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Investigating the self-perceived educational priorities among oncology nurses.

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Title: Investigating the self-perceived educational priorities among oncology nurses

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Abstract

Background: Oncology nurses are the main providers of care to people affected by cancer. However, little is known about the educational needs and priorities of oncology nurses when providing care to people living with cancer.

Objective: To understand the self-perceived educational priorities among oncology nurses.

Design: A national online survey.

Setting: The Cancer Nurses Society of Australia (CNSA) is an Australian wide professional body for cancer nurses. At the time of conducting the research, there were approximately 1300 members. All members were invited to participate in the survey. CNSA provided access to nurses working in all areas of cancer care, including inpatient wards, outpatient centres, ambulatory day oncology units, radiation oncology, bone marrow transplant units, educational, and research units.

Participants: Registered nurses involved in direct care of people affected by cancer who were members of CNSA, and ability to communicate in English.

Methods: The instrument consisted of a 15-item online questionnaire which included demographic and professional questions related to the self-perceived oncology educational needs which were free-text. This survey was hosted using an online electronic data capture system (i.e., SurveyMonkey®), and the electronic link was sent to the CNSA who then sent an email invitation to the 1,300 members.

Results: 610 educational needs were identified and ranked. These individual answers were grouped into seven overarching categories with various sub-categories within each group. The oncology nurses identified important educational topics which included: a) cancer biology, b) treatments, c) direct patient care, d) age-specific cancer care, e) leadership and research, and f) law and ethics.

Conclusion: As the number of people affected by cancer continue to rise, addressing the educational needs and priorities of oncology nurses has never been so important. Higher educational institutions and healthcare institutions should consider these findings in addressing the learning needs for the current oncology nursing workforce.

Introduction

Globally, cancer is the second leading cause of death (Fitzmaurice et al., 2015). Evidence has identified that there were 18.1 million new cancer cases, and 9.6 million cancer deaths occurred in 2018 (Ferlay et al., 2019). Over one million people are currently living with or beyond a diagnosis of cancer in Australia (Australian Institute of Health and Welfare, 2019). Consequently, cancer poses a significant burden for healthcare systems across the entire cancer care continuum (Amundsen et al., 2021). A large body of evidence has underscored that the impact of cancer and associated treatments can have a significant negative impact on an individual's psychological, physical, spiritual, and social well-being (Gabriel et al., 2021) that may continue to affect quality of life well after cancer treatment has ended. Supportive care is defined as a person-centred approach to the provision of the necessary services for those living with or affected by cancer to meet their informational, spiritual, psychological, social, or physical needs during diagnosis, treatment, or follow-up phases, including issues of health promotion and prevention, survivorship, palliation, and bereavement (Paterson et al., 2021, Paterson et al., 2020, Yates et al., 2021). Importantly, emerging evidence has identified that unmet supportive care needs are associated with reduced pyscho-social outcomes (such as, quality of life, depression, and anxiety) across a range of tumour patient populations groups including: prostate (Watson et al., 2015), breast (Lee et al., 2021), haematological (Oberoi et al., 2017), myeloma (Pereira et al., 2020), oesophageal (Choi et al., 2021), and including informal caregivers (Kim and Carver, 2019). Oncology nurses play a vital role in addressing these supportive care needs of people and their families at all phases of the cancer care continuum, but often oncology nurses may not be involved in their care due to a lack of timely referrals from other members of the cancer multidisciplinary team (MDT) (Butow et al., 2012, Lisy et al., 2019, Paterson et al., 2018, Paterson et al., 2021, Paterson et al., 2020, Paterson et al., 2015).

It is widely acknowledged that oncology nurses provide consultations with patients which are essential to meet the supportive care needs of people affected by cancer, safely embedded within the MDT (Paterson and Nabi, 2017). Given the millions of people affected by cancer, oncology nurses are continuing to be challenged because of newer complex therapies and diagnostics (Singh and Mijakovic, 2021, Withycombe et al., 2021, Jennings et al., 2021), including multimodality treatments, and newer emergent broader considerations such as, oncogeriatrics, genetic counselling, and survivorship issues which have a central place for oncology nursing practice (Puts et al., 2021, Molassiotis et al., 2021). Further to this, there is an increasing need for realising optimal care pathways, improved patient and health system outcomes particularly for regional/rural communities and disadvantaged populations through efficient, effective, and sustainable models of care that require ongoing specialist and ongoing leadership education (Lisy et al., 2019).

The oncology nurse provides the 'hub of supportive care' (Paterson and Nabi, 2017) and they are uniquely placed within the MDT to ensure that the holistic person-centred care needs are assessed (physical, psychological, social and spiritual domains) and shared self-management care plans are developed in partnership with the individual and their loved one to optimise supported self-management and rehabilitation (Williamson et al., 2021). However, most oncology nurses receive limited exposure to cancer care education in their undergraduate curriculum studies (Altre and Chou, 2021) and often qualified oncology nurses must complete many hours of non-specialist mandatory hospital training annually, with little time to keep abreast of the latest evidence-based developments in cancer care (Challinor et al., 2020). Importantly, due to a paucity of formal oncology nursing education, nurses who wish to pursue an oncology nursing career often rely on learning within the workplace and participating in continual professional development activities to gain knowledge about cancer survivorship and acute cancer care. However, within the Australian context there is a scarcity of universal oncology nursing specialisation programmes, and indeed this is true on a global scale (Young et al., 2020). Training programmes in oncology are diverse globally, some offer university-level master's degree, and others provide offerings of specialised cancer hospital training programmes. Therefore, to better understand the educational training needs of oncology nurses in Australia this study sought to gain insights into the self-perceived educational needs of oncology nurses in this context. This study addressed the following research question:

- What are the self-perceived educational priorities among oncology nurses in Australia?

Methods and materials

Design: A national cross-sectional online survey (Van Selm and Jankowski, 2006) was used to understand the self-perceived educational priorities among oncology nurses.

Sample: The Australian Institute for Health and Welfare (AIHW) (Australian Institute for Health and Welfare, 2015) identified that there are approximately 283,570 nurses working in Australia. This number comprises enrolled nurses, midwives, and registered nurses. Of these, an estimated 24,333 work within the medical division of their hospital. When this research study was designed there was no available information to determine the number of nurses who worked within the cancer specialty. The AIHW Labour Force data did not record the number of nurses who worked in cancer care, nor was the register of nurses in Australia available for this research purpose. It has only been in 2021 that the Australian Health Practitioner Regulation Agency (AHPRA), included the cancer nursing specialty as a subgroup of the nursing profession.

Therefore, the Cancer Nurses Society of Australia (CNSA) was used as the point of collection of data. The CNSA is an Australian wide professional body for cancer nurses. At the time of conducting the research, there were approximately 1300 members of the CNSA. All members of the CNSA were invited to participate in the survey. CNSA provided access to nurses working in all areas of cancer care, including inpatient wards, outpatient centres, ambulatory day oncology units, radiation oncology, bone marrow transplant units, educational, and research units.

Inclusion criteria: Oncology nurses who were the members of the CNSA were surveyed. The inclusion criteria included (a) registered nurses involved in direct care of people affected by cancer, and (b) ability to communicate in English.

Data collection instrument: An online survey was developed by the members of the Education Standing Committee of the CNSA. The instrument consisted of a 15-item online questionnaire which included demographic and professional questions related to the self-perceived oncology educational needs which were free-text. This study represents the response to the open-ended question. This survey was hosted using an online electronic data capture system (i.e., SurveyMonkey®), and the electronic link was sent to the CNSA who then sent an email invitation to the 1,300 members. A reminder email was sent after two weeks by CNSA. Participation was completely voluntary, and consent was assumed upon completion of the questionnaire. Data was collected anonymously without directly identifying information.

Demographic and professional questions. The demographic and professional questions included participants' state and territory, location of workplace (metropolitan, regional, rural), private or public practice, current clinical area of practice, cancer speciality, gender, age, registered nursing experience (in months and years), oncology nursing experience (in months and years), highest qualification, and current enrolments in oncology nursing education.

Rather than give participants pre-determined categories of educational topics participants were asked to provide topics and importance through free text questions. The free text option for the participants centred around the questions of: Could you please nominate 10 education subjects you would be interested in learning about? One a scale of 1 to 10 could you please indicate how important you feel each of these education subjects will assist you in your practice and knowledge acquisition? A scoring system from 1 being 'not very important' to 10 being 'extremely important' to their clinical practice.

Data management and analysis

Ethical approval was obtained from the Queensland University of Technology (2000000652)

and the approval from the Research Committee of the Cancer Nurses Society of Australia prior to participant recruitment and data collection. The survey administrator used properties of the survey system to download de-identified survey results into Microsoft Excel® spreadsheets that were given to the principal investigator (DT). The data was downloaded from the electronic platform, checked for accuracy, and stored on a password protected computer. A power analysis for the sample size was not calculated because there are no comparable studies published at the time of the study (to the best of our knowledge) and given the qualitative nature of the open-ended question. Descriptive statistics were computed to describe the study sample (Tabachnick et al., 2007). Participants responses to the free-text questions relating to the educational priorities were analysed using content analysis (Krippendorff, 2018). The participants' free-text responses were generally given using a single word descriptor relating to the educational topic that was of interest to them. These responses, identifying the educational priorities were read and coded multiple times by (DT and CT) to identify common keywords, synonyms, and similar terms. These educational suggestions were then grouped together to identify overarching categories and sub-categories. By consensus the researchers identified the categories and sub-categories which best reflected the responses and named them using common terms in the cancer literature such as 'cancer biology', 'supportive care' and 'survivorship'. Frequencies of ranked needs were calculated for the responses within each of the sub-categories based upon mean scores.

Results

Sample

A total of 125 nurses responded to the survey (see **Table 1**). The response rate was 9.7 %. Females made up 98.4% of participants. The ages of participants ranged from 18 to over 60 years, and most participants were over 40 years old. Most respondents (82.4%, n=105) had been working as a registered or enrolled nurse for more than 10 years, and (65%, n=85) over 10 years in cancer care. Almost half, 38.4% (n=48) held a masters or doctorate degree. The sample included representation from all Australian states and territories. The primary location of work was in the metropolitan area (66.4%, n=83) and most nurses (71.2%, n=89) worked in the public health care setting. Although participants area of practice varied, most worked in the outpatient/ambulatory settings (56%, n=70). Only a small number of participants worked outside of direct clinical care in research and administration roles (4.8%, n=6).

Educational priorities

We asked respondents to identify their top 10 preferences for educational opportunities and to rank their priorities for these educational opportunities based on their value or importance from one to 10. Not all participants gave 10 preferences. Overall, 610 educational opportunities were identified and ranked. These individual answers were grouped into seven overarching categories with various sub-categories within each group (see **Table 2**).

Cancer biology

Not surprisingly we found that historically common topics for education remain important for cancer nurses. Cancer biology and disease specific information were important to many nurses (n=96). Along with general information about medical oncology (n=37, rank 6.62) and haematological cancers (n=28, rank 7.56), participants identified that, while not ranked as highly as specific diagnoses, understanding genetics related to specific cancers was also important (n=25, rank 5.28). The general sub-category was used where people did not specify a type of cancer but identified that tumour specific information was important and included suggestions such as cancer statistical trends.

Treatment

Treatment options for patients was also an important category (n=148). Traditional anticancer therapies such as chemotherapy, radiation therapy, surgery, palliative care, and stem cells were all represented with ranking of importance from 5.78 to 7.78. New treatments such as immunotherapies, including car-t cell therapy and other novel therapies were identified in responses (n=70) with rankings of 6.21 and 6.08. The interest in new therapies was not surprising with the advancement of novel treatments over the past two decades in cancer care. Interest was also shown in complementary and alternative therapies and their use in cancer care to support conventional treatment modalities (n=9, rank 7.22).

Leadership

Education in relation to nursing leadership which included clinical and research practices were identified many times (n=79). As most respondents had extensive cancer nursing experience it was not unexpected that educational opportunities beyond basic nursing management of patients were identified. Clinical leadership responses included various advanced practice roles, writing business cases and workforce management, and were ranked on average at 6.82. Nursing leadership in research (n=10, rank 6.50) included education not only in conducting research but also how to publish, write abstracts and present research outcomes at national and international meetings.

Direct patient care

Cancer nurses play an essential role in direct patient care and therefore as expected this was by far the largest category (n=229). Assessment skills (n=7) and diagnosis and pathology education (n=11) were identified as important to a small number of participants. Sub-categories also included entries such as patient education (n=15, rank 6.93). This category included suggestions on basic patient education and how to support improved health literacy. The nurse's role in psycho-social care provision was also identified as important (n=39) with an average rank of 6.92. General broad supportive care (n=57, rank 7) which covered access to care, fertility, exercise, diet, and device management was also important. By far, toxicity and symptom management were the largest patient care sub-category (n=77, rank 6.19). This group included both acute and long-term toxicity and symptom management, with a particular focus on the nurse's role. Finally, in the direct patient care category was the identification of the importance of understanding the role of the cancer in survivorship care (n=23, rank 5.64). Suggestions in this sub-category were broad but did identify not only survivorship care in the curative setting but also people affected by metastatic (advanced) cancer.

Age specific

A small number of nurses identified that age specific information would be valuable to inform practice. The age groups that participants identified of importance was adolescents and young adults (n=3, rank 6.33) and gerontology (n=5, rank 3.40). Specifically, nurses identified that dementia and cancer was important to learn more about.

Other

Finally, outside of the overarching categories clinical trials (n=15, rank 6.67), including current trial information, trial management and law and ethics (n=20, rank 5.84) were also identified as important education opportunities. Law and ethics included important topics such as assisted dying, advanced care planning, and ethics surrounding treatment decision-making.

Discussion

This study set out to understand the self-perceived educational priorities among oncology nurses in Australia. With the increasing number of people being diagnosed with cancer, and surviving cancer (Ferlay et al., 2019, Fitzmaurice et al., 2015) the number of people who require oncology nursing support continues to rise. With 151,000 new Australian cancer diagnoses each year, against the backdrop of many oncology nurses in Australia facing burnout (McMillan et al., 2016), identifying their self-perceived educational needs is timely and important. Evidence has underscored that there

has not been a similar increase in oncology nursing educational preparation within existing nursing degree programs which could tackle some of these issues (Hammersley and Bromley, 2021). This study has helped to identify the topics which are perceived as most helpful among practicing oncology nurses in the pursuit of meeting their continual professional development needs to support them professionally. The oncology nurses represented in this study identified important educational topics which included: a) cancer biology, b) treatments, c) direct patient care, d) age-specific cancer care, e) leadership and research, and f) law and ethics. The findings from this study have some overlap with the educational needs among oncology nurses in United States of America (USA) (Klemp et al., 2011, Chen and Raingruber, 2014), but the focus of these studies was on survivorship and psycho-social issues alone. Of note, these existing studies are also clinically outdated by year of publication because oncology nursing practice, and oncology diagnostics and treatments in general have substantially changed over the past 10 years. A more recent study (Parajuli and Hupcey, 2021) also conducted in the USA explored the palliative care educational needs among oncology nurses and identified some overlap with the educational topics identified in the current study. Similarity in topics included: direct patient care and ethical and legal aspects, however key educational topics identified by Parajuli and colleagues (Parajuli and Hupcey, 2021) included social, spiritual, and cultural aspects of care. None of the participants in the current study identified these topics to be an educational priority. Interestingly, patients in the Australian context have reported that these important aspects of care can be poorly addressed in existing services, with careful consideration of culturally safe Aboriginal and Torres Strait Islander cancer care (Lisy et al., 2019, Shahid et al., 2013, Treloar et al., 2014). There are several possible explanations to consider, firstly, the participants in this study may perceive that the social, spiritual, and cultural aspects of their practice and current educational knowledge are up to date, with no needs, or gaps perceived. Or an alternative hypothesis is that the nurses represented in this study are not aware of the evidenced unmet spiritual, social, and cultural cancer care gaps (Paterson et al., 2020, Paterson et al., 2015, Fu et al., 2020, Ge et al., 2020, Maguire et al., 2013, Moore et al., 2013). Further research would be helpful to confirm or refute these hypotheses.

Currently, there is limited evidence on the worldwide recruitment of oncology nurses specifically (Challinor et al., 2020). This dearth of data could be explained in part by the limited training available to become an oncology nurse, the lack of educational attainment programmes (e.g., post-graduate qualification, master's degrees, or certification programmes) available, and only some countries, including Australia, have only recently included the cancer nursing specialty as a subgroup of the nursing profession, as an official classification within professional regulatory bodies. Future specialised oncology nursing training opportunities and higher education oncology nursing

programmes are needed (Challinor et al., 2020) to develop robust career pathways for nurses to address existing training needs, and to fill current and future workforce shortage gaps (Yates et al., 2021). This study has provided a valuable step forward by identifying the oncology nursing topic areas to support continual professional development.

Limitations

This study was conducted with oncology nurse members of the Cancer Nursing Society of Australia, located in Australia. The participants were drawn from a professional organisation for cancer nurses with a voluntary membership, which may have introduced bias. It is possible that these participants may be more committed to their career as cancer nurses compared to non-members, and may therefore, not be representative of the target population. However, the educational priorities identified had some overlap in training needs of oncology nurses in other countries (Chen and Raingruber, 2014, Parajuli and Hupcey, 2021), but are useful of other international to compare and contrast their self-perceived educational needs. This study had an overall low response rate (9.7%) but web-based surveys have been shown to have a lower response rates than traditional paper-based surveys (Lin and Van Ryzin, 2012). Existing studies have reported web-based recruitment response rates ranged from (10-26%) (Pennay et al., 2018) and our response rate is in keeping. To provide further context, previous studies involving the CNSA solely as a point of data collection, have published similar response rates 6% (Puhringer et al., 2015), and 11.8% (Northfield, 2018) and 25.2% (Johnson and Adler, 2014). The sample was biased in favour of females, nurses working in public hospitals, many who have worked on oncology of many years and were highly educated. The limited numbers of participants also impacted the ability for the researchers to identify relationships between the findings available. This is an important consideration since younger and more inexperience nurses may report different educational priorities. Therefore, further research should be undertaken in this cohort of Australian cancer nurses. The nurses' responses to open-ended question were short, providing limited information about the type of education and what their preferences for the modality of educational delivery. A final limitation was the dearth of recent research in this area which made it difficult to compare the study findings.

Conclusion

As the number of people affected by cancer continue to rise, addressing the educational needs and priorities of oncology nurses has never been so important. This study has provided valuable insight into the self-perceived areas for continuing education among oncology nurses. The findings from this study are important for higher educational institutions in the design of their undergraduate and post-graduate curriculum offerings, and to inform future course developments. Healthcare

institutions should consider these findings in addressing the learning needs for the current oncology nursing workforce. It is important that educational needs and priorities among oncology nurses are updated over time to reflect the ever-changing supportive care needs of people affected by cancer.

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Table 1. Distribution of the participant characteristics

Characteristic	n=125	%
Gender		
Female	123	98.4
Male	2	1.6
Age category (years)		
18-29	4	3.2
30-39	32	25.6
40-49	37	29.9
50-59	40	32
60 and over	12	9.6
State or Territory		
Queensland	28	22.4
New South Wales	29	23.2
Australian Capital Territory	1	.8
Victoria	35	28
South Australia	13	10.4
Western Australia	14	11.2
Northern Territory	2	1.6
Tasmania	3	2.4
Location of practice		
Metropolitan	83	66.4
Regional	36	28.8
Rural	6	4.8
Type of service organisation		
Public	89	71.2
Private	20	16
Both	10	8
Other	6	4
Cancer specialty		
Medical Oncology	40	32
Haematology	9	7.2
Radiation Oncology	13	10.4
Combined	43	34.4
Other	20	16
Current area of practice		
Inpatient	19	15.2
Outpatient	49	39.2
Ambulatory Care	21	16.8
Education	15	12
Research	4	3.2
Administration	2	1.6
Other	15	12
Years of nursing experience		
< 6 months	0	0
6-12 months	0	0
1-5 years	5	4
5-10 years	17	13.6
10-20 years	37	29.6
>20 years	66	52.8
Years in cancer nursing		
< 6 months	3	2.4
6-12 months	4	3.2
1-5 years	12	9.6
5-10 years	20	16
10-20 years	51	40.8

>20 years	35	28
Highest qualification		
Hospital certificate	6	4.8
Diploma	17	13.6
Bachelor	25	20
Masters	44	35.2
Doctorate	4	3.2
Other	29	23.2
Current enrolment in formal cancer education program		
Graduate certificate	2	4.44
Graduate diploma	1	2.22
Masters	17	37.78
Doctorate	3	6.67
Other	22	48.89

Table 2: Categories and rank of educational priorities

Category	Average rank	Count of category
Age Specific		
Adolescent and Young Adults	6.33	3
Gerontology	3.40	5
Cancer biology		
Medical oncology	6.62	37
Haematology	7.56	28
Biology and genetics	5.28	25
General	7.33	6
Leadership		
Clinical	6.82	69
Research	6.50	10
Direct patient care		
Assessment skills	5.71	7
Diagnostics and pathology	6.27	11
Patient education	6.93	15
Psychosocial care	6.92	39
Supportive care	7.00	57
Survivorship	5.64	23
Toxicity and symptom management	6.19	77
Treatment		
General	7.10	10
Complementary and alternative therapies	7.22	9
Chemotherapy	5.78	9
Immunology	6.21	58
Other novel therapies	6.08	12
Palliative care	6.44	16
Radiation oncology	7.73	22
Stem cells	7.78	9
Surgical oncology	5.33	3
Other		
Clinical trials	6.67	15
Law and ethics	5.84	20
Total	**6.49**	**610**

STROBE Statement—checklist of items that should be included in reports of observational studies

	Page	Recommendation
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found
Introduction		
Background/rationale	1	Explain the scientific background and rationale for the investigation being reported
Objectives	2	State specific objectives, including any prespecified hypotheses
Methods		
Study design	2	Present key elements of study design early in the paper
Setting	3	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection
Participants	3	(*a*) *Cohort study*—Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up *Case-control study*—Give the eligibility criteria, and the sources and methods of case ascertainment and control selection. Give the rationale for the choice of cases and controls *Cross-sectional study*—Give the eligibility criteria, and the sources and methods of selection of participants
		(*b*) *Cohort study*—For matched studies, give matching criteria and number of exposed and unexposed *Case-control study*—For matched studies, give matching criteria and the number of controls per case
Variables	3-4	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable
Data sources/ measurement	3-4	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group
Bias	4	Describe any efforts to address potential sources of bias
Study size	4	Explain how the study size was arrived at
Quantitative variables	4	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why
Statistical methods	4	(*a*) Describe all statistical methods, including those used to control for confounding
		(*b*) Describe any methods used to examine subgroups and interactions
		(*c*) Explain how missing data were addressed
		(*d*) *Cohort study*—If applicable, explain how loss to follow-up was addressed *Case-control study*—If applicable, explain how matching of cases and controls was addressed *Cross-sectional study*—If applicable, describe analytical methods taking account of sampling strategy
		(*e*) Describe any sensitivity analyses

Continued on next page

Results		
Participants	4	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed
		(b) Give reasons for non-participation at each stage
		(c) Consider use of a flow diagram
Descriptive data	Table 1	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders
		(b) Indicate number of participants with missing data for each variable of interest
		(c) *Cohort study*—Summarise follow-up time (eg, average and total amount)
Outcome data	Table 2	*Cohort study*—Report numbers of outcome events or summary measures over time
		Case-control study—Report numbers in each exposure category, or summary measures of exposure
		Cross-sectional study—Report numbers of outcome events or summary measures
Main results	4-6	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included
		(*b*) Report category boundaries when continuous variables were categorized
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period
Other analyses	N/A	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses
Discussion		
Key results	6	Summarise key results with reference to study objectives
Limitations	7	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias
Interpretation	6-7	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence
Generalisability	7	Discuss the generalisability (external validity) of the study results
Other information		
Funding	N/A	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based