Oncology 23(2),293-300.

I was not sure why you were focusing on Spain when you noted that no documents existed in Spain that address this topic.

This suggestion has indeed already been taken into account. Since there according to the reviewer's suggestion, we have removed country specific references. As two reviewers commented, the mention of Spain is unclear; therefore this part of the article has been erased. Due to the fact that the readers of this magazine are North Americans and global readers, we have erased country specific references.

Reference removed:

Ascunce, N., Salas, D., Zubizarreta, R., Almazan J., Ederra M. (2010). Cancer screening in Spain. Annals of Oncology 21, 43–51.

Reviewer 2

Some ideas are not clearly expressed.

This suggestion was clarified on the first point of the reviewer 1

The mention of Spain was unclear/underdeveloped. This portion of the manuscript is unclear and should be revised for clarity. Omit the Spain section or expand/clarify for understanding the purpose/connection.

As the reviewer 2 comments, the mention of Spain is unclear, therefore this part of the article has been eliminated.

No information that would be of value for lay audience.

We have included a specific section called “Implication for practice”. We hope this will be useful for lay audience.

The major weakness of this manuscript is that it is lacking in evidence based discussions for nurses' contributions to improve outcomes.

We are completely agree with the reviewer and we have added a paragraph in the *Discussion*clarifying this point. Further research is needed to measure the workload of each activity and to improve outcomes.

<u>Editor's Comments</u>

Please realize the readers of this journal are mostly North Americans but also have global readers so it would be helpful not to have country specific references.

See reply to comment 3 of reviewer 1.

Please make sure you describe implications for nursing.

We have included a specific section called “Implication for practice”.

Implications for practice

This work describes the activities involved in the nurse's role in cancer screening programs. The definition of the role is the first step in developing indicators to assess nurse performance in cancer screening. Further research is needed to measure the workload of the activities and to prioritize them according to their relevance.

Nurses must be in the lead when it comes to coordination and communication with cancer patients and their relatives to significantly improve healthcare delivery related to cancer screening.

The nurse should be a core member of the multidisciplinary team for organized cancer screening programs. Multiprofessional teamwork is key to optimizing the contribution of nursing to cancer screening. Collaboration and multiprofessional strategies can have important benefits for patients.

Proceso editorial y correspondencia del artículo 2 (Collegian: The Australian Journal of Nursing Practice, Scholarship & Research).

Respuesta del editor y comentarios de los revisores de Collegian: The Australian Journal of Nursing Practice, Scholarship & Research.

Ms. Ref. No.: COLL-D-16-00014
Title: Identifying nursing activities in population-based colorectal and breast cancer screening programs in Spain: A Delphi study
Collegian: The Australian Journal of Nursing Practice, Scholarship and Research

Dear Dr. Montse García,

The reviewers' comments on this manuscript have now been received. Your paper is considered to have merit but reviewers have concerns about several aspects of the paper and recommend major revision. As such, the paper cannot be considered for publication by Collegian as it currently stands.

The detailed comments from both reviewers are included below for your consideration. Should you be able to address these and substantially rework the paper within three months Collegian would be pleased to receive a revised manuscript from you. Please ensure that you include a detailed list of changes made during the revision. The revised manuscript would then be subject to a further peer review process.

Thank you for considering Collegian as your preferred avenue of publication and best wishes with your publication endeavours.

Yours sincerely,

Jane Louise Phillips, PhD
Editor
Collegian: The Australian Journal of Nursing Practice, Scholarship and Research

Reviewers' comments:

Reviewer #1: COLL-D-16-00014 Review

Thank you for the opportunity to review this paper. Congratulations to the authorship team on undertaking this research. The article reads very well and will be of particular interest to those working in the field. The manuscript requires minor essential revisions and some further suggestions are made for minor revisions.

Essential minor revisions

The first essential revision should be to the 'background' section of the Abstract. At present, the background does not set the scene for what the research is about. Many readers will only scan abstracts to elicit articles of relevance. At present, the reader will not be able to decipher the purpose of the article or understand the aims of the study. Please rewrite this section.

The second essential revision is to the discussion section. When opening the discussion section, it is very helpful to restate the study aims and to make a confident statement about what are the most significant or important findings. What are the most significant outcomes of conducting the two rounds of the Delphi technique? Why are these results important? What impact might they have on the activities of the BC & CRC screening professionals? The most important results appear to be summarised in the results section of the abstract and you could draw on these sentences to help better formulate the discussion.

On page 9 of the discussion, the strengths of the study are described: 'This is the first study on an organised and population-based screening program.' Please rewrite this more accurately as 'the first study that identifies nursing activities performed in cancer screening programs, as described by the Spanish health professionals responsible for delivering BC and CRC screening programs'. I recommend that you bring this strength, and the strengths described in the paragraph that begins: 'Identifying the activities performed by cancer screening nurses.' to earlier in the discussion. At present, the strengths are 'buried' in the limitations of the article. Therefore, the third essential revision is that the authors reorder the discussion to emphasis the strengths of this study and convince the reader of its merit.

The final essential revision is with regards to Table 1. The participating regions are listed alphabetically. I suggest that this is reordered numerically to show that the largest proportion of participants came from Catalonia (68%). Given that this is a far higher proportion than for any other region, is this likely to impact on the results? I recommend that the authors account for this in the discussion, particularly in the paragraph on page 9 that begins with 'Another study limitation is that all regions were not represented.'

Suggested minor revisions
Keywords: I suggest changing 'Delphi' to 'Delphi techniques' which is the standard MESH heading.
Keywords: I suggest changing keywords 'nurse' and 'role' to 'nurse's role' which is the standard MESH heading.

Reviewer #2: COLL-D-16-00014 Review
This is an interesting article and has the potential to offer insights into the role of nurses in cancer screening and also into the screening practices in Spain.
However, before this article is suitable for publication there are some areas that need to be addressed:

Abstract: the abstract needs to be reworded/rewritten to more clearly illustrate what you have done and what you found in this study. The background needs to give a concise account of cancer screening that sets up our argument for why this study was done. The methods need to be clearly outlined. The conclusion needs to reflect the conclusion of your study rather than be a generic statement.

Background: This section needs to be more concise. Also, you mention cervical cancer screening here though this is not a part of the study itself. This needs to be explained.
Aims and objectives: need to be more clearly stated - perhaps a subheading could be used to make this very clear for the reader

Methods: Your method needs to be much clearer and more concise. Perhaps use the subheadings sample and setting; data collection; data analysis. Justify your choice of a Delphi method - why was this the best way to do this study?
Please explain where you got your statements for the delpi from?

Results: I am interested that you have more Doctors commenting on a nursing role than nurses - can you explain why this is appropriate? Can you comment on the spread of regions - are they representative of the whole of Spain? International readers need some context here.
Some sections of the results would be more clearly displayed as dot points or a table - for example the 13 activities deleted in round 1 are presented as a big block of text and so get lost in the results. It would be good to see this section reworked so results are more clearly displayed for the reader.

Table 1: What do you mean by dedication? How can you consider nursing roles in programs that have no nurses (n=8)?
Table 2: Management does not seem to be the correct term for these statements. They appear to relate to nursing care and patient management rather than management - this suggests administrative type tasks.

Discussion: The discussion needs to consider the links between the findings of this study and other literature in this field.
Referencing: This journal requires APA style referencing - currently this format is not used

Respuesta al editor y a los revisores del Collegian: The Australian Journal of Nursing Practice, Scholarship & Research.

Title: Identifying nursing activities in population-based colorectal and breast cancer screening programs in Spain: A Delphi study (Ref. No.: COLL-D-16-00014)
We sincerely appreciate the time invested in your review. We have revised the manuscript based on your feedback, which helped us to produce a paper with increased clarity and precision. Below, we have identified all original concerns followed by our responses (in bold). We will gladly address any remaining concerns you may have.

REVIEWER #1: COLL-D-16-00014 REVIEW

Thank you for the opportunity to review this paper. Congratulations to the authorship team on undertaking this research. The article reads very well and will be of particular interest to those working in the field. The manuscript requires minor essential revisions and some further suggestions are made for minor revisions.
Author response: We thank the reviewer for reading our manuscript and commenting thoughtfully on our work.

Essential minor revisions:

The first essential revision should be to the 'background' section of the Abstract. At present, the background does not set the scene for what the research is about. Many readers will only scan abstracts to elicit articles of relevance. At present, the reader will not be able to decipher the purpose of the article or understand the aims of the study. Please rewrite this section.
Author response: As suggested by the reviewer, the abstract has been modified as follows:
"Background: Although several institutions, including the European Oncology Nursing Society, and the European guidelines for quality assurance in cancer screening recommend that nurses be included on multidisciplinary teams for population-based cancer screening programs, there are no current documents describing the activities of nurses in these programs."

The second essential revision is to the discussion section. When opening the discussion section, it is very helpful to restate the study aims and to make a confident statement about what are the most significant or important findings.
What are the most significant outcomes of conducting the two rounds of the Delphi technique?
Why are these results important?
What impact might they have on the activities of the BC & CRC screening professionals?
The most important results appear to be summarised in the results section of the abstract and you could draw on these sentences to help better formulate the discussion.

Author response: Thank you for the suggestion. We have added a paragraph at the beginning of the discussion section defining the purpose of the study and summarizing the main results:

“This paper identifies nursing activities related to BC and CRC screening in Spain from the perspective of cancer screening program experts. The findings from this study indicate that the most important and frequent activities consisted of acting as a link between the user and the primary care team, providing users with information related to the cancer screening process, resolving users’ concerns, registering all nursing activities during the process of cancer screening, and as responsibility; keeping all participant data confidential.”

On page 9 of the discussion, the strengths of the study are described:

'This is the first study on an organised and population-based screening program.' Please rewrite this more accurately as 'the first study that identifies nursing activities performed in cancer screening programs, as described by the Spanish health professionals responsible for delivering BC and CRC screening programs'.

Author response: Thank you for the suggestion. We have rewritten this text based on the reviewer’s recommendation.

“This is the first study to identify nursing activities performed in population-based cancer screening programs that are described by Spanish health professionals responsible for conducting BC and CRC screening programs. The identification of the core activities is a starting point for the development of indicators and outcome measures that, in turn, are necessary for evaluating nursing care in cancer screening programs and ensuring the quality of the programs.”

I recommend that you bring this strength, and the strengths described in the paragraph that begins: 'Identifying the activities performed by cancer screening nurses…' to earlier in the discussion. At present, the strengths are 'buried' in the limitations of the article.

Author response: Based on the reviewer’s recommendation, we have moved the paragraph to earlier in the discussion. We first discuss the strengths of the study and later the limitations so that the strengths are not buried in the limitations of the article.

Therefore, the third essential revision is that the authors reorder the discussion to emphasis the strengths of this study and convince the reader of its merit.

Author response: We thank the reviewer for this suggestion. Based on the reviewer’s recommendation, we have modified the order of the discussion. The discussion begins with a brief summary of the results that emphasizes the implications and interpretation. The strengths of the study are then described, and the results are compared with other studies. Finally, the limitations, strengths and future research are described.

The final essential revision is with regards to Table 1. The participating regions are listed alphabetically. I suggest that this is reordered numerically to show that the largest proportion of participants came from Catalonia (68%).

Author response: We agree with the reviewer. Table 1 has been reordered numerically.

		First questionnaire	
		n	**%**
Answered questionnaire	**No**	**21**	**30.9**
	Yes	**47**	**69.1**
Professional category	**Doctor**	**27**	**57.4**
	Nurse	**20**	**42.6**
Program coordinator	**Yes**	**29**	**61.7**
	No	**18**	**38.3**
Dedication to cancer screening program	**Only activity**	**14**	**29.8**
	Shared with other work activities	**33**	**70.2**
Type of screening	**Colorectal**	**12**	**25.4**
	Breast	**26**	**55.4**
	Both	**9**	**19.2**
Nurse participation in the program	**No**	**8**	**17.0**
	Yes, for colorectal	**8**	**17.0**
	Yes, for breast	**17**	**36.2**
	Yes, for both	**14**	**29.8**
Participating regions	**Catalonia**	**32**	**68.1**
	Basque Country	**4**	**8.6**
	Cantabria	**2**	**4.3**
	Madrid	**2**	**4.3**
	Aragon	**1**	**2.1**
	Balearic Islands	**1**	**2.1**
	Ceuta	**1**	**2.1**
	Galicia	**1**	**2.1**
	La Rioja	**1**	**2.1**
	Murcia	**1**	**2.1**
	Valencia Community	**1**	**2.1**

Given that this is a far higher proportion than for any other region, is this likely to impact on the results?

I recommend that the authors account for this in the discussion, particularly in the paragraph on page 9 that begins with 'Another study limitation is that all regions were not represented.'

Author response: The cancer screening programs are decentralized, and responsibility is delegated to the regions. This type of territorial organization has led to differing applications of cancer screening policies in the various regions. Some regions have a single screening program centrally managed, while others, such as Catalonia, have a territorial structure with technical offices that manage the program autonomously but under common criteria for all technical offices. Common criteria include screening strategy, some organizational aspects and evaluation. In Catalonia, the different technical offices might have distinct protocols, and that is why we invited all of them to participate. Catalonia has greater representation because there are more screening technical offices. In other regions, the screening programs are centralized, and there is only one technical office for the entire region, and therefore, the characteristics and procedures are the same. A paragraph has been added in the discussion explaining the situation:
"Another study limitation is that not all regions were represented because the panel comprised only those experts who agreed to participate. Professionals from only eleven of the 17 regions agreed to participate. Because the panel did not include experts from all regions of Spain, the identified activities may not be appropriate for all Spanish screening programs. The coverage rates of cancer screening programs throughout Spain in 2012, before starting the study, were 100% for BC and 17% for CRC. Therefore, not all regions could be represented in CRC screening programs (Cancer Screening Network, 2013).
Catalonia accounted for 68% of all participants. The reason for this high representation is that although there is only one cancer screening program in Catalonia, there are different technical offices that manage it. The research team thought it would be interesting to invite all professionals from the different offices to include all procedures used throughout that region."

On the other hand, the coverage rates of cancer screening programs throughout Spain in 2012, before starting the study, were 100% for BC and 17% for CRC. Therefore, not all regions could be represented in CRC screening programs. This information has been added in the manuscript.

Suggested minor revisions

Keywords: I suggest changing 'Delphi' to 'Delphi techniques' which is the standard MESH heading.

Author response: The keyword has been changed to "Delphi Techniques".

Keywords: I suggest changing keywords 'nurse' and 'role' to 'nurse's role' which is the standard MESH heading.

Author response: The keyword has been changed to "Nurse's Role".

REVIEWER #2: COLL-D-16-00014 REVIEW

This is an interesting article and has the potential to offer insights into the role of nurses in cancer screening and also into the screening practices in Spain.

However, before this article is suitable for publication there are some areas that need to be addressed:

Abstract: the abstract needs to be reworded/rewritten to more clearly illustrate what you have done and what you found in this study. The background needs to give a concise account of cancer screening that sets up our argument for why this study was done. The methods need to be clearly outlined. The conclusion needs to reflect the conclusion of your study rather than be a generic statement.

Author response: Thank you for the suggestion. We have modified the background, method and conclusions of the abstract as suggested by the reviewer.

"Background: Although several institutions, including the European Oncology Nursing Society, and the European guidelines for quality assurance in cancer screening recommend that nurses be included on multidisciplinary teams for population-based cancer screening programs, there are no current documents describing the activities of nurses in these programs.

Objectives: To identify nursing activities performed in cancer screening programs in Spain from the perspective of professionals involved in those programs.

Methods: A national two-round Delphi study was conducted in a population of sixty-eight cancer screening experts who were invited to participate and asked to identify nursing activities in cancer screening from a list of 24 possible activities. Individuals were also asked to report the importance and frequency of these activities.

Results: Forty-seven experts participated, and they identified 25 activities performed by colorectal cancer screening nurses and 17 performed by breast cancer screening nurses. These activities were primarily in the areas of patient management, education and health promotion. All activities selected by breast cancer screening professionals were also selected by colorectal cancer screening professionals.

Conclusions: The most important and frequent working practices of cancer screening nurses include acting as a link between the user and the primary care team, providing users with information and explaining that information, and resolving users' concerns. The main responsibilities that were identified included registering all nursing activities during the process of cancer screening and keeping all patient data confidential.

Background: This section needs to be more concise.

Author response: The background section has been modified to make it more concise. Some paragraphs have been removed and some information has been added to clarify the section.

Also, you mention cervical cancer screening here though this is not a part of the study itself. This needs to be explained.

Author response: In Spain, cervical cancer screening is an opportunistic program, not a population-based program. The research team determined that nursing activity in an opportunistic program is very different from that in a population-based program, and therefore, cervical cancer screening was not included in the study. We have added this explanation to the methods section, and we have eliminated this in the back ground section to avoid confusion.

"We contacted only CRC and BC screening professionals, which are population-based screening. In Spain the cervical cancer screening is an opportunistic screening, and for that reason was excluded from the study. The opportunistic approach does not systematically invite the entire target population. Individuals are invited to undergo the screening test when they have contact with the health system (public or private). They might make the decision on their own or because they attend a health center for a different reason and are identified as a member of the target group."

Aims and objectives: need to be more clearly stated - perhaps a subheading could be used to make this very clear for the reader

Author response: As suggested by the reviewer, a subheading has been added at the end of the background section to indicate more clearly the aim of the study.

"Purpose of the study: To identify the activities performed by cancer screening nurses, we conducted a literature review to document nurses' involvement in cancer screening (Benito et al., 2014). However, most publications included in this review were not original reports. Rather, they were non-systematic reviews or expert opinions. In addition, the examined articles were primarily from North American countries and investigated opportunistic screening programs. As a result, some of the identified activities were not applicable to population-based screening programs.

To contextualize these activities in a population-based screening program, this study consulted screening professionals to identify the activities performed by cancer screening nurses. These activities were selected based on the literature review.

The aim of the study was to identify nursing activities performed during cancer screening programs in Spain from the perspective of professionals involved in these programs."

Methods: Your method needs to be much clearer and more concise. Perhaps use the subheadings sample and setting; data collection; data analysis.

Author response: We appreciate the reviewer's comment. As suggested by the reviewer, we have added subheadings in the methods section. We have also added some sentences to clarify this section.

The actual subheadings of the methods sections are:

Study design
Sample and setting
Data collection
Procedure
First questionnaire
Consensus
Second questionnaire
Data analysis
Ethical considerations

Justify your choice of a Delphi method - why was this the best way to do this study?

Author response: In our study, we aimed to contextualize a population-based program because there are no recommendations for nurse activity in this area. We needed a technique that would allow a consensus among screening professionals and provide a more qualitative view. For this reason, we chose the Delphi technique because we believed it was the best fit for the goals of our study.

The Delphi technique is a structured process that uses a series of rounds to gather information. It allows the inclusion of a large number of individuals across diverse geographic locations and aims to achieve consensus of opinions or choices. The characteristics of this technique allow the role of the nurse in screening programs throughout the Spanish territory to be defined by consensus.

In the methods section, we have added a sentence that justifies the choice of this technique.

Please explain where you got your statements for the Delphi from?

Author response: The statements for the Delphi were primarily obtained from:

***Watson, R., McKenna, H., Cowman, S., & Keady, J. (Eds.). (2008). Nursing research: Designs and methods. Elsevier Health Sciences.* This book has a chapter entitled "Delphi Studies", which was consulted for consensus and expert panel information.**

Other documents, such as the following, were also consulted:

Coleman, C. A., Hudson, S., & Maine, L. L. (2013). Health literacy practices and educational competencies for health professionals: a consensus study. Journal of health communication, 18 (sup1), 82-102.

Endacott, R., Clifford, C. M., & Tripp, J. H. (1999). Can the needs of the critically ill child be identified using scenarios? Experiences of a modified Delphi study. Journal of Advanced Nursing, 30(3), 665-676.

Jones, J., & Hunter, D. (1995). Consensus methods for medical and health services research. BMJ: British Medical Journal, 311(7001), 376.

Keeney, S., Hasson, F., & McKenna, H. (2006). Consulting the oracle: ten lessons from using the Delphi technique in nursing research. Journal of advanced nursing, 53(2), 205-212.
Keeney, S., Hasson, F., & McKenna, H. P. (2001). A critical review of the Delphi technique as a research methodology for nursing. International journal of nursing studies, 38(2), 195-200.
McKenna, H., & Hasson, F. (2002). A study of skill mix issues in midwifery: a multi method approach. Journal of Advanced Nursing, 37(1), 52-61.
Sumsion, T. (1998). The Delphi technique: an adaptive research tool. The British Journal of Occupational Therapy, 61(4), 153-156.
Walker, A. M., & Selfe, J. (1996). The Delphi method: a useful tool for the allied health researcher. International Journal of Therapy and Rehabilitation, 3(12), 677-681.
All of these documents are included in the reference section.

Results: I am interested that you have more Doctors commenting on a nursing role than nurses - can you explain why this is appropriate?

Author response: The reviewer is right noting that more doctors than nurses reviewed the role of nurses. We contacted those responsible for screening technical offices in Spain. These professionals coordinate and lead screening teams and, 93.10% of them are doctors. Therefore, there were more doctors than nurses participating in the study.

Can you comment on the spread of regions - are they representative of the whole of Spain? International readers need some context here.

Author response: Yes, the regions are representative of the whole of Spain. Of the 17 regions, 58% participated in the study.

All population-based breast cancer screening programs started between 1990 and 1999; however, colorectal cancer screening programs began later, and there is a difference of 16 years between the oldest and newest programs. Those who participated in the study had more experience.

On the other hand, Catalonia has a greater representation because there are more screening offices. In other regions, the screening programs are centralized and there is only one technical office for the whole region, and therefore, the characteristics and procedures are the same. In Catalonia, there are different technical screening offices, and there may be differences in protocols among them, so all offices were all invited to participate.

A paragraph has been added in the discussion explaining this:

"Catalonia accounted for 68% of all participants. The reason for this high representation is that although there is only one cancer screening program in Catalonia, there are different technical offices that manage it. The research team thought it would be

interesting to invite all professionals from the different offices to include all procedures used throughout that region."

Some sections of the results would be more clearly displayed as dot points or a table - for example the 13 activities deleted in round 1 are presented as a big block of text and so get lost in the results. It would be good to see this section reworked so results are more clearly displayed for the reader.
Author response: A new table has been added to clarify the selection process of the activities (The new table is Table 2). The current Table 3 has been modified to improve its readability.

Table 1: What do you mean by dedication?
Author response: Table 1 has been changed. We have replaced "dedication" with "dedication to cancer screening program", and in the second column of the table, the word "shared" has been changed to "shared with other work activities".

How can you consider nursing roles in programs that have no nurses (n=8)?
Author response: Eight professionals answered the questionnaire who had no professional nurses in their programs. However, the research team believed it was important to include the opinions of this group of professionals because they were experienced professionals in cancer screening, and they could identify the needs of the cancer screening program and select those that could be covered by nurses. In this study, we identified how many screening programs had nurse in their teams and the needs that could be covered by these professionals.
We have added a clarification on the methodology.
"If they worked in programs that did not have nurses, they were asked to select those activities they believed that should be part of the nurse profile."

Table 2: Management does not seem to be the correct term for these statements. They appear to relate to nursing care and patient management rather than management - this suggests administrative type tasks.
Author response: We thank the reviewer. As suggested, the word "Management" has been changed to "Patient Management".

Discussion: The discussion needs to consider the links between the findings of this study and other literature in this field.
Author response: We agree the reviewer's suggestion. A paragraph has been added comparing the results of this study with existing literature.
"Although there is little updated literature describing nurses' activities in this type of program, the available articles that do present results are similar to these findings. The

National Health Service Breast Screening Programme presents quality assurance guidelines for nurses in BC screening, which state that a nurse's role in this area is primarily related to most of the activities identified in this study. These guidelines also identified providing users with information related to the cancer screening process, registering all nursing activities during this process, and keeping all data of the participants confidential as key nursing activities (Chapman 2012).

There are a number of studies in the literature on having nurses perform endoscopies that suggest that when nurses perform endoscopic procedures, particularly lower endoscopies, outcomes and adverse events are in line with those of physicians (Day et al. 2014). However, this activity was not selected by the cancer screening professionals in our study because Spanish law does not allow nurses to perform these procedures."

Referencing: This journal requires APA style referencing - currently this format is not used.

Author response: The style referencing has been changed.

Proceso editorial y correspondencia del artículo 3 (International Journal of Nursing Knowledge).

Respuesta del editor de International Journal of Nursing Knowledge.

21-Aug-2015

Dear Dr. Benito Aracil:

It is a pleasure to accept your manuscript entitled "Identifying nursing interventions in a cancer screening program using NIC taxonomy" in its current form for publication in the International Journal of Nursing Knowledge.

Thank you for your fine contribution. On behalf of the Editors of the International Journal of Nursing Knowledge, we look forward to your continued contributions to the Journal.

Your article cannot be published until the publisher has received the appropriate signed license agreement. Within the next few days the corresponding author will receive an email from Wiley's Author Services system which will ask them to log in and will present them with the appropriate license for completion.

Sincerely,

Dr. Jane Flanagan
Editor-in-Chief, International Journal of Nursing Knowledge
journal@nanda.org

Proceso editorial y correspondencia del artículo 5 (European Journal of Cancer Care).

Respuesta del editor y comentarios de los revisores de European Journal of Cancer Care.

27-Nov-2015
Dear Mrs. Benito,

Manuscript ECC-2015-0319, entitled "Cross sectional survey on awareness of colorectal cancer and its screening program of primary health care professionals in Catalonia, Spain", which you submitted to the European Journal of Cancer Care, has been reviewed.

The reviewer(s) have suggested major revisions to your manuscript. I would therefore invite you to respond to the reviewer(s)' comments and revise your manuscript accordingly. The comments of the reviewer(s) are included at the bottom of this letter. Also, please review the author guidelines at:www.wileyonlinelibrary.com/journal/ecc

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Once again, thank you for submitting your manuscript to the European Journal of Cancer Care and I look forward to receiving your revision.
Yours sincerely,
Dr. Aristotle Bamias
abamias@med.uoa.gr

Reviewer: 1
The authors assess whether general practitioners and nurses have accurate information regarding colorectal cancer screening procedures, surveillance recommendations and referral strategies at an area of Catalonia, Spain.
The article is well structured, easy to read and allows the reader to find easily the major aspects and results of the survey.

Some questions and suggestions for authors:
- Is the area you have chosen to carry out the study a special area or may represent the rest of the region? Have you chosen it because the program was implemented long time ago and protocols have been modified?

- It would be interesting to describe briefly the way of implementation of the programme in the area (this one or in general) in order to know the information the professionals receive.

- Could you explain in detail how do you create the variable related with the involvement of the heath centre in the screening programme?

- Related with the variable, colorectal cancer and screening awareness, have you considered the possibility of score different points, not always one, according to the importance or character of the question? A minor question, why do you use the first 12 questions instead all of them (13)?

- Table 2: It would be interesting to include data of participation in the centres.

- Table 3: you show the distribution of primary health care professionals who agreed to answer the survey and those who refused, according to selected variables. Although it is possible to estimate the participation by these variables, would be helpful to show it directly, or at least include some comments about that. Ej: women participation= 62.55 vs men participation=46.99.

- According to the results of the multivariate analysis, do you believe that the key variables are the experience and the profession type?

- Could you show some of the results of the other studies carried out about the same subject you mention?

- Taking into account that primary health care professionals are responsible for monitoring surveillance colonoscopies and should schedule the surveillance colonoscopies is notable the fact that most of GPs and nurses are not aware of this. What do you propose to improve the knowledge about this responsibility and in general about the whole process? Have you introduced some of your proposals?

Review 2:

This study is an observational cross sectional survey of healthcare professionals on their understanding of colorectal cancer (CRC) and the CRC screening programme in the L'Hospitalet de Llobregat region of Barcelona, Catalonia, Spain.

Ethics: The ethical approval is stated in the paper and looks sufficient and confidentially is stated in the article.

Originality:

- The study is interesting and important as it shows that the healthcare professionals (GPs and nurses) in a region of Catalonia general understand CRC and the screening programme but need some further education in regards to their CRC knowledge on non-modifiable risk factor, hyperplasia polyp and post-polypectomy surveillance procedures (including primary care responsibility). Further education should aid in improving understanding, uptake and effectiveness of the Catalonia CRC screening programme.
- The article is sustainably over the 2500-word count for EJCC research articles and needs to be shortened.
- To my knowledge a CRC screening survey for primary care health professionals encompassing all the topics outlined in the paper for this region of Spain has not been carried out before. Additionally, similar studies for this population were not found in a literature search.

Structure

Layout and format

- Some sections could be reorganised and condensed for better clarity. Outlined in relevant sections below.
- Consistently is needed in all the sub sections of the article in describing the topics of the questionnaire, as this can be variable.
- A copy of the expanded or full survey questions (numbered) should be included to aid in the understanding of the methods, results, tables/figure and discussion – especially for questions referred to in the methods and results for the scoring and category sections. This would also aid in checking that the named categories encompass the correct types of question for each category. This could be included as an appendix or elsewhere in the article.

Title

- The current title doesn't give enough information about the exact study details. As it could be more clear what the study is about and the population (e.g. cross sectional survey on awareness of CRC and the CRC screening programme of primary care health care professionals in Catalonia, Spain).

Abstract

- For the sentence '*mean estimated screening knowledge score was 8.13 (1.26)*', should reference 1.26 as the s.d (standard deviation).
- Include details on region and country of study population (e.g. Barcelona and Spain).
- Expand/clarify details on the questions that were incorrectly answered (e.g. the CRC no modifiable risk factors, CRC surveillance intervals for screened patients with no adenomas, who is responsible for organising and determining CRC post-polypectomy surveillances and risk of progression of hyperplasia polyps versus normal adenomas).
- Emphasize what areas need more education and implications.

Introduction

- This is very long and should be shortened in some areas, though should also add explanation of CRC post-polypectomy surveillance recommendations described in discussion e.g. on adenoma risk categories and surveillance screening recommendations
- In paragraph on FOBT and immunochemical technology should mention Faecal Immunochemical Test (FIT) as an example - as this is what is being referred to. Additionally, this paragraph could be reworded in places to be more exact.
- Could be reorganised for clarity e.g. '*in some regions of Spain, such as the Basque country or some areas of Catalonia, primary care involvement is important (Portillo et al., 2013), in other regions, GPs are not directly involved in the screening process but play an important advisory role'* could be added to start of paragraph on the CRC screening programme in the L'Hospitalet region, Catalonia, Spain and involvement of the GPs and PCNs.
- In the paragraph on first three screening rounds, in the sentence '*To date, five screening rounds have been completed, but screening procedures have changed over the course of 13 years'*, number of years should maybe be 14 years if referring to since first pilot study in 2000?
- In the paragraph on fifth screening rounds, the sentence would make more sense as follows (changes underlined) 'S*ince 2009, the current policy is that primary care professionals should schedule the first surveillance colonoscopy in the interval recommended by the screening program, and should also schedule and decide the interval of all subsequent surveillance colonoscopies'*.
- Should describe the general study design/method of the study e.g. cross sectional survey of the primary care healthcare professions (GPs and nurses).

Graphical abstracts and/or highlights

- None included
- Highlights are mandatory for this journal, therefore should be included. They consist of a short collection of 3-5 bullet points that convey the core findings of the article.

Methods

- This section should be reordered for further clarity

- The ‘design’ section could be called ‘study design’, and the sentence referring to the results of table 1 that should be moved to the results section
- Should create a ‘survey’ or ‘questionnaire’ section that includes the description of the survey, methodology, pilot and final study (rename the relevant studies the pilot and final study). The dates that the data was collected should be more precise (include date of day as well).
- Include description of how tried to encourage non-responders to participate in the survey (if did that).
- The sentence on ‘*As far as we know, there are no studies aimed at these two aspects’* may be better included in the introduction.
- The ‘variable’ section could be made more clear; clearer definitions of the variables and question scoring method for categories and multiple regression. The last two descriptions were quite hard to understand and need further explanation (e.g. is one point allocated per question for a correct answer)? It is also not clear what ‘*percentage of people with unfinished studies’* is referring to exactly.
- Additionally was the age of the health care professionals collected and if so this could be included as a potential confounder in the models.

Results and statistical errors

-This could be reordered in a more logical way in some sections, as it doesn't flow well at times and some of the headings do not seem clear e.g. heading ‘*Questions related to screening knowledge’* – what questions does this section cover, as initially thought it referred to one of the scoring categories but it seems to encompass 11 questions?
- In the ‘*Questions related to the role of primary care professionals in CRC screening’* section the description of colonoscopy results and surveillance should be included in the introduction as mentioned previously.
- The sentence ‘*We analysed differences within centres (the degree to which professionals working in the same primary care centre agreed) to measure consensus related to surveillance colonoscopies’* is hard to understand and how obtained results (procedure should be outlined in method section, if not already).
- Some results stated in tables as well as text (do not need to repeat exact values in text e.g. ORs and 95% CI for table 4). Also not all result topics that had 95% CI that didn’t overlap OR 1 were mentioned from table 4.
- Table 1; include correct footnote formatting e.g. a, b, c etc. Define definitions more clearly such as ‘*Non-completed studies: refers to the percentage of people with less than primary studies within the neighbourhood’* – as it not clears what this is referring to. *‘Implication’* may not be the right choice of word for that definition. Include % and overall totals for adult and eligible population section.
- Table 2; not clear what ‘*Percentage of people with less than primary studies within the neighbourhood’* means or definition of ‘neighbourhood’. Extra % needs to be deleted.
- Table 3; could be helpful to know what the correct answers are and what exact questions are (also refer to question numbers and categories).

Table 4; could make heading more precise and footnote what ORs are adjusted for, and what questions each section refers to.
- Figure 1; change heading to be more concise. Graph covers 3 areas of knowledge and total. Graph could potentially be changed to a different orientation to look better or perhaps pie graphs. Could have better choice of words for categories e.g. successes could be changed.

Conclusions/Discussion

- Description on risk stratification of adenomas and surveillance should be included in introduction
- This sentence would make more sense as follows (changes underlined) '*Incorrect or missed post-polypectomy surveillance is one of the main causes of colonoscopy misuse and is a very relevant issue in terms of both costs and human and technical resources needed'*.
-Sentence '*Although it has been 13 years since the screening program was implemented, there have been numerous organizational changes'*, again should be 14 years if use pilot start date of 2000?
- Could mention other possible ways of educating the health care professionals about areas answered incorrectly e.g. updating and advertising educational websites and improving access to guidance in CRC and Catalonia CRC screening programme for the healthcare professionals
- Should emphasize areas where education is needed and how improvement in this area will help with CRC screening knowledge, understanding and uptake and adherence in this region, and improvement in long term CRC outcomes.

Language

- The paper at times needs to be written more clearly, as English may not be the authors first language. As at times some word choices could be improved (e.g. questions rather than items and there are numerous grammatical and spelling errors.) Including CRC being called CCR at times.

Previous work and references

- Previous appropriate research is referenced
- All cited references, need to be checked as there were occasional inconsistences, notably
- '*In 2005, Spain's National Health System (NHS) Cancer Strategy recommended the implementation of CRC pilot screening programs (Ascunce et al., 2010)'.* It doesn't seem to state this in the paper, and instead stated that the first-round results of pilot studies in four regions were available on the following dates (Catalonia since 2000 [14], Valencia 2005, Murcia 2006 and the Basque Country 2008)
- *'A high participation rate is essential for maximizing the effects of organized cancer screening (Jepson et al., 2000)'.* However, in paper refers to Lynge E, Olsen AH, Fracheboud J, Patnick J: Reporting of performance indicators of mammography screening in Europe. Eur J Cancer Prev 2003, 12:213–222.
- '*The US Preventive Service Task Force (USPSTF) has suggested that clinicians use a '5As' approach when discussing preventive health services with their patients. This leads clinicians through a stepped approach of assessing a patient's eligibility for screening, advising screening*

for services that are due, agreeing and negotiating a course of action with the patient, assisting in obtaining screening, and arranging follow up (Lafata et al., 2014). ‘. However, in paper refers to Sheridan SL, Harris R, Woolf SH. Shared decision making about screening and chemoprevention: a suggested approach from the U.S. Preventive Services Task Force. Am J Prev Med 2004; 26:56–66

- Note not all papers could be checked, as could not all be accessed in institutions online server or were in Spanish
- Should use the references outlined below in the introduction when referring to the following ’There is hard evidence that screening with both Faecal Occult Blood Test (FOBT) and flexible sigmoidoscopy effectively reduces CRC mortality (Hewitson *et al.*, 2008; Hol *et al.*, 2010; Littlejohn *et al.*, 2012). Would be better stating the % in CRC mortality reduction by each of these screening methods (e.g. 15 to 17% for FOBT and 22 to 31% for Flexible Sigmoidoscopy (FS) in the UK and Italian RCTs and no benefit for FS for Norwegian RCT) and replace references Hol2010 and LittleJohn2012 with the following well known RCTs for FS. FS RCTs
- Schoen RE, Pinsky PF, Weissfeld JL *et al*. Colorectal-cancer incidence and mortality with screening flexible sigmoidoscopy. *N. Engl. J. Med.* 366, 2345–2357 (2012).
- Atkin WS, Edwards R, Kralj-Hans I *et al*. Once-only flexible sigmoidoscopy screening in the prevention of colorectal cancer: a multicentre randomised controlled trial. *Lancet* 375, 1624–1633 (2010).
- Segnan N, Armaroli P, Bonelli L *et al.* Once-only sigmoidoscopy in colorectal cancer screening: follow-up findings of the Italian randomized controlled trial – SCORE. *J. Natl Cancer Inst.* 103, 1310–1322 (2011).
- Hoff G, Grotmol T, Skovlund E, Bretthauer M. Risk of colorectal cancer seven years after flexible sigmoidoscopy screening: randomised controlled trial. *BMJ* 338, b1846 (2009).

Respuesta al editor y a los revisores del European Journal of Cancer Care.

We sincerely appreciate the time invested in your review. We have revised the manuscript based on your feedback, which helped us to produce a paper with increased clarity and precision. Below, we identify all of the original concerns followed by our responses (in bold). We will gladly address any remaining concerns you may have.

1. Is the area you have chosen to carry out the study a special area or may represent the rest of the region? Have you chosen it because the program was implemented long time ago and protocols have been modified?
   Author response: This area was chosen because it is our screening area of work. In 2000, a biennial screening pilot programme for colorectal cancer (CRC) was implemented at L'Hospitalet de Llobregat, Catalonia, and it was the first programme for colorectal cancer screening in Spain. Some protocol changes in this area arose as a result of 15 years of experience.

2. It would be interesting to describe briefly the way of implementation of the programme in the area (this one or in general) in order to know the information the professionals receive.
   Author response: Thank you for the suggestion. We have added a sentence in the Introduction section explaining how the programme was implemented.
   Page 3, Paragraph 3: "The technical office develops protocols that are delivered to primary health care professionals (GPs and nurses). Furthermore, regular meetings (at least one meeting every two years) are conducted to report changes and explain the results of previous rounds. Although all of these actions occur, the multiple protocol modifications can lead to confusion for the professionals who implement the programme. For that reason, we chose to analyse whether primary health care professionals are familiar with the current screening characteristics and procedures. This study thus aimed to assess whether GPs and nurses had accurate information regarding CRC screening procedures, post-polypectomy surveillance recommendations and referral strategies."

3. Could you explain in detail how do you create the variable related with the involvement of the heath centre in the screening programme?
   Author response: As suggested by the reviewer, hawse have added information regarding this variable:
   Page 5 Paragraph 2: "A variable describing the involvement of the health care centre with the screening programme was also added. This variable was created based on whether the primary health care centres supported the screening programme to increase uptake (i.e., phone calls to non-participants). A list for each primary health centre containing the people who had not already participated in the screening

programme was prepared. Primary health care professionals were asked to contact these individuals to inform about the CRC screening programme. We considered centres to have a high level of implementation if they agreed to be contacted and a low level of implementation if they did not.”

4. Related with the variable, colorectal cancer and screening awareness, have you considered the possibility of score different points, not always one, according to the importance or character of the question?
   Author response: None of the questions was less important than the others, as we considered that all of the information is imperative for colorectal cancer screening. Therefore, all questions were assigned the same number of points.

5. A minor question, why do you use the first 12 questions instead all of them (13)?
   Author response: Question 13 is not included in the total score because it is an opinion question. In this question, there are no right or wrong answers because the question is about when the patient has had or asked any questions regarding the monitoring to be performed.

6. Table 2: It would be interesting to include data of participation in the centres.

   Author response: We agree with the reviewer. We have included this variable in Table 2.

	Adult population (17 and over) n (%)	Eligible population n (%)	Fifth round % of screening participation[a]	% of people with less than primary studies[b]	Number of professionals in the centre[c]	Involvement with the CRC screening programme[d]	Study participants[e] n (%)
Centre 1	6737 (3.3)	1906 (3.0)	36.9	20.34	≤30	High	9 (90.0)
Centre 2	8884 (4.4)	3272 (5.1)	42.7	20.23	≤30	Low	12 (85.7)
Centre 3	11955 (5.9)	4815 (7.5)	33	24.64	>30	Low	16 (51.6)
Centre 4	17822 (8.8)	5018 (7.8)	44.2	14.62	≤30	High	15 (51.7)
Centre 5	11955 (5.9)	5000 (7.8)	32.7	24.64	≤30	Low	22 (81.5)
Centre 6	22491 (11.1)	5334 (8.3)	27.2	20.63	>30	Low	24 (66.7)
Centre 7	21442 (10.6)	5545 (8.7)	30.2	20.35	>30	Low	19 (57.6)
Centre 8	17822 (8.8)	5777 (9.0)	38.1	14.62	≤30	High	27 (90.0)
Centre 9	24428 (12.0)	6273 (9.8)	23	24.87	>30	Low	18 (51.4)
Centre 10	16938 (8.3)	6582 (10.3)	41.4	16.16	≤30	High	15 (51.7)
Centre 11	21772 (10.7)	6710 (10.5)	21.5	18.73	>30	Low	17 (44.7)
Centre 12	20954 (10.3)	7781 (12.2)	35.9	13.01	>30	Low	12 (31.6)
Total	**203200**	**64013**					**206**

Table 2: Characteristics of primary health care centres

a: % of screening participation refers to the percentage of people who participated in CRC screening in the last round.
b: % people with less than primary studies refers to the percentage of people with less than primary studies within the health care basic area.
c: Number of professionals in the health care centre refers to the number of people (GPs and nurses) working in the health care centre.
d: Involvement with the CRC screening programme is based on whether the primary health care centres gave support to the screening programme to increase uptake.
e: GP and nurses who agreed to participate in our study.

7. Table 3: you show the distribution of primary health care professionals who agreed to answer the survey and those who refused, according to selected variables. Although it is possible to estimate the participation by these variables, would be helpful to show it directly, or at least include some comments about that. Ej: women participation= 62.55 vs. men participation=46.99.

   Author response: Thank you for the suggestion. We have added a sentence in the results section pertaining to the percentage of the level of participation based on the variables in table 3.

   Page 8 Paragraph 2: "Significant differences between centres with more than 30 professionals and those with fewer than 30 professionals were found. The centres with fewer workers were more likely to participate than were the centres with more professionals (71.9% vs. 50.2%). No other statistically significant differences were detected, but women participated more than men (62.5% vs. 47.0%), and professionals from centres with a high level of implementation participated more than professionals from centres with a low level of implementation (67.3% vs. 55.6%) (Table 3)."

8. According to the results of the multivariate analysis, do you believe that the key variables are the experience and the profession type?

   Author response: We have included all the variables of the multivariable logistic regression model. In the previous table, we showed only the significant variables, but this may be confusing, so we have included all variables in the model.

Table 5: Factors associated with CRC screening knowledge and early detection

Colorectal Cancer and Screening Awareness	**OR** adjusted*	**95% CI**
Experience in primary health care (years)		
Fewer than 10 years	1	
More than 10 years	2.02	(1.13-3.61)
Professional		
Nurse	1	
GP	1.85	(1.03-3.33)
Percentage of people with unfinished studies within the neighbourhood		
13-19%	1	
20-21%	0.60	(0.30-1.23)
>22%	1.48	(0.65-3.36)
Sex		
Females	1	
Males	1.05	(0.45-2.44)

CI: confidence intervals
* Results derived from four multivariate logistic regression models.
OR adjusted by the variables included in the model
Dummy variable: score 0-8 (poor knowledge) and score of 9-12 (good knowledge)

9. Could you show some of the results of the other studies carried out about the same subject you mention?

Author response: We are grateful to the reviewer for this suggestion. We have added a paragraph to this effect.

Page 11, First paragraph of discussion section: "The findings of this study suggest that although professionals are knowledgeable about CRC screening characteristics, some aspects could be improved. These results are consistent with other studies conducted with primary health care professionals. Birkenfeld and Niv measured knowledge about the age range for CRC screening, the aspects of approving the procedure for screening the risk population, the definition of the risk population and the signs and symptoms of CRC. The aspects that were less unknown were questions related to the risk population (only 18% of correct answers) and those related to the CRC symptoms and signs (only 37% of correct answers) (Birkenfeld and Niv, 2006). Ramos investigated the knowledge of colorectal cancer and cancer screening, but the percentage of correct answers was very wide, ranging from 48.9% to 96.3% (Ramos *et al.*, 2010). In our study, information related to follow-up and surveillance colonoscopies and the major non-modifiable CRC risk factors was the least known among the respondents."

10. Taking into account that primary health care professionals are responsible for monitoring surveillance colonoscopies and should schedule the surveillance colonoscopies is notable the fact that most of GPs and nurses are not aware of this. What do you propose to improve the knowledge about this responsibility and in general about the whole process? Have you introduce some of your proposals?

    Author response: We have expanded the paragraph in which proposals are explained, and we have introduced some of these proposals. As we state in the Conclusion section (page 12, paragraph 2):

    "To improve communication, we propose providing small amounts of information reminding all professionals of the recommended follow-up intervals. Another possible proposal would involve improving access to CRC screening guidelines and establishing CRC screening programme protocols. To facilitate such access, we could create, update and advertise an educational website for primary health care professionals. As a last proposal, ad hoc record cards for primary health care professionals could be designed, printed and distributed to describe the appropriate level of surveillance for patients according to the colonoscopy results."

Proceso editorial y correspondencia del artículo 6 (Enfermería Clínica).

Respuesta del editor y comentarios de los revisores de Enfermería Clínica.

Estimada Mrs. Benito:

El equipo editorial de nuestra revista ha valorado detenidamente el manuscrito que nos remitió con el título "Impacto de una intervención informativa a profesionales de atención primaria sobre el programa poblacional de cribado de cáncer colorrectal en Cataluña." (Ref. ENFCLIN-15-28R1), así como los informes de las evaluaciones efectuadas. Con estas evaluaciones, y para que el manuscrito pueda ser publicado le sugerimos una serie de observaciones importantes, que deben ser tenidas en cuenta antes de proceder a una reconsideración del mismo para su posible publicación.

Puede encontrar estos comentarios al final de este mensaje.

Por favor, no se olvide de comprobar minuciosamente que su manuscrito se adapta en su totalidad a las normas de publicación de nuestra revista.

Para evitar retrasos en el proceso editorial, nos gustaría que considerase oportuno enviar la nueva versión antes del próximo 06/06/2015.

Rogamos nos adjunte una carta en que se indique puntualmente el tratamiento que se ha dado a cada una de las sugerencias o, en caso de no aceptar alguna de ellas, explique los motivos para no hacerlo. También es necesario que envíe las modificaciones que haya realizado resaltadas en rojo, para facilitar su revisión.

Le agradecemos su interés por nuestra revista y sinceramente esperamos recibir la versión corregida de su trabajo en los plazos estipulados.

Reciba un cordial saludo,

Comité Editorial
Enfermería Clínica

COMENTARIOS PARA LOS AUTORES:

Revisor #1:

Podría tener interés para Enfermería sí se mejora la discusión y se hiciera propuestas de nuevas actividades específicas para las enfermeras que pudiera aumentar su responsabilidad o rol autónomo ante este problema de salud.

En todo el manuscrito se considera que el "cribado de CCR" es un programa (ente, grupo, institución) en lugar de una actividad. Quizás se debería redactar de forma que quede claro cuando se habla de la actividad concreta "cribado de CCR" y cuando se habla del Programa de Cribado o los Profesionales del Departamento de Cribado, etc.

- Título:
El título no es del todo apropiado. Va más ligado al objetivo del estudio que a los resultados. El hecho de que sea interrogativo no lo hace suficientemente atractivo.

- Resumen:
En general es correcto.

En las palabras claves se podría añadir "evaluación, educación, formación".

- Introducción:
Los cuatro últimos párrafos deberían ligarse un poco más entre ellos ya que ahora quedan un poco aislados. Son motivos que justifican que sea necesaria una homogenización de conocimientos, etc., pero no queda claro en el redactado.

Página 3: Línea 6: cambiar "puede reducir" por reduce.

Página 3: Línea 40: Sólo se habla de los criterios de exclusión. Quizás debería hablarse también de los criterios de inclusión.

- Método:
No entiendo por qué se habla de "Muestra". Los autores envían un cuestionario a TODOS los profesionales implicados en la formación, así pues, a toda la POBLACIÓN. Luego, para el segundo cuestionario sólo lo envían a los que participaron ya en el primero. Por lo tanto, tampoco se puede hablar de muestra. Otra cosa es que, dado en número de profesionales que han respondido, los autores calculen la potencia del estudio. Pero estrictamente no se debería hablar de "cálculo del tamaño de la muestra".

Dado que el segundo cuestionario se pasaba sólo a los profesionales que habían respondido al primero, ¿por qué no se hizo (o planificó) un análisis con datos apareados?

Página 5: Línea 43: Borrar "Sin embargo" no aporta nada.

Página 6: Línea 56: acentuar "solo".

- Resultados:
El primer párrafo se debería redactar mejor ya que describe exactamente lo que se dice en la figura 1.

La primera frase del segundo párrafo es un poco confusa. Deberían buscar un redactado alternativo.

Página 7: Línea 52: no entiendo qué representan los resultados entre paréntesis.

Página 8: Línea 21 a 28: No me queda claro que este resultado se vea en la Tabla 2.

- Discusión:
Creo que debería aprovecharse para hacer más énfasis en el rol de la enfermera, en hacer propuestas de mejora, en comentar la posibilidad que la formación/información proporcionada no sea la correcta etc. Se centra demasiado en los resultados, pero no aprovecha para profundizar un poco más en la educación, los roles profesionales etc.

Página 9: Línea 6: Añadir "sólo" entre "mejoró" y "conceptos".

Líneas 12 a 16: este comentario no se desprende de ningún resultado. La línea de 12 a 16 dice: *Este aumento tiene relevancia clínica ya mejora de manera notable los conocimientos de los profesionales gracias a una única sesión formativa presencial y el envío de mensajes por correo electrónico*.

Línea 14: Añadir "que" entre "ya" y "mejora".

- Tablas y figuras:
Tabla 1: No se entienden las variables (% de personas con nivel de estudios inferior a primarios) esto son los pacientes de cada centro, o los profesionales. Si fueran los profesionales no tendría mucho sentido ya que todos deberían ser universitarios. Aclarar.

Tampoco se entiende la variable (% de participación en el cribado de CCR" ¿a quién se refiere?

Tabla 2: es muy difícil de leer ya que casi se solapan las "n" con los "%" y no queda muy claro a qué variable corresponden. Se podría añadir una columna con el dato de "diferencia de %" que ayudaría tener mejor conocimiento de las diferencias entre un cuestionario y otro y también entre intervención y control.

- Bibliografía:
Tendrían que homogeneizarse todas las referencias
En algunas citas aparece el mes, en otras no (ref. 1,4, 9). Alguna no tiene punto después del nombre de la revista (ref4). Alguna tiene el número de volumen entre paréntesis y en otras no aparece el número de volumen.

Revisor #2:

- Aspectos formales.
Se sigue la estructura habitual de artículo original.

- Título:
Aunque es correcto, podía incluir para dar una idea más clara de su contenido, el para qué podía ser suficiente esa información a los profesionales, o indicar que es una evaluación del impacto de una actividad informativa.

- Tablas y figuras:
Son comprensibles.

La lectura es difícil de seguir y comprender en ocasiones, se recomienda una revisión de la redacción del texto en general. Se ponen 2 ejemplos:

- La redacción del párrafo sobre cómo se aseguraban los centros la realización de colonoscopias de seguimiento. Cuesta entenderlo (pg. 11, a partir de la línea 30).
- ¿El programa acude a los centros? Más bien serán los profesionales participantes en el programa. Se trata "el programa" como un ser con entidad propia, es un error de redacción,

al utilizar un tono coloquial, que quizás hay que cuidar en un artículo científico. (pg. 6, línea 25).

- Aspectos éticos:

El estudio fue aprobado por el Comité Ético correspondiente.

- Contenido y validez de la información científica:

Hay una confusión en los términos relacionados con la actividad formativa: se dice en el objetivo que se trata de una actividad formativa, pero en el título y a lo largo del texto parece que se trata de una actividad meramente informativa. En Educación para la Salud, hay que tener en cuenta que los hábitos, los comportamientos (se intenta medir si cambian en los profesionales con quienes se interviene), no se cambian sólo con información o intervenciones puntuales (Frías Osuna, A. Salud Pública y Educación para la Salud. Barcelona: Eselvier, 2000). Información, formación, comunicación, no son términos sinónimos.

- Palabras Clave:

Siendo el artículo sobre una actividad formativa, se echa de menos una palabra clave que sea "formación" o "información" o "comunicación", se aconseja poner "formación de profesionales".

- Objetivos:

No están totalmente claros: La intervención formativa es ¿sobre los conocimientos del cribado y recomendaciones (objetivo en el resumen) o sobre el programa (objetivo en el texto)?

- Método:

Aunque se describe, hay algunas cuestiones que no están suficientemente claras.

Sobre el diseño:

La elección de estudio clínico es adecuada para el objetivo propuesto.

La aleatorización, que quizás sea de los aspectos más importantes para poder ver la validez en un ensayo clínico, no está suficientemente explicada. Aunque la aleatorización por agregados es útil para evaluar programas de Educación para la Salud e intervenciones formativas, ¿los centros de salud tienen características similares o hay diferencias que pueden generar sesgos? Por ejemplo, en la tabla 1 se observa que hay centros con más de 30 profesionales, y otros con 30 profesionales o menos y se interviene más en los primeros.

Sobre la intervención:

Las sesiones formativas ¿cómo son? ¿y las píldoras? ¿en qué consisten? (pg. 8, línea 22).

Sobre el instrumento:

No se entiende por qué no se puede validar el cuestionario realizado. Precisamente cuando no hay cuestionarios en el ámbito propio es cuando hay que validar el instrumento a utilizar.

¿Cómo es el cuestionario? ¿De respuestas múltiples, Verdadero / Falso; SI/NO…?

En la pg. 7, línea 47 aparece la expresión "aspectos que por lo que sabemos…": ¿cómo se sabe? Si es por la bibliografía habría que hacer alguna referencia bibliográfica, si es por otra fuente habría que señalarla.

Sobre la Muestra:
Se justifica el cálculo de la muestra en la media obtenida en los primeros cuestionarios: una media ¿de qué? ¿Sobre qué?, Si es de la puntuación, que parece deducirse al continuar con la lectura, habría que definir esa puntuación: valores posibles (pg. 7, línea 8): hasta la página siguiente en el apartado de análisis de datos no se sabe que puede ir de 0 a 11.

- **Análisis de datos:**

No queda claro cuáles fueron las variables, más cuando al inicio del análisis de datos indican que se creó una nueva variable para medir el conocimiento ¿cuál?

Si las puntuaciones van de 0 (peor) a 11 (mejor) y en ese sentido se expresan los resultados, ¿cómo se dice que se clasifican en correctas, incorrectas, NS/NC, sin respuesta? Está un poco confuso.

Hay contradicciones o cuestiones poco claras: La puntuación de la pregunta 2 fue la única en la que se encontraron diferencias, y fue mayor en quienes no contestaron al segundo cuestionario (pg. 8, línea 47) ¿Esto significa que ya tenían los conocimientos antes de la intervención? Al menos no apunta en la dirección de que quienes recibieron la intervención mejoraron sus conocimientos y la utilidad de la misma. ¿Para qué se resalta este resultado si a continuación se refiere que solo se analizan los individuos que contestaron los dos cuestionarios? Todo esto está en el apartado "Métodos" y son "Resultados" y merece una referencia en la "Discusión".

En ningún momento se dice el periodo, las fechas, en que se llevó a cabo el estudio.

- Resultados:
Lo más importante es que no hay diferencias estadísticamente significativas. A pesar de ello se insiste en que en 9 de las 11 primeras preguntas aumentó el porcentaje de preguntas correctas en el grupo intervención, en 4 en el grupo control. Decir que "mejoraron notoriamente" (pg. 10, línea 27) sin significación estadística no es aceptable en un artículo científico.

Aunque en la metodología se indica que se proponen detectar una diferencia igual o superior a 1,00 punto entre el cuestionario previo a la intervención y el posterior (pg. 7, línea 14), se conforman con una diferencia de 0,25 puntos, de 8,07 a 8,32 (pg. 9, línea 28); en el grupo intervención solo se produjo un aumento de 0.34 puntos (pg. 9, línea 35), de 7,94 a 8,38.

La figura 1 es muy clarificadora para comprender el proceso. Se debe corregir que se habla de "sesiones informativas" en plural cuando en el texto se refiere que ha habido una única sesión, más las píldoras informativas.

En la tabla 1, en la 1ª columna se entiende que se ponen características de los profesionales participantes ¿A qué se refiere el % de personas con nivel de estudios inferior a primarios?

- Discusión:
Solo se compara con otros estudios y se refiere como limitación, la tasa de no respuesta. Quizás haya que apuntar otras posibles limitaciones ¿en la aleatorización por centros?

- Conclusiones:

No se ha medido el funcionamiento del programa de cribado así que no se puede concluir que es esencial para el buen funcionamiento mantener una comunicación constante con los profesionales implicados.

Cuando se habla de comunicación constante ¿se quiere decir las píldoras informativas mencionadas? (porque sesiones solo ha habido una puntual), quizás esto habría que haberlo definido previamente. Y si solo ha habido una sesión, tampoco se puede concluir que "sesiones formativas de manera continuada pueden contribuir a mejorar…".

- Referencias bibliográficas:
Correctas.

Respuesta al editor y a los revisores del Enfermería Clínica.

Respuestas a los comentarios de los revisores:
Agradecemos mucho los comentarios y sugerencias tan útiles que nos han realizado los revisores y que han permitido mejorar el manuscrito.
A continuación, indicamos nuestras respuestas a los comentarios realizados por los revisores y quedamos a su disposición por si requieren alguna aclaración adicional.

Revisor #1:
Podría tener interés para Enfermería sí se mejora la discusión y se hiciera propuestas de nuevas actividades específicas para las enfermeras que pudiera aumentar su responsabilidad o rol autónomo ante este problema de salud.
Se han propuesto nuevas actividades para enfermería teniendo en cuenta los resultados del estudio: ***Tal y como muestran los resultados, la intervención no aumenta todos los aspectos que desconocen los profesionales de AP, y por lo tanto debe mejorarse. Como consecuencia de estos resultados el equipo investigador diseñó nuevo material informativo haciendo énfasis en los aspectos donde no se mejoraba. Una posible e importante actividad de las enfermeras sería estudiar nuevos formatos para realizar esta formación, diseñarlos e impartirlos teniendo en cuenta los resultados de este estudio.***

En todo el manuscrito se considera que el "cribado de CCR" es un programa (ente, grupo, institución) en lugar de una actividad. Quizás se debería redactar de forma que quede claro cuando se habla de la actividad concreta "cribado de CCR" y cuando se habla del Programa de Cribado o los Profesionales del Departamento de Cribado, etc.
Se ha especificado y modificado este concepto en el manuscrito. Cuando se habla de “cribado” como actividad se ha mantenido como cribado, y cuando se habla de “cribado” como institución se ha añadido “programa” o “profesionales del programa”.

- Título:
El título no es del todo apropiado. Va más ligado al objetivo del estudio que a los resultados. El hecho de que sea interrogativo no lo hace suficientemente atractivo.
El título: ***¿Es suficiente la información que se les da a los profesionales de atención primaria sobre el cribado de cáncer colorrectal?*** **se cambiado por:** ***Impacto de una intervención informativa a profesionales de atención primaria sobre el programa poblacional de cribado de cáncer colorrectal en Cataluña.***

- Resumen:
En las palabras claves se podría añadir "evaluación, educación, formación".
Se han añadido las palabras clave sugeridas por el revisor: evaluación, educación, formación de profesionales.
- Introducción:

Los cuatro últimos párrafos deberían ligarse un poco más entre ellos ya que ahora quedan un poco aislados. Son motivos que justifican que sea necesaria una homogenización de conocimientos, etc., pero no queda claro en el redactado.
Para facilitar la lectura y comprensión de la introducción se han modificado los cuatro últimos párrafos (ver manuscrito).

Página 3: Línea 6: cambiar "puede reducir" por reduce. **Se ha cambiado el tiempo verbal.**

Página 3: Línea 40: Sólo se habla de los criterios de exclusión. Quizás debería hablarse también de los criterios de inclusión.
La línea 40 dice: *Las funciones de los profesionales de atención primaria dentro del programa de cribado son muy diversas: a) promover la participación y adherencia al cribado, b) informar sobre los beneficios y riesgos, c) valorar los criterios de exclusión y categorías de riesgo y considerar si es preciso derivar a unidades especializadas, y d) garantizar la continuidad y el correcto seguimiento de las lesiones detectadas.*

No se añaden los criterios de inclusión porque no es una actividad de los profesionales de primaria. El programa poblacional de cribado de cáncer colorrectal se dirige a hombres y mujeres de 50 a 69 años que residen en L'Hospitalet de Llobregat. Los profesionales de AP identifican si entre sus pacientes de 50 a 69 años tienen algún criterio de exclusión (antecedentes personales, familiares...). Los profesionales de AP no valoran los criterios de inclusión, sino que, de toda esta población elegible, deciden quiénes pueden o no participar en el cribado.

- Método:
No entiendo por qué se habla de "Muestra". Los autores envían un cuestionario a TODOS los profesionales implicados en la formación, así pues, a toda la POBLACIÓN. Luego, para el segundo cuestionario sólo lo envían a los que participaron ya en el primero. Por lo tanto, tampoco se puede hablar de muestra. Otra cosa es que, dado en número de profesionales que han respondido, los autores calculen la potencia del estudio. Pero estrictamente no se debería hablar de "cálculo del tamaño de la muestra".
Teniendo en cuenta los comentarios del revisor, se ha redactado de manera diferente el cálculo del tamaño de la muestra: *Hemos calculado el tamaño del efecto mínimo que es probable que se detecte usando el número final de participantes del estudio. Aceptando un riesgo alfa del 0,05 en un contraste bilateral con 64 sujetos en ambos grupos, la potencia del contraste de hipótesis es del 80% para detectar como estadísticamente significativa una diferencia de 0,62 puntos en las puntuaciones medias.*

Dado que el segundo cuestionario se pasaba sólo a los profesionales que habían respondido al primero, ¿por qué no se hizo (o planificó) un análisis con datos apareados? **Se ha añadido un**

análisis de datos apareados, tal y como sugiere el revisor. Mediante el test de Wilcoxon se han comparado los resultados pre y post del grupo intervención. Para comparar los resultados entre el grupo control y el grupo intervención, se utilizó el test de U de Mann-Whitney.

Página 5: Línea 43: Borrar "Sin embargo" no aporta nada.
Se ha eliminado

Página 6: Línea 56: acentuar "solo".
Se ha acentuado

- Resultados:
El primer párrafo se debería redactar mejor ya que describe exactamente lo que se dice en la figura 1.
Se ha modificado y ampliado la información del primer párrafo

La primera frase del segundo párrafo es un poco confusa. Deberían buscar un redactado alternativo.
Se ha modificado la frase para que sea menos confusa

Página 7: Línea 52: no entiendo qué representan los resultados entre paréntesis.
Se han quitado los paréntesis.

Página 8: Línea 21 a 28: No me queda claro que este resultado se vea en la Tabla 2.
La línea 21 a 28 dice: *No se encontraron diferencias estadísticamente significativas en ninguna de ellas, sin embargo, en 9 de las 11 primeras preguntas se aumentó el porcentaje de respuestas correctas en el grupo intervención y en 4 para el grupo control, tal y como muestra la tabla 2. Las 3 preguntas que en el primer cuestionario tenían un porcentaje de respuestas correctas inferior al 50% mejoraron notoriamente en el grupo intervención (Tabla 2).*
Todo el apartado de resultados se ha ampliado y modificado. Se ha añadido el análisis de los resultados del grupo intervención previos y posteriores a la intervención.

- Discusión:
Creo que debería aprovecharse para hacer más énfasis en el rol de la enfermera, en hacer propuestas de mejora, en comentar la posibilidad que la formación/información proporcionada no sea la correcta etc. Se centra demasiado en los resultados, pero no aprovecha para profundizar un poco más en la educación, los roles profesionales etc.
Se ha añadido este párrafo: La intervención diseñada para este estudio no mejoró de forma relevante aquellos aspectos que desconocen los profesionales de AP. Como

consecuencia de estos resultados el equipo investigador diseñó nuevo material informativo haciendo énfasis en los procedimientos y circuitos del programa de cribado. Una importante actividad de las enfermeras sería estudiar nuevos formatos para realizar esta formación, diseñarlos e impartirlos teniendo en cuenta los resultados de este estudio.

Página 9: Línea 6: Añadir "sólo" entre "mejoró" y "conceptos". **Se ha añadido**

Líneas 12 a 16: este comentario no se desprende de ningún resultado.
La línea de 12 a 16 dice: *Este aumento tiene relevancia clínica ya mejora de manera notable los conocimientos de los profesionales gracias a una única sesión formativa presencial y el envío de mensajes por correo electrónico*. Es cierto que no se desprende de los resultados y se trata de una valoración de los autores. Se ha eliminado esta frase.

Línea 14: Añadir "que" entre "ya" y "mejora". **Se ha añadido**

- Tablas y figuras:
Tabla 1: No se entienden las variables (% de personas con nivel de estudios inferior a primarios) esto son los pacientes de cada centro, o los profesionales. Si fueran los profesionales no tendría mucho sentido ya que todos deberían ser universitarios. Aclarar.
Se ha añadido una leyenda en la tabla 1 que se trata de una variable agregada que se refiere al porcentaje de población diana del centro de AP que tiene un nivel de estudios inferior a los estudios primarios.

Tampoco se entiende la variable (% de participación en el cribado de CCR" ¿a quién se refiere?
Se ha añadido una leyenda en la tabla 1 que se trata de la población participante en el cribado, para clarificar esta variable.

Tabla 2: es muy difícil de leer ya que casi se solapan las "n" con los "%" y no queda muy claro a qué variable corresponden. Se podría añadir una columna con el dato de "diferencia de %" que ayudaría tener mejor conocimiento de las diferencias entre un cuestionario y otro y también entre intervención y control.
Se ha modificado la tabla 2 para hacerla menos difícil de leer. Se han añadido dos columnas, la diferencia entre el grupo intervención y el grupo no intervención y la diferencia entre el cuestionario 1 y 2.

- Bibliografía:
Tendrían que homogeneizarse todas las referencias
En algunas citas aparece el mes, en otras no (ref. 1,4, 9). Alguna no tiene punto después del nombre de la revista (ref4). Alguna tiene el número de volumen entre paréntesis y en otras no aparece el número de volumen.

Se han modificado las referencias para homogeneizarlas

Revisor #2:

- Título:

Aunque es correcto, podía incluir para dar una idea más clara de su contenido, el para qué podía ser suficiente esa información a los profesionales, o indicar que es una evaluación del impacto de una actividad informativa.

Se ha modificado el título: *¿Es suficiente la información que se les da a los profesionales de atención primaria sobre el cribado de cáncer colorrectal?* se cambiado por: *Impacto de una intervención a profesionales de atención primaria sobre el programa poblacional de cribado de cáncer colorrectal en Cataluña.*

- Tablas y figuras:

La lectura es difícil de seguir y comprender en ocasiones, se recomienda una revisión de la redacción del texto en general. Se ponen 2 ejemplos:

La redacción del párrafo sobre cómo se aseguraban los centros la realización de colonoscopias de seguimiento. Cuesta entenderlo (pg. 11, a partir de la línea 30).

¿El programa acude a los centros? Más bien serán los profesionales participantes en el programa. Se trata "el programa" como un ser con entidad propia, es un error de redacción, al utilizar un tono coloquial, que quizás hay que cuidar en un artículo científico. (pg. 6, línea 25).

Se ha revisado todo el texto y se ha modificado el redactado para intentar hacerlo más comprensible

- Contenido y validez de la información científica:

Hay una confusión en los términos relacionados con la actividad formativa: se dice en el objetivo que se trata de una actividad formativa, pero en el título y a lo largo del texto parece que se trata de una actividad meramente informativa. En Educación para la Salud, hay que tener en cuenta que los hábitos, los comportamientos (se intenta medir si cambian en los profesionales con quienes se interviene), no se cambian sólo con información o intervenciones puntuales (Frías Osuna, A. Salud Pública y Educación para la Salud. Barcelona: Eselvier, 2000). Información, formación, comunicación, no son términos sinónimos.

Se ha cambiado en todo el texto la expresión “sesión formativa” por “sesión informativa”.

- Palabras Clave:

Siendo el artículo sobre una actividad formativa, se echa de menos una palabra clave que sea "formación" o "información" o "comunicación", se aconseja poner "formación de profesionales".

Se han añadido las siguientes palabras clave: evaluación, educación, formación de profesionales.

- Objetivos:

No están totalmente claros: La intervención formativa es ¿sobre los conocimientos del cribado y recomendaciones (objetivo en el resumen) o sobre el programa (objetivo en el texto)?
Se ha modificado el objetivo del texto para unificarlo con el del resumen, que es: *Evaluar el impacto de una intervención informativa específica a los profesionales de atención primaria sobre sus conocimientos del programa de cribado de cáncer colorrectal. Los conocimientos del programa de cribado implican conocimiento sobre el circuito del programa, las recomendaciones de vigilancia posterior y las estrategias de derivación.*

- Método:
Sobre el diseño: La aleatorización, que quizás sea de los aspectos más importantes para poder ver la validez en un ensayo clínico, no está suficientemente explicada. Aunque la aleatorización por agregados es útil para evaluar programas de Educación para la Salud e intervenciones formativas, ¿los centros de salud tienen características similares o hay diferencias que pueden generar sesgos? Por ejemplo, en la tabla 1 se observa que hay centros con más de 30 profesionales, y otros con 30 profesionales o menos y se interviene más en los primeros.
Tal y como sugiere el revisor, se ha explicado más ampliamente como se realizó la aleatorización. El equipo investigador cree que la aleatorización por centros es adecuada para este estudio. Se escogió esta aleatorización para evitar que la información de la sesión se transmitiera entre los profesionales del mismo centro. Se compararon las características del grupo intervención en relación al grupo control previo a la intervención, para ver si existían diferencias. Se ha añadido esta información en el manuscrito, mostrando que no existían diferencias entre estos dos grupos.

Sobre la intervención: Las sesiones formativas ¿cómo son? ¿Y las píldoras? ¿En qué consisten? (pg. 8, línea 22).
Se han explicado de manera más detallada la sesión informativa en los centros y las píldoras informativas que se enviaron a los profesionales (ver manuscrito).

Sobre el instrumento: No se entiende por qué no se puede validar el cuestionario realizado. Precisamente cuando no hay cuestionarios en el ámbito propio es cuando hay que validar el instrumento a utilizar.
Ya se comenta en el manuscrito que se trata de un cuestionario *ad hoc*, en el que previamente a su administración en la población de estudio, se valoraron aspectos relacionados con la comprensión, factibilidad y duración. De hecho, gracias a las entrevistas realizadas a una muestra de conveniencia se modificó el enunciado de alguna pregunta para facilitar la comprensión y evitar interpretaciones equívocas. El objetivo del estudio fue evaluar el grado de conocimientos sobre el programa de cribado de la oficina técnica, antes y después de una intervención. El cuestionario abordaba aspectos específicos de los circuitos de la oficina técnica del programa de cribado. (Nótese que las diferentes oficinas técnicas del programa de cribado de cáncer colorrectal han de seguir

unas directrices marcadas por el Plan Director de Oncología, pero tienen cierto margen en el momento de implementar los circuitos).

¿Cómo es el cuestionario? ¿De respuestas múltiples, Verdadero / Falso; SI/NO…?
Se ha añadido un apartado en Métodos sobre las características del cuestionario (instrumento)

En la pg. 7, línea 47 aparece la expresión "aspectos que por lo que sabemos…": ¿cómo se sabe? Si es por la bibliografía habría que hacer alguna referencia bibliográfica, si es por otra fuente habría que señalarla.
La expresión "aspectos que por lo que sabemos…" ha sido cambiado por "según la bibliografía consultada y se han añadido las referencias pertinentes

Sobre la Muestra: Se justifica el cálculo de la muestra en la media obtenida en los primeros cuestionarios: una media ¿de qué? ¿Sobre qué?, Si es de la puntuación, que parece deducirse al continuar con la lectura, habría que definir esa puntuación: valores posibles (pg. 7, línea 8): hasta la página siguiente en el apartado de análisis de datos no se sabe que puede ir de 0 a 11.
Se ha añadido que se trata de la puntuación total del cuestionario, que se describe más detalladamente en el apartado de variables y que los valores pueden ir de 0 a 11.
Análisis de datos:
No queda claro cuáles fueron las variables, más cuando al inicio del análisis de datos indican que se creó una nueva variable para medir el conocimiento ¿cuál?
Se ha creado un apartado en métodos donde se describen las variables del estudio.

Si las puntuaciones van de 0 (peor) a 11 (mejor) y en ese sentido se expresan los resultados, ¿cómo se dice que se clasifican en correctas, incorrectas, NS/NC, sin respuesta? Está un poco confuso.
Se ha añadido este redactado para clarificarlo: Las preguntas se clasificaron como correctas, incorrectas y NS/NC o sin respuesta. Las respuestas correctas se las puntuó con un uno, las incorrectas con cero. A partir de la suma de estas 11 preguntas se creó una nueva variable para medir el conocimiento global sobre el cribado. La puntuación de esta nueva variable iba de 0 (peor) a 11 (mejor).

Hay contradicciones o cuestiones poco claras: La puntuación de la pregunta 2 fue la única en la que se encontraron diferencias, y fue mayor en quienes no contestaron al segundo cuestionario (pg. 8, línea 47) ¿Esto significa que ya tenían los conocimientos antes de la intervención? Al menos no apunta en la dirección de que quienes recibieron la intervención mejoraron sus conocimientos y la utilidad de la misma. ¿Para qué se resalta este resultado si a continuación se refiere que solo se analizan los individuos que contestaron los dos cuestionarios? Todo esto está en el apartado "Métodos" y son "Resultados" y merece una referencia en la "Discusión".

El párrafo del que se está hablando es: *Se realizó un análisis de las pérdidas por seguimiento. Se compararon las respuestas en el primer cuestionario del grupo de profesionales que contestaron solo al primer cuestionario con aquellas que contestaron ambos, y solo se encontraron diferencias en la* pregunta 2 sobre los factores de riesgo del cáncer (p=0,013). La puntuación en esta pregunta fue mayor en el grupo de profesionales que finalmente no contestó el segundo cuestionario*.*

Se ha realizado un análisis de las pérdidas por seguimiento, es decir que se comparan las respuestas del grupo de personas que se pierden, que contestan al primer cuestionario pero que no quieren/pueden contestar al segundo. Esto se realiza para comprobar que las personas que NO han contestado el segundo cuestionario lo hayan hecho porqué tienen menos conocimientos que los que acceden a contestar y por lo tanto haya un sesgo. Es por este motivo que se comenta que no existen diferencias entre estos dos grupos (los que contestan todo y los que sólo el primer cuestionario) y que en la única pregunta que se detectaron es en la 2, pero que al contrario de lo que se podría esperar, los que no respondieron el segundo cuestionario obtuvieron mejor puntuación.

El equipo investigador ha incluido este análisis en MÉTODO ya que es un tipo de análisis realizado para descartar posibles sesgos, previo a los análisis para los resultados del estudio.

En ningún momento se dice el periodo, las fechas, en que se llevó a cabo el estudio.

Se ha ampliado la información en relación al cronograma del estudio:

En enero de 2013 se explicaron los objetivos en los centros de AP y se recolectaron los datos previos a la intervención. La intervención se realizó durante los meses de setiembre a octubre de 2013. Las píldoras informativas se enviaron entre diciembre de 2013 y febrero de 2014. En abril inició la recogida del segundo cuestionario y el trabajo de campo finalizó en el mes de julio.

- Resultados:

Lo más importante es que no hay diferencias estadísticamente significativas. A pesar de ello se insiste en que en 9 de las 11 primeras preguntas aumentó el porcentaje de preguntas correctas en el grupo intervención, en 4 en el grupo control. Decir que "mejoraron notoriamente" (pg. 10, línea 27) sin significación estadística no es aceptable en un artículo científico.

Según la sugerencia del revisor, se ha añadido el análisis específico del grupo intervención (pre vs post) y sí que se han encontrado diferencias significativas. Toda esta información se ha ampliado el apartado de resultados.

Tal y como indica el revisor, se ha cambiado "notoriamente" por "mejoraron en el segundo cuestionario entre 8 y 9,2%".

Aunque en la metodología se indica que se proponen detectar una diferencia igual o superior a 1,00 punto entre el cuestionario previo a la intervención y el posterior (pg. 7, línea 14), se

conforman con una diferencia de 0,25 puntos, de 8,07 a 8,32 (pg. 9, línea 28); en el grupo intervención solo se produjo un aumento de 0.34 puntos (pg. 9, línea 35), de 7,94 a 8,38.
Se ha modificado el apartado del cálculo de la muestra: ***Hemos calculado el tamaño del efecto mínimo que es probable que se detecte usando el número final de participantes del estudio. Aceptando un riesgo alfa del 0,05 en un contraste bilateral con 64 sujetos en ambos grupos, la potencia del contraste de hipótesis es del 80% para detectar como estadísticamente significativa una diferencia de 0,62 puntos en las puntuaciones medias.***

La figura 1 es muy clarificadora para comprender el proceso. Se debe corregir que se habla de "sesiones informativas" en plural cuando en el texto se refiere que ha habido una única sesión, más las píldoras informativas.
Se ha modificado la figura 1, y se ha puesto sesión informativa, en singular.

En la tabla 1, en la 1ª columna se entiende que se ponen características de los profesionales participantes ¿A qué se refiere el % de personas con nivel de estudios inferior a primarios?
Se ha añadido una leyenda en la tabla 1 clarificando que: Se trata de una variable agregada que se refiere al porcentaje de población diana del centro de AP que tiene un nivel de estudios inferior a los estudios primarios

- Discusión:
Solo se compara con otros estudios y se refiere como limitación, la tasa de no respuesta. Quizás haya que apuntar otras posibles limitaciones ¿en la aleatorización por centros?
No creemos que la aleatorización por centros se trate de una limitación del estudio. Se escogió esta aleatorización para evitar que la información de la sesión se transmitiera entre los profesionales del mismo centro. Se realizó un análisis entre el grupo intervención vs. No intervención para las variables del estudio, y no existían diferencias estadísticas.
Se ha añadido como limitación la muestra final del estudio, ya que sólo se consigue una tasa de respuesta de los dos cuestionarios del 31,7%.

- Conclusiones:
No se ha medido el funcionamiento del programa de cribado así que no se puede concluir que es esencial para el buen funcionamiento mantener una comunicación constante con los profesionales implicados.
Se ha modificado la frase por: ***Es importante tener una comunicación frecuente con los profesionales implicados, no sólo para mantenerlos al corriente de los resultados y novedades, sino también para que se sientan partícipes del mismo.***

Cuando se habla de comunicación constante ¿se quiere decir las píldoras informativas mencionadas? (porque sesiones solo ha habido una puntual), quizás esto habría que haberlo definido previamente. Y si solo ha habido una sesión, tampoco se puede concluir que "sesiones formativas de manera continuada pueden contribuir a mejorar…".

Se ha añadido al inicio del manuscrito que cuando se habla de información continuada se refiere a 1 sesión presencial más 3 píldoras informativas. En la frase "sesiones formativas de manera continuada pueden contribuir a mejorar…" se ha cambiado "sesiones formativas" por "intervención informativa continuada".