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

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.

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,
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.

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

<table>
<thead>
<tr>
<th>Article</th>
<th>Description</th>
<th>Areas Mentioned</th>
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<tbody>
<tr>
<td>Arbyn et al., 2008</td>
<td>Opportunistic and organized screening for cervical cancer in Europe</td>
<td>Clinical</td>
</tr>
<tr>
<td>AWHONN, 2010</td>
<td>Opportunistic screening for breast cancer in the United States</td>
<td>Education and promoting health, research and program evaluation, training</td>
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<tr>
<td>Ayres, 2009</td>
<td>Opportunistic screening for cancer in the United States</td>
<td>Education and promoting health</td>
</tr>
<tr>
<td>Chapman, 2012</td>
<td>Organized screening for breast cancer in the United Kingdom</td>
<td>Management, education and promoting health, clinical, research and program evaluation</td>
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<tr>
<td>Dobrow et al., 2007</td>
<td>Organized screening for colorectal cancer in Canada</td>
<td>Clinical</td>
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<tr>
<td>Fawcett et al., 2007</td>
<td>Opportunistic screening for breast cancer in the United States</td>
<td>Management, education and promoting health</td>
</tr>
<tr>
<td>Glasper, 2012</td>
<td>Organized screening for colorectal cancer in the United Kingdom</td>
<td>Clinical</td>
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<tr>
<td>Godsell, 2005</td>
<td>Opportunistic screening for skin cancer in the United Kingdom</td>
<td>Clinical</td>
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<tr>
<td>Hilton et al., 2003</td>
<td>Opportunistic screening for cervical cancer in the United States</td>
<td>Education and promoting health, clinical</td>
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<tr>
<td>Khan et al., 2012</td>
<td>Organized screening for colorectal cancer in New Zealand</td>
<td>Clinical</td>
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<tr>
<td>Loescher, 2004</td>
<td>Opportunistic screening for breast and cervical cancers in the United States</td>
<td>Management, education and promoting health, research and program evaluation</td>
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<tr>
<td>Lundgren et al., 2000</td>
<td>Organized screening for cervical cancer in Sweden</td>
<td>Education and promoting health</td>
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<tr>
<td>Mahon, 2000</td>
<td>Opportunistic screening for cancer in the United States</td>
<td>Management, education and promoting health</td>
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<tr>
<td>Oluwatosin, 2008</td>
<td>Opportunistic screening for breast cancer in Nigeria</td>
<td>Education and promoting health</td>
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<tr>
<td>Oscarsson et al., 2011</td>
<td>Organized screening for cervical cancer in Sweden</td>
<td>Education and promoting health</td>
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<tr>
<td>Phelan &amp; Heneghan, 2008</td>
<td>Opportunistic screening for skin cancer in the United States</td>
<td>Education and promoting health, clinical</td>
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<tr>
<td>Shapero et al., 2007</td>
<td>Organized screening for colorectal cancer in Canada</td>
<td>Clinical</td>
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<tr>
<td>Shum et al., 2010</td>
<td>Organized screening for colorectal cancer in China</td>
<td>Clinical</td>
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<tr>
<td>Turkistanli et al., 2003</td>
<td>Opportunistic screening for cervical cancer in Turkey</td>
<td>Education and promoting health</td>
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<tr>
<td>van Putten et al., 2009</td>
<td>Opportunistic screening for colorectal cancer in the United States</td>
<td>Clinical</td>
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<tr>
<td>Wright, 2000</td>
<td>Opportunistic screening for colorectal cancer in the United States</td>
<td>Education and promoting health, clinical</td>
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<tr>
<td>AWHONN—Association of Women’s Health, Obstetric, and Neonatal Nursing</td>
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### 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*(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 participation of patients in cancer screening (1 study)
- Conveying the importance of follow-up and risk evaluation*(1 study)
- Providing education to the population on methods of prevention (1 study)

### Clinical
- Performing diagnostic tests for screening programs*(12 studies)
- Identifying the physical, social, and psychological needs of patients (2 studies)
- Ensuring that people with positive results receive appropriate follow-up*(2 studies)
- Contacting patients and informing them of the results*(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*(1 study)
- Critically analyzing the results of investigations related to screening*(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*(1 study)
- Conducting research on prevention and early detection that will have useful application in clinical practice*(1 study)

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

*Requires specific competence levels

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**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; Glesper, 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., 2005).

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).

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.

The authors gratefully acknowledge Anna Riccobene, RN, for her assistance with the classification of activities identified by the review.

References


