

An integrative review of South African cancer nursing research published from 2002–2012

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Background: This integrative review aimed to quantify the publication output of South African cancer nursing research conducted between 2002 and 2012 and to identify key trends relevant to cancer nurse researchers.

Objectives: To describe the publication output of cancer nursing research in terms of the journals of publication, authors, focus, participants and methods used, to explore whether the published work was funded and to assess the quality of the studies published.

Methods: An integrative review was conducted using the key words *South Africa* in combination with *cancer nursing* and *oncology nursing* to search the databases Pubmed, PsycINFO, CINAHL, Sabinet, Web of Science, Medline and OvidSP. A data extraction sheet was developed to document the required information from each paper and all publications were reviewed independently by the authors.

Results: A total of 181 publications for potential inclusion were identified and 26 papers were included in this review. Cervical cancer, specifically the prevention of this disease, was the most popular diagnostic focus and theme of investigation. Most of the studies were descriptive and none of the studies met the criteria of the highest quality.

Conclusion: Nursing added to the body of knowledge regarding the primary and secondary prevention of cancer. There is a need for work on both men and women diagnosed with the most common cancers, as well as the family and care giver. There is also a need for multidisciplinary work using complex interventions focusing on symptom management to improve patient outcomes.

Introduction

Problem statement

The significance of this article lies in the fact that it is the first review of South African cancer nursing research. South Africa, as a developing country, is an anomaly as it is both developed with a good infrastructure and developing, as it faces huge social and economic challenges, with a large gap between the poor dependent on developing aid and skilled professionals (Layne 1998:183). South Africa therefore faces the health challenges applicable to both the developed and developing world. In addition to primary and secondary cancer prevention, South African nursing research should be able to inform nurses practising in both the private healthcare system and the public sector, as both sectors provide patient services using sophisticated treatment (Abratt & Vorobiof 2003:395). It is not clear how many people are diagnosed with cancer annually as the histological-based National Cancer Registry only reflects data up to 2005 (National Health Laboratory Service 2012). However, it is estimated that one in six South African men and one in seven South African women will develop cancer during their lifetime (health24 2013). According to the Cancer Association of South Africa (CANSA) (CANSA 2012), the most prevalent cancers in women are breast, cervical, unknown primary site, colorectal and uterine cancer. In men, the most prevalent are prostate, unknown primary site, lung, colorectal and oesophagus cancer. Cancer patients experience various symptoms of which pain, fatigue and nausea and vomiting seem to be the most prevalent (Maree & Wright 2008:47).

The first National Oncology Nursing Symposium was held in 1979. During this symposium, Falkson (1979), a medical oncologist, introduced medical oncology as an established, recognised and rapidly-growing speciality and highlighted the dire shortage of oncology nurses. Nurses were asked to join the ranks of their European and American colleagues by completing the diploma in oncology nursing. Intelligence, dedication and a wish to serve humanity were required from such a nurse as it would be expected that she would become a full member of the multiprofessional healthcare team and, in many instances, act as team leader. The nature of cancer has, since this introduction, changed dramatically due to the increase in incidence, new treatments, advances in

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drugs and technologies, changing care settings and increased survival rates leading to new and varied challenges facing nurses (Mcilpatrick & Keeney 2003:629; Pearce, Kelly & Stevens 2001:372). In addition, the National Department of Health has, as of 1999, developed and adopted the National Cancer Control Policy which includes a cervical screening programme (CANSa 2008). Cervical screening is executed at district health level in primary health clinics (Mojaki *et al.* 2010:109), tasking nurses with the prevention and detection of cervical cancer. However, the nurse's role is not limited to the prevention of cervical cancer. The Scope of Practice (South African Nursing Council 1984) refers specifically to the prevention of disease and promotion of health through teaching and counselling individuals and groups and thus includes all cancers.

Nursing research not only enlarges the body of knowledge required by any profession (Keogh 1997:303), but also allows nurses to find creative and new approaches to old and new health problems and to design new and innovative programmes which will make a difference to people's health status (LoBiondo-Wood & Haber 2010a:6). Furthermore, nursing research is an essential component for improvement of the care of people living with cancer (Mcilpatrick & Keeney 2003:630). Despite cancer nursing being an established main nursing speciality, when looking to research to provide the evidence base for its practice, cancer nursing research is still a relatively young discipline (Molassiotis *et al.* 2006:432).

The cornerstone of nursing research in South Africa was laid in 1951 when the first nurse obtained a master's degree in sociology. Nursing research, however, originated in 1996 when a group of six nurses successfully completed a master's programme in nursing. Nursing research then expanded rapidly with 55 postgraduate studies completed between 1969 and 1979 and 248 studies completed between 1980 and 1990. It is not known whether oncology nursing was addressed in these studies as no mention is made of this speciality (Brink 1992). It is, however, possible that oncology nursing could have formed part of the 1.7 and 1.8% of studies focusing on the field of general nursing. In a systematic review of worldwide cancer nursing research between 1994 and 2003, Molassiotis *et al.* (2006:434) reported only three studies from South Africa listed by CINAHL (Cumulative Index to Nursing and Allied Health Literature), of which one was written in the English language and two in Afrikaans. In addition, infrastructure plays a major role in the progress of cancer nursing research. Quality research can only be conducted when funding is available to support research programmes (Molassiotis *et al.* 2006:439).

Aims of the study

South African cancer nursing research output and its characteristics have not been evaluated formally. The importance of such an evaluation resides in the identification of trends, uncovering of gaps and the provision of research directions. In addition, many cancer nurses use such findings as a guide for developing future research endeavours

(Molassiotis *et al.* 2006:432). Integrative review is the broadest category of review and can include both qualitative and quantitative work (LoBiondo-Wood & Haber 2010b:212). An integrative review allowed the researchers to examine the literature using a particular lens defined by the objectives of the study to examine critically and evaluate the previous research, provide a clear account of the body of work on the subject and to arrive at specific conclusions (Molassiotis *et al.* 2006:431). The aim of this integrative review was to quantify the publication output related to South African cancer nursing research conducted between 2002 and 2012 and to identify key trends relevant to cancer nurse researchers. The objectives of the study were to:

- describe the publication output of cancer nursing research in terms of the journals of publication, authors, focus, participants and methods used
- explore whether the published work was funded
- assess the quality of the studies published.

Research method and design

Literature review

A review was conducted of the papers published between the years 2002 and 2012. Publications qualifying for inclusion had to be peer reviewed, conducted in a South African setting and co-authored by a South African nurse. The key words *South Africa* in combination with *cancer nursing* and *oncology nursing* were used. The data bases searched were Pubmed, PsycINFO, CINAHL, Sabinet, Web of Science, Medline and OvidSP.

Research approach and design

Data gathering commenced in April 2012 and regular searches were carried out until April 2013 in order to identify any new studies published, adding them to the main body of the current review. A data-extraction sheet was developed so as to document the required information from each paper including the year of publication, the journal of publication, the authors, affiliation of the authors, title of the study, participants and research methods used. Funding, a key word indicating the focus of the study and four sections dedicated to the judgement of the quality of the papers were also included.

Grade I studies

In order to benchmark the quality of the South African quantitative and qualitative publications against international trends, the same grading system applied by Molassiotis *et al.* (2006) in the worldwide review of cancer nursing research was used. Quantitative research was assessed by means of the three-point grading system developed by Mann (Molassiotis *et al.* 2006:433), where Grade I refers to randomised controlled trials. Grade I studies are divided into:

- Grade IA, referring to a randomised controlled trial where the sample size has been calculated and an accurate, standard definition of outcome variables is provided.

- Grade IB, providing only the standard definition of outcome variables .
- Grade IC, which does not include the above criteria.

Grade II studies

Grade II studies refer to prospective studies with a comparison group such as a non-randomised trial or good observational studies or retrospective studies with controls clarifying confounding variables. Grade II studies are divided into:

- Grade IIA, where the sample size has been calculated and an accurate standard definition of outcome variables and adjustment for the effects of important variables are included.
- Grade IIB studies, having at least one of the criteria of a Grade IIA study.

Grade III studies

All other studies are Grade III with:

- Grade IIIA containing a comparison group, calculated sample size and accurate standard definition of outcome variables.
- Grade IIIB studies including at least one of the criteria of Grade IIIA.
- Grade IIIC studies, which do not include any of the above criteria.

Rating system

The rating system developed by Cesario, Morin & Santa-Donato (2002:711) was used to assess the qualitative studies. Five categories applied:

- descriptive vividness
- methodological congruence with subcategories (1) rigour in documentation, (2) procedure and (3) ethics and confirmability
- analytical preciseness
- theoretical connectedness
- heuristic relevance with subcategories intuitive recognition, relationship to the existing body of knowledge and applicability.

A scoring scale of 0 to 3 was used in order to evaluate whether the different criteria were met, with 0 = no evidence, 1 = poor evidence, 2 = fair evidence and 3 = good evidence. The final quality of papers was based on the total scores of each of the categories, with QI referring to good quality studies meeting 75% to 100% of the total criteria (total score of 22.5 to 30); QII referring to studies of fair quality meeting 50% to 74% of the total criteria (score of 15 to 22.4); and QIII referring to poor-quality studies where less than 50% of the criteria were met (less than a total score of 15).

Assessment of quality

To assess the quality of the mixed-methods study, the criteria outlined by O’Cathain, Murphy & Nicholl (2008) were used and six categories, each containing specific criteria, were assessed. The categories are the:

- success of the study
- mixed-methods design

- qualitative component
- quantitative component
- integration
- inferences made.

Stake’s instrument for assessing the quality of case reports as outlined by Crowe *et al.* (2011) was used to evaluate the quality of the case studies. This instrument contains 20 criteria, including the readability of the report, conceptual structure, definition and description of the case, attention paid to the various contexts, presentation of the raw data and possible risks to the individual. A scoring system of yes = 2; yes, but = 1; no OR not enough information = 0 applied (O’Cathain *et al.* 2008) to both the mixed methods and case study. Where the appropriate answer was no, no = 2; no, but = 1 and yes = 0. The final quality of the studies was based on the total scores of each of the categories or criteria for the case study, with good-quality studies (QI) meeting at least 75% of the total criteria, fair-quality studies (QII) meeting between 50% and 74% of the total criteria and poor-quality studies (QIII) less than 50%.

Data analysis

Content analyses (Burns & Grove 2010:528) were used to identify categories according to the focus of the study and to group the categories into themes.

All publications identified during the searches were reviewed independently by the authors. Both authors received formal training in the management, assessment and review of information and conducting reviews. Disagreements were resolved by means of discussion. A senior nurse researcher, not involved in the study, had the role of arbitrator in case of disagreement. Lists of publications obtained from the databases were first reviewed to exclude literature reviews, letters to the editor, editorials, clinical reports, dissertations, work published in non-accredited South African journals, discussion papers, comments on research published and grey literature. Only the output of published research was captured.

Abstracts of all papers not excluded were obtained and titles were first reviewed to determine whether some aspect of cancer was the focus of the study; the abstracts were used where titles did not provide clear answers. Thereafter, full-text papers were used to review the study using the data-extraction sheet.

Results

A total of 181 publications for potential inclusion in this review were identified. Most (73) were found in Sabinet, 27 in Pubmed, 31 in Web of Science, 21 in CINAHL, 15 in PsycINFO, 14 in Medline and none in OVIDSP (list available on request). All publications identified were written in the English language. Of the 181 publications, 155 were excluded as they either did not meet the inclusion criteria or were duplicated. Twenty-six papers were included in this review (Addendum 1); only two papers (7.7%) were

published between 2002 and 2006, whilst 24 (92.3%) were published between 2007 and 2012 (Figure 1). This equates to 1.95 publications per million of the population based on a population of 50.586 million (South African Statistics 2012) and 0.47 per thousand people diagnosed with cancer during 2002 to 2012 estimated according to the National Cancer Registry data (National Health Laboratory Service 2012).

Papers were published in nine journals including journals dedicated to nursing and midwifery issues in general, subject-specific journals as well as journals with a multi-professional focus. Most papers (65.4%) were published in journals focusing on research conducted in the South African and African context with two journals publishing 50% of the papers. However, 23.1% of the papers were published in international journals specifically dedicated to cancer. The year 2007 seems to be a defining moment as the first paper co-authored by South African nurses was published outside the borders of Africa, with a further eight published up to 2012 (Table 1).

It was difficult to evaluate the impact factor of the journals selected for the publication of the work as journals reported their impact using different assessment measures. However, 25.9% of studies were published in journals with a 2011 impact factor ranging from 1.171 to 1.410, whilst 22.2% of the

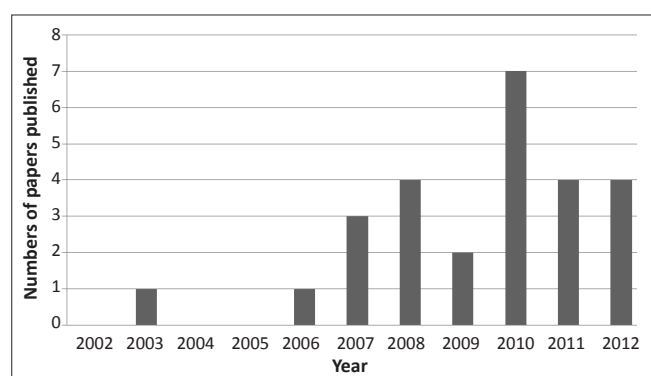


FIGURE 1: Cancer nursing research papers published between 2002 and 2012.

TABLE 1: Journals publishing cancer nursing papers, authored/co-authored by South African nurses between 2002 and 2012.

Name of journal	Scope of journal	Focus of journal	Number of papers published	Year of publication
Health SA Gesondheid	Interdisciplinary, issues pertaining to public health	Africa and other developing countries (Health SA Gesondheid, 2013)	7	2003, 2007, 2008, 2010, 2011 (2), 2012
Africa Journal of Nursing and Midwifery	Nursing and health-related issues	Africa (Africa Journal of Nursing and Midwifery, 2012)	6	2006, 2009, 2010 (3), 2012
Journal of Research in Nursing	Nursing topics and themes	Global (Journal of Research in Nursing, 2013)	1	2007
Curatationis	Nursing and midwifery	Africa (Curatationis, 2013)	3	2007, 2008, 2009
Indilinga: African Journal of Indigenous Knowledge Systems	Cross disciplinary	African scholars (Indilinga: African Journal of Indigenous Knowledge Systems, 2013)	1	2008
Reproductive Health Matters	Multi-professional, focusing on women's reproductive health needs	International (Reproductive Health Matters, 2013)	1	2008
Journal of Pain Management	Multidisciplinary, focusing on acute, chronic or cancer-related pain	International (Journal of Pain Management, 2013)	1	2010
European Journal of Oncology Nursing	Oncology nursing, patient care, nurse education, management and policy development	International (European Journal of Oncology Nursing, 2013)	3	2010 (2), 2011
European Journal of Cancer Care	Multi-professional cancer care	Europe and international (European Journal of Cancer Care, 2013)	3	2011, 2012 (2)

studies were published in journals having a 2011 SCImago Journal Rank ranging from 0.13 to 0.21 (*European Journal of Cancer Care* 2013; *European Journal of Oncology Nursing* 2013; SCImago, 2007–2013).

Most of the studies (42.3%) were conducted in a community setting; only 26.9% of the studies settings included cancer wards and cancer clinics (Table 2). The participants were primarily female as 50% of the studies targeted women. Nurses comprised the second most-studied group (19.2%), followed by people of both genders (11.5%). Less than a third (30.8%) of the participants were people suffering from cancer. It seems that the families of people diagnosed with cancer were not investigated at all, as no evidence could be found (Table 3).

Only one study (3.8%) resulted from collaborative research between researchers from South Africa and other countries, namely Sweden and the UK; the rest (96.2%) were written by authors affiliated with South African institutions, mainly universities. Authors not affiliated to universities contributed to one (3.8%) of the papers and represented CANSA and the South African Database for Functional Medicine. South African inter-university collaboration resulted in the publication of six papers (23.1%). Thirty-seven South African authors contributed to the papers with 33 (89.2%) contributing to only one paper; three authors contributed to two papers, one to three, one to 10 and one to 16. Evidence of multi-disciplinary team research could not be found.

When investigating the diagnostic focus of the papers it was found that the majority of papers (53.8%) focused on cervical cancer whilst 34.6% focused on cancer in general, 11.5% on breast cancer and 3.8% on oral cancer. A comparison between the number of papers and prevalence of the specific cancers investigated is presented in Figure 2.

Studies investigated four themes, primary and secondary prevention of cancer (46.2%), cancer care (26.9%), nurses and nursing practice (15.4%) and experiencing the signs of cancer (11.5%). No evidence of work on symptom management could

be found and no study investigated any aspect of the family or the care-giver. A detailed description is provided in Table 4.

A variety of research designs were used and nine (34.6%) of the studies were qualitative; a further nine (34.6%) were surveys and two (7.7%) were pilot studies. Each of the remaining six studies used a different research design. A total of 30 samples were selected as two studies selected two samples and one study three.

A non-probability sampling approach was used for the selection of most of the samples (50%) whilst 7.7% used a

TABLE 2: Settings and sources of information for studies included in this review†.

Setting	n	%
Cancer care settings (hospital ward and outpatient clinic)	7	26.9
Surgical clinic and hospital ward	1	3.8
Places in the community	11	42.3
Clinics (primary health and other)	3	11.5
Records	2	7.7
University	3	11.5
Unknown	1	3.8

†, Some studies used more than one setting and/or source of information and therefore percentages are higher than 100%.

TABLE 3: Participants in the studies included in this review†.

Participants	Subgroups	n	%
Women	From the community	8	30.8
	With cervical cancer	2	7.7
	With breast cancer	3	11.5
Nurses		5	19.2
Both men and women	From the community	1	3.8
	Receiving chemotherapy	1	3.8
	With advanced cancer	1	3.8
Traditional healers		1	3.8
Private medical practitioners		1	3.8
Informal care givers		1	3.8
Men from the community		1	3.8
Children with cancer		1	3.8

†, Some studies targeted more than one population and therefore percentages are higher than 100%.

TABLE 4: Themes investigated between 2002 and 2012 in papers included in this review.

Research themes	n	%
Primary and secondary prevention of cancer		
Cancer in general	1	3.8
Cervical cancer	9	34.6
Breast cancer	1	3.8
Oral cancer	1	3.8
Experiencing the signs of cancer		
Breast cancer	1	3.8
Cervical cancer	2	7.7
Cancer care		
Cervical cancer	2	7.7
Breast cancer-related lymphoedema	1	3.8
Needs of children	1	3.8
Symptoms	2	7.7
End of life care	1	3.8
Nurses and nursing practice		
Knowledge and practices relating to pain	2	7.7
Perceptions of the cervical screening programme	1	3.8
Experiential world of the oncology nurse	1	3.8

probability sampling and 19.2% did not state which approach was used. Sample sizes varied from one to 980 participants. The mean sample size for quantitative work was 228 and for qualitative work 13. Interviews were the most common method of collecting data and were used in 73.1% of the studies. Focus groups were used in 15.4% of the studies and questionnaires in 11.5%. The details of the research methods used in the studies are outlined in Table 5.

Nine studies (32.1%) reported funding; seven (26.9%) were funded by a local university, one (3.8%) was funded by CANSA and one study (3.8%) was funded by a university

TABLE 5: Research methods used in the studies included in the review.

Design	Method	n	%
Qualitative	Descriptive	6	21.4
	Phenomenological	2	7.7
	Ethno-nursing	1	3.8
Survey		9	34.6
Case study		1	3.8
Mixed methods		1	3.8
Quantitative testing of intervention		1	3.8
Q method		1	3.8
Descriptive		1	3.8
Formative evaluation		1	3.8
Pilot		2	7.7
Sampling†			
Probability	Random	2	7.7
Non-probability	Purposive	6	23.1
	Convenience	14	53.8
	Snowball	2	7.7
	Single case	1	3.8
Not stated		5	19.2
Data collection methods†			
Interviews		19	73.1
Focus group		4	15.4
Questionnaires		3	11.5
Record review		3	11.5
Observation		1	3.8
Photographs		1	3.8

†, Some studies used more than one sampling and data collection method and therefore percentages are higher than 100%.

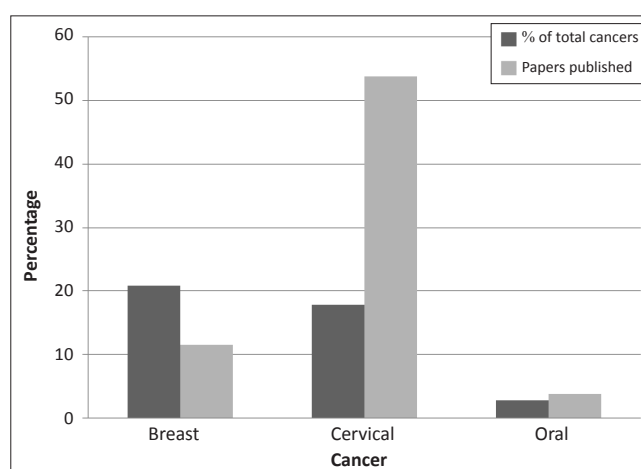


FIGURE 2: Percentage of papers published focusing on a specific cancer compared to the prevalence of cancer in South Africa as indicated in the 2005 National Cancer Registry.

TABLE 6: The quality of the studies included in this review.

Quantitative studies	<i>n</i>	%
IA	0	0
IB	0	0
IC	0	0
IIA	0	0
IIB	0	0
IIIA	0	0
IIIB	15	57.7
IIIC	0	0
Qualitative studies		
QI (Good)	0	0
QII (Fair)	6	23.1
QIII (Poor)	2	7.7
Mixed-method study		
QI (Good)	0	0
QII (Fair)	1	3.8
QIII (Poor)	1	3.8
Case study		
QI (Good)	1	3.8
QII (Fair)	0	0
QIII (Poor)	0	0

in the UK and the Swedish Children's Cancer Foundation. As indicated in Table 6, most studies (96.2%) did not meet the criteria to be regarded as good quality. Quantitative studies were either descriptive or surveys and no evidence could be found of any study using a calculated sample size, comparison group and control group. However, all studies included clear definitions of outcome variables. The quality of the qualitative work seemed to be better as 77.8% of the studies met at least 50% of the evaluation criteria to be regarded as fair quality. Theoretical connectedness and procedural rigour scored the lowest with relationship to the existing body of knowledge and intuitive recognition the highest. The quality of the studies is depicted in Table 6.

Discussion

This study is the first assessment of South African cancer nursing research to date. The study provided evidence that 26 papers focusing on cancer nursing were published over a period of 10 years. When comparing the annual output reported in the current review with the output of other countries included in the worldwide review (Molassiotis *et al.* 2006), South Africa would be fifth in terms of the total number of work, published slightly more than Australia (2.4 papers per year) and less than Canada (4.6 per year). In terms of the number of publications per million of the population, South Africa is on a par with the UK, publishing 1.9 papers per million of the population. However, it should be remembered that eight years have passed since the world review and it would be interesting to see how South Africa performs in the next world review.

Whether the publication of 2.6 articles per year is commendable is debatable. It seems as if this review was the first assessing research output in any specialist field of nursing in South Africa. Country reviews of cancer nursing

also seem to be unavailable and not having comparators complicates definite conclusions. When comparing the number of papers included in this review to the total of three included in the worldwide review (Molassiotis *et al.* 2006:434), it would be quite reasonable to say that oncology nursing research has progressed since the international review. In contrast, when considering the number of public and private cancer care providers, supportive and palliative care services rendered by CANSA, the Hospice and Palliative Association of South Africa and other non-governmental organisations where cancer nurses practise, the research output cannot be justified. It was primarily community members without cancer who were investigated and no evidence of nursing's attempt to improve the outcomes of patients receiving anti-cancer treatment could be found.

The finding that less than a third of the studies were funded and that the academic institutions were the primary funders was not surprising. Cancer and subsequently cancer research is not a national priority and the Medical Research Council and other stake holders awards 'extremely low funding' to cancer research (Albrecht 2006:36). It would, however, be interesting to determine whether primary investigators not reporting funding approached funders like CANSA, the Medical Research Council, National Research Foundation and Technology and Human Resources for Industry Programme applied for financial support and what the outcomes of such applications were. Funding reported in this review compared negatively with world trends, where 48.8% of the total ($n = 619$) reported funding (Molassiotis *et al.* 2006:434).

What is of great concern is finding that the majority of authors contributed to only a single paper. Cancer nursing research therefore seems to be a mere 'fact-finding' academic exercise not directed toward improving the health outcomes of communities and patients living with cancer, their caregivers and their families. Conducting small-scale research as part of a postgraduate degree in all probability adds to this situation. In addition, no author was affiliated with a clinical setting and almost all the work derived from academic settings. This is also of great concern and questions the development of cancer nursing as specialist field in the past 10 years as research forms the basis of the development of nursing (Retsas 2000:599). Holyoake (2011) is of the opinion that the gap between the nursing 'elite' and everyday majority is wider than ever. However, Molassiotis *et al.* (2006:438), finding a similar trend in the world review, are pragmatic about this reality and are of the opinion that this might change with joint posts between the academic and clinical settings – something yet to be implemented in South Africa.

Similarly to the work included in the world review, the diagnostic focus of the research seemed inconsistent to the disease profile. Where the focus of international studies was generic issues of patients with mixed diagnosis (Molassiotis *et al.* 2006), cervical cancer was the diagnostic focus of the

majority of the South African work. Breast cancer as the most common cancer in females (National Health Laboratory Service 2012) received only limited exposure. Cervical cancer is, however, the most common cancer in Black women (National Health Laboratory Service 2012) and a preventable disease. In addition, the National Department of Health has been focusing on the prevention of cervical cancer with the screening programme introduced in 2000 (Department of Health 2000). The screening programme has not achieved the desired outcome due to low screening uptake (Gakidou, Nordhagen & Obermeyer 2008), adding to the disease's high mortality rate of nearly 60% (Denny 2010:71). Preventing cervical cancer remains a challenge and it thus seems quite reasonable to focus on this disease.

There is an absence of work focusing on prevalent cancers in men (such as prostate and bladder cancer) and prevalent cancers affecting both men and women (such as cancer of an unknown primary, oesophageal, colorectal and lung cancer, melanoma and Kaposi sarcoma). Similarly to breast cancer, childhood cancers received minimal exposure and lacked focus by including children with a range of diagnosis. Although childhood cancer is a rare disease affecting approximately 800 to 1500 children annually (CANSAs 2013), this field of specialist nursing warrants nursing research. Work focusing on haematological cancers was also absent and, as non-Hodgkin's lymphoma is one of the most prevalent cancers in both men and women (CANSAs 2012), this needs to be investigated.

Primary and secondary prevention of cancer was the focus of nearly half of the work resulting in community members being the majority of the participants. This trend does not concur with world trends where nurses and other health professionals were the participants in half of the studies and nursing issues and nursing roles the most common research focus (Molassiotis *et al.* 2006:436). It seems as if South African nurses, in terms of the prevention and early detection of cancer, have no role concerns or confusion as suggested in the world review.

The same disappointing trend in terms of the absence of multi-disciplinary work reported in the world review (Molassiotis *et al.* 2006:438) was found in this review. According to Richardson (2004:299), professional isolationism is not conducive to positive patient outcomes and mutual partnerships, valuing and shared working are the only way of improving cancer care. Research should be conducted using a team approach, involving researchers from a range of disciplines who can investigate problems from diverse perspectives and using a range of methodological approaches.

The majority of the work (two out of three studies) was quantitative, with surveys and descriptive designs being the most popular. More complicated research designs were only used in a minority of studies. Most of the qualitative work was descriptive. Both the quantitative and qualitative studies did not receive high scores in terms of quality. The quality of the qualitative work was better than the quantitative work. A

similar trend was found in the international review. However, international quantitative work included approximately 10% good and 10% fair quality papers, but a higher percentage of poor quality qualitative work as compared with this review.

Limitations

It is possible that the key words used in this review may be a limitation as it could have excluded nurse-led work not appearing in the literature research under the keyword 'nursing'. In addition, international collaborative work could also have been excluded if 'South Africa' was not included in the key words. Despite these limitations, it is still believed that the article provides a fair representation of cancer nursing research conducted in South Africa as the review covers the three South African-based journals publishing nursing research.

Conclusions and recommendations

Nursing added to the body of knowledge of the primary and secondary prevention of cancer. It seems as if the research investigating this field of cancer care has reached maturity and there is thus an urgent need for more innovative and influential work to find effective solutions to the identified problems.

There is a gap in terms of research focusing on the patient diagnosed with cancer, the family and care-giver. More studies are needed on the most prevalent cancers like prostate and breast cancer and cancer of an unknown primary site. Work on haematological and cancer in children and adolescents are also needed. To join the international drive toward evidence-based practice, symptom management using complex interventions should be the priority of nurses practising in cancer care settings. This should preferably be done in a programmatic way in collaboration with other members of the multidisciplinary team to ensure that patient problems are addressed in a holistic culturally-sensitive manner. A need for work on symptoms like breathlessness, fatigue, cachexia and depression has been identified internationally (Molassiotis *et al.* 2006:439). However, pain remains an unrelieved symptom of South African cancer patients (Maree & Wright 2008:45), therefore pain management also needs urgent attention. Unique to developing countries is the high prevalence of cervical cancer and problems related to this disease and its treatment, such as sexual functioning and vaginal stenosis, should also be addressed.

Lack of infrastructure will continue to hamper the progression of cancer nursing research and nurses should be empowered to apply for research grants. Lastly, it is essential to combine our efforts with international expertise to build on current evidence to find tailor-made solutions to the problems unique to people living with cancer in a developing country, their caregivers and families.

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Competing interests

The authors declare that they have no financial or personal relationships which may have inappropriately influenced them in writing this article.

Authors' contributions

J.M. (University of the Witwatersrand) was the project leader and wrote the manuscript. S.S. (University of the Witwatersrand) reviewed the manuscript. Both authors reviewed the publications identified during the searches.

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Appendix 1

APPENDIX 1: Papers published between 2002 and 2012 included in this review.

Year	Authors	Research design and approach	Target population	Sampling	Category	Journal
2003	Mdondolo, N De Villiers, L Ehlers, VJ	Qualitative design Ethno nursing method	Xhosa women Xhosa registered nurses	Purposive Convenience	Experiencing the signs and symptoms of cancer	Health SA Gesondheid
2006	Maboko, E Mavundla, TR	Qualitative	Black women with HIV and cervical cancer	Purposive	Experiencing the signs and symptoms of cancer	Africa Journal of Nursing and Midwifery
2007	Enskär, K et al.	Descriptive	Nurses	Not specified	Cancer care	Journal of Research in Nursing
2007	Maree, JE Wright, SCD	Quantitative survey	Black women	Convenience	Primary and secondary prevention	Health SA Gesondheid
2007	Sibiya, MN Grainger, L	Formative evaluation	Primary health clinics Records Nurses	Random Purposive Not mentioned	Primary and secondary prevention	Curationis
2008	Mokgadi, SM Mulaudzi, MF	Qualitative	Traditional healers	Snowball	Cancer care	Indilinga: African Journal of Indigenous Knowledge Systems
2008	Van Schalkwyk, SL Maree, JE Wright, SC	Qualitative	Women diagnosed with cervical cancer	Convenience	Experiencing the signs and symptoms of cancer	Reproductive Health Matters
2008	Maree, JE Wright, SC	Quantitative survey	Patients with advanced cancer	Convenience	Cancer care	Curationis
2008	Van Rooyen, D Le Roux, L Kotze, WJ	Qualitative phenomenological	Nurses	Purposive	Nurses and nursing practice	Health SA Gesondheid
2009	Mugivhi, H Maree, JE Wright, SCD	Quantitative survey	Black women	Convenience	Primary and secondary prevention	Curationis
2009	Maree, JE Lu, X Mosalo, A Wright, SCD	Quantitative survey	Women	Convenience	Primary and secondary prevention	Africa Journal of Nursing and Midwifery
2010	Mookeng, MJ Mavundla, TR McFarland, DM	Qualitative	Private medical practitioners	Purposive	Primary and secondary prevention	Africa Journal of Nursing and Midwifery
2010	Sibiya, N Grainger, L	Qualitative	Primary health clinics Nurses	Random Not specified	Primary and secondary prevention	Africa Journal of Nursing and Midwifery
2010	Loubser, HJ Herbst, MC	Mixed methods	Records	Not specified	Cancer care	Africa Journal of Nursing and Midwifery
2010	Maree, JE Wright, SCD	Quantitative survey	Women	Convenience	Primary and secondary prevention	European Journal of Oncology Nursing
2010	Maree, JE	Qualitative	Black women	Convenience snowball	Primary and secondary prevention	Health SA Gesondheid
2010	Maree, JE	Quantitative survey	Nurses	Convenience	Nursing and nursing practice	Journal of Pain Management
2011	Rwamugira, J Maree, JE	Pre- and post-intervention	Community members	Purposive	Primary and secondary prevention	European Journal of Cancer Care
2011	Maree, JE Wright, SC	Quantitative survey	Women	Convenience and purposive	Primary and secondary prevention	European Journal of Oncology Nursing
2011	Issah, F Maree, JE Mwinituo, PP	Qualitative	Women treated for cervical cancer	Purposive and convenience	Experiencing the signs and symptoms of cancer	European Journal of Oncology Nursing
2011	Maree, JE Wright, SC Makua, TP	Quantitative survey	Men	Convenience	Primary and secondary prevention	European Journal of Cancer Care
2011	Maree, JE	Instrumental case study design using mixed methods	Women living with breast cancer-related lymphoedema	Most severe case	Cancer care	Health SA Gesondheid
2011	Maree, JE Lu, XM Wright, SCD	Intervention research	Women	Convenience	Primary and secondary prevention	European Journal of Cancer Care
2011	Oberholzer, AE Nel, E Myburgh, CPH Poggenpoel, M	Exploratory and descriptive	Primary school children treated for haematological or oncological disorders	Not specified	Cancer care	Health SA Gesondheid
2012	Maree, JE Combrink, M De Lange, T Toerien, AS Bedeker, M	Quantitative survey	Patients treated with chemotherapy	Convenience	Cancer care	Health SA Gesondheid
2012	Maree, JE Lu, XM Wright, SCD	Quantitative survey	Women	Convenience	Primary and secondary prevention	Africa Journal of Nursing and Midwifery