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Bridging the Gap: A Descriptive Study of Knowledge and Skill Needs in the First Year of Oncology Nurse Practitioner Practice

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Abstract

Purpose/Objectives—To identify the knowledge and skill needs of oncology nurse practitioners (ONPs) as they enter cancer care practice, and to identify necessary educational resources.

Design—Cross-sectional, descriptive.

Setting—A national e-mail survey.

Sample—610 self-described ONPs from the Oncology Nursing Society's database.

Methods—The project team developed a 28-item electronic survey. The survey was randomly distributed via e-mail.

Main Research Variables—ONPs' feelings of preparedness in the first year of ONP practice.

Findings—In the first year of practice, 90% of ONPs rated themselves as prepared or very prepared in obtaining patient history, performing physical examination, and documenting findings. ONPs rated themselves as not at all or somewhat prepared in clinical issues of chemotherapy/

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biotherapy competency (n = 81, 78%), recognizing and managing oncologic emergencies, (n = 77, 70%), and recognizing and managing drug toxicities (n = 63, 61%). The primary source of oncology education for ONPs new to practice was almost exclusively the collaborating or supervising physician (n = 84, 81%).

Conclusions—Specific knowledge and skills, such as information about chemotherapy, oncologic emergencies, and side effects of therapy, are needed before an ONP enters a cancer care practice.

Implications for Nursing—Cancer-specific education should be made available to new ONPs as they begin independent practice.

The United States is facing a shortage of cancer care providers needed to provide high-quality cancer care. The current oncology workforce is without proportionate replacement for expected clinician attrition (Erikson, Salsberg, Forte, Bruinooge, & Goldstein, 2007; Warren, Mariotto, Meekins, Topor, & Brown, 2008). Patient factors also contribute to a potential workforce shortage. The number of people diagnosed and living with cancer will rise by 81% by 2020 because of an aging general population, more effective screening and treatment, and prolonged survival among individuals with cancer (Erikson et al., 2007; Warren et al., 2008). Subsequently, cancer care visit demands are projected to grow at a more rapid pace than the number of appointments oncologists can provide (Erikson et al., 2007; Warren et al., 2008).

The American Society of Clinical Oncology (2007) and Patlak and Levit (2009) urged the redesign of current work practices and the development of a workforce to ensure continuous delivery of high-quality cancer care. Part of that work redesign will include physicians no longer providing as much direct care, but, instead, directing teams of providers that include nurse practitioners (Erikson et al., 2007). Restrategizing oncology care delivery by increasing the numbers and expanding the roles of nonphysician practitioners, such as nurse practitioners, is considered to be critically important to meet the current and future cancer care needs in the United States.

Evolution of Nurse Practitioners

Nurse practitioners are RNs who provide a broad range of healthcare services mainly focusing on patient healthcare needs with quality and cost effectiveness (American Academy of Nurse Practitioners, 2007). The use of nurse practitioners alone or in collaboration with physicians has a long history of equivocal or superior patient outcomes in primary (Hayes, 2007), specialty (Hoffman, Tasota, Zullo, Scharfenberg, & Donahue, 2005; Rudy et al., 1998), and cancer care (Cunningham, 2004; Murphy-Ende, 2002; Nevidjon et al., 2010). Particular strengths of nurse practitioners are patient education, communication, and adherence to evidence-based practice guidelines (Bryant-Lukosius & Dicenso, 2004; Murphy-Ende, 2002). Those attributes have led to increased use of nurse practitioners in oncology specialty practice, and those individuals have been designated as oncology nurse practitioners (ONPs) (Bishop, 2009; Nevidjon et al., 2010). In cancer care, improved outcomes in quality of life (Young, 2005), increased productivity (Akscin, Barr, & Towle,

2007), and high patient satisfaction (Towle et al., 2011) with ONPs and physician assistants have been documented in hematology/oncology practices.

However, the availability of ONPs is not projected to meet demand. Patlak and Levit (2009) addressed the shortage with two suggestions: (a) include a meaningful cancer care curriculum in nurse practitioner programs, and (b) provide on-the-job training for nurse practitioners in a program that provides didactic and clinical oncology fellowship education in a cancer center.

The solutions are problematic for today's nurse practitioner educational setting and workforce. Adding meaningful oncology content in established nurse practitioner programs is difficult because many curricula already are full to capacity with required content for national educational accreditation. Specialty education in nurse practitioner curricula is discouraged as educational trends move toward more general, population-based education and away from disease-focused content. Patlak and Levit's (2009) suggestion for on-the-job training through nurse practitioner fellowship programs is modeled on the traditional medical oncology fellowship. Although a fellowship program may be educationally optimal, it often is not feasible given that nurse practitioners traditionally transition to the advanced practice role as they age and as familial and financial obligations limit their professional flexibility.

Education of Nurse Practitioners

Nurse practitioners are educated using population-specific rather than disease-specific frameworks (Kinney, Hawkins, & Hudmon, 1997). That educational paradigm has been strengthened through the *Consensus Model for Advanced Practice Registered Nurses: Licensure, Accreditation, Certification, and Education* (American Nurses Association, 2008). That model has been endorsed by major nursing organizations and is scheduled for 2015 implementation (American Nurses Association, 2008). The consensus model endorses the preparation of all advanced practice nurses at a population- specific rather than a disease-specific focus. Because cancer care reaches across all patient populations, population-specific nurse practitioner certification and educational paradigms (i.e., family, adult, acute care, or women's health) cannot fully prepare nurse practitioners for specialty care such as cancer.

To begin to better define the role and standardize knowledge and skill preparation into oncology practice, the Oncology Nursing Society ([ONS], 2007) published specific competencies for entry-level ONPs. The 2007 competencies build on core competencies for all nurse practitioners to meet the unique needs of patients with a past, current, or potential diagnosis of cancer, including

- Assessing all aspects of the patient's health status, including health promotion, health protection, and disease prevention
- Diagnosing health status, including critical thinking, differential diagnosis, and integration and interpretation of various forms of data

- Planning and implementing interventions to return the patient to a stable state to optimize health
- Imparting knowledge and skills for patient self-care.

The competencies assume that ONPs have completed graduate coursework and have clinical experiences to "provide advanced nursing care to meet the specialized physiologic and psychological needs of patients throughout the continuum of care, including cancer prevention and detection, cancer diagnosis and treatment, rehabilitation, survivorship, and end-of-life care" (ONS, 2007, p. 6).

To date, nurse practitioners without previous cancer care experience enter oncology positions requiring a high degree of autonomy and decision making without any specific cancer training or education (Focus on Staff, 2007). Traditional oncology nursing orientation is not fully adequate for the unique role of the ONP.

For nurse practitioners entering oncology, additional professional education is necessary for the provision of safe and appropriate care of the patient with cancer throughout the cancer care trajectory (Nevidjon et al., 2010; Rosenzweig & Roth, 2010). However, the specific educational needs of ONPs as they enter cancer care practice and potential sequela from lack of education have not been quantified. Quantification of those needs and outcomes will support the development of ONP knowledge and skill education templates. The purpose of this study, therefore, was to identify the knowledge and skill needs of ONPs as they enter cancer care practice, and identify the educational resources used by ONPs in that cancer care practice.

Methods

The current study was a cross-sectional, descriptive study of self-described ONPs. A project team of experienced ONPs was formed to examine and identify the clinical and nonclinical knowledge and skill needs of ONPs based on personal experiences as they entered oncology practice, through the experiences of ONP colleagues, and through experiences with ONP mentorship. The consensus opinions regarding identified needs were crafted into a questionnaire to assess ONP knowledge and skill needs. The questionnaire items also were chosen based on the ONS role delineation study (McMillan, Heusinkveld, & Spray, 1995) of advanced practice nurses in oncology. In addition, the team felt that identification of the knowledge and skill deficits alone was not adequate. The questionnaire also should measure the clinical and professional outcomes of ONPs' knowledge and skill deficits in their first year of professional cancer care practice. The survey questions were developed and then approved by the panel of ONPs serving as the Bridging the Gap Working Group.

An electronic survey then was developed. The completed questionnaire consisted of 28 items: 17 demographic identifiers, 7 items assessing clinical and professional educational preparedness, and 4 items describing patient and professional outcomes from the respondents' identified educational deficits. The questionnaire was distributed (from June 21, 2009 to July 27, 2009) via e-mail survey to 610 self-described ONPs in ONS's database.

Results

One hundred and four self-reported ONPs, 17% of the potential sample, responded and constituted the recruited sample. All respondents except one were women. The majority of the ONPs ranged in age from 30–50 years. The nine geographic divisions of the United States were represented (U.S. Census Bureau, n.d.). Most of the respondents (n = 94, 90%) had some previous nursing education at the time of entry into nurse practitioner education. Eighty-two (79%) of the respondents had a bachelor's degree in nursing, nine (9%) had a diploma in education only, and two (2%) had an associate degree when they started their nurse practitioner education. The growing trend toward nurse practitioner education among individuals without previous nursing education was reflected by nine respondents. Those nurse practitioners were presumably in the new paradigm of nursing education regarding accelerated bachelor's degree with immediate matriculation to a master's or nurse practitioner program. The basic nurse practitioner education from which the ONPs were educated was predominantly in adult nurse practitioner programs (see Table 1).

The respondents had a mean of 8.3 years (SD = 6.7 years) of ONP experience. Forty-three percent of the nurse practitioners were certified as oncology nurses. The OCN® certification was held by 20 (19%) of the respondents, and 25 (24%) were certified with the AOCNP® credential. Reasons for noncertification varied, including lack of time for preparation, lack of confidence in passing the examination, lack of extrinsic reward professionally, or a lack of available finances to pursue certification.

Eighty-six of the respondents (83%) saw patients in the outpatient setting of a hospital clinic or private oncologist office, and 50 (48%) had inpatient responsibilities, including patient medical, surgical, bone marrow transplantation, and intensive care units. Sixty-one (59%) cared for a population that included patients with hematologic and oncologic diagnoses, 19 (18%) had responsibility for a disease-specific population, and 14 (13%) only had patients with cancer in their practice.

ONPs described their perceived level of preparedness for specific clinical components of the role (see Table 2). The respondents felt they were well prepared with the foundational nurse practitioner skills of obtaining a history, performing a physical examination, and writing and presenting a patient case. The clinical practice components for which the ONPs felt poorly prepared were specific to cancer care. The items chosen most often as "not at all prepared" (n = 84, 81%) were oncology-specific procedures (e.g., bone marrow biopsies, thoracentesis, paracentesis, lumbar punctures). The second highest items ranked as "not at all prepared" for were chemotherapy or biotherapy competencies (n = 62, 60%). Third- and fourth-ranked items for which the respondents felt poorly prepared were billing and reimbursement (n = 51, 49%) and recognizing and managing oncologic emergencies (n = 40, 39%), respectively. Items with more than 20% of the respondents indicating that they were "not at all prepared" were end-of-life care (n = 30, 29%), recognition and management of drug toxicities (n = 27, 26%), diagnosis and staging to help formulate a treatment plan (n = 22, 21%), and radiographic ordering and interpretation (n = 21, 20%). Overall, 59 (57%) of the respondents felt they were "not at all" or "somewhat" prepared for more than half of the foundational clinical knowledge for cancer care. Interestingly, no significant influence was noted between

years of nursing experience or type of nurse practitioner education and feelings of preparedness for oncology clinical practice.

Respondents were asked to identify their top three clinical learning needs that, if addressed, would have helped them in their first year of practice. The top three clinical learning needs were radiologic ordering and interpretation (n = 44, 42%); diagnosis and staging to formulate a patient treatment plan (n = 37, 36%); and a common learning need for all new nurse practitioners, billing and reimbursement (n = 30, 29%). The learning needs for more than 20% of the respondents included ordering and interpreting laboratory studies (n = 26, 25%), recognizing and managing oncologic emergencies (n = 24, 23%), and the process of differential diagnosis (n = 22, 21%) (see Table 3).

The manner in which the respondents met their knowledge and skills needs was most often via collaborating with a supervising physician (n = 84, 81%) or self-study (n = 64, 62%). Used less often were collaboration with fellow ONPs (n = 36, 35%) and institutional training or orientations (n = 28, 27%). The nonclinical entry-level knowledge needs of the ONP role also were assessed. The responses reflected the perceived level of preparedness for specific nonclinical components of the ONP role (see Table 4). Although the knowledge and skill needs may not be specific to oncology, they were identified by ONPs as lacking in their first year of practice. The top three nonclinical knowledge needs in the first year of practice were quantifying the ONP contribution to practice (n = 48, 46%), negotiating salary and benefits (n = 41, 39%), and navigating RN and ONP relationships (n = 32, 31%).

Outcomes of Knowledge Gap

The ONPs felt that the identified knowledge and skill gaps, both clinical and nonclinical, resulted in a personal sense of inadequacy for 68 (65%) of the respondents; stress and anxiety for 52 (50%); and strained working relationships with physicians (n = 21, 20%), nursing colleagues (n = 21, 20%), and management personnel (n = 19, 18%). Patient error was reported as a knowledge gap outcome by four (4%) of the ONPs. Position attrition also was cited as a knowledge gap outcome by 23 (22%) respondents.

Discussion

The results of the survey are the first to elucidate the knowledge and skill gaps for ONPs as they enter oncology practice. The survey elicited interesting findings worthy of additional discussion. Simply increasing the number of nurse practitioners in the oncology workforce is not adequate for the provision of optimal cancer care. ONPs also must have requisite cancer education to provide the highly specialized care required by patients with cancer and their families.

First, the learning needs of ONPs are not necessarily a result of educational deficits in the basic nurse practitioner programs. The respondents indicated that they were very prepared to elicit a history, perform a physical, communicate findings, and compile a differential diagnosis, which shows that nurse practitioner programs are preparing graduates for the knowledge and skills of the nurse practitioner role. Requiring academic nurse practitioner programs to add very specific oncology content is unrealistic. The burden of additional

specific education must fall to the cancer centers and oncology practices on entry into clinical oncology practice.

In addition, trends in education have a direct bearing on results. The survey reflects the growing trend toward students entering nurse practitioner education without the more traditional bachelor's degree in nursing and several years of oncology experience. Several paths to nurse practitioner education and ONP practice are now available, and some state that no previous clinical experience or previous nursing education is needed. As the demand for nurse practitioners in all specialties increases, those educational trends most likely will continue (Erikson et al., 2007). The responsibility for appropriate mentorship and close supervision becomes even greater for nurse practitioners new not just to oncology, but to nursing as well.

Every effort should be made to ensure that ONPs have a knowledge base that focuses on patient safety. Identified knowledge needs in the first year of practice were very specific learning needs that had implications for errors and poor patient outcomes. Laboratory evaluation, radiographic ordering, and recognizing and managing oncologic emergencies were the top knowledge needs identified; all are key components of ONP practice. ONPs beginning oncology practice without key knowledge must be closely supervised and mentored to ensure patient safety.

Results of the survey indicate that ONPs new to cancer care most often fulfill their clinical learning needs through their collaboration and mentorship with their supervising physicians. Many physicians are unaware of the knowledge and skill needs of the newly hired ONPs and may be unable or unwilling to provide basic cancer care education. Those results indicate that physicians using ONPs may require resources to aid them in appropriate ONP education. The American Nurses Association (2008) addresses the need for disease-specific education and specifically mandates that specialty practice is developed, recognized, and monitored by the nursing profession.

The outcomes of knowledge deficits range from patient error to job attrition. Although patient error is infrequently self-reported in the advanced practice nurse survey, the lack of basic knowledge in differential diagnoses, recognizing oncologic emergencies, and lack of knowledge regarding appropriate ordering and interpretation of radiographic and laboratory testing may preclude an ONP from recognizing a near miss or error unless patient harm occurred. An institutional obligation to patients with cancer and their families is needed to ensure that the ONPs have the necessary knowledge and skills to safely manage patients with cancer.

Finally, ONPs need collaboration and professional development with career maturation to meet identified nonclinical skill needs. Although physicians can provide mentorship regarding practice issues, they should not be expected to provide all professional collegiality and interaction. Interaction with other ONPs is important for professional development. Orientation, mentorship, and development programs are in place at large medical centers. One model from the University of Maryland uses an infrastructure that was created to support nurse practitioners across the institution in orientation, support, mentorship, and

networking (Bahouth & Esposito-Herr, 2009). In addition, the lead nurse practitioner is able to relate to the unique role and to evaluate nurse practitioners using criteria appropriate and specific to nurse practitioners (Bahouth & Esposito-Herr, 2009). Skalla and Caron (2008) described a network and infrastructure support through a cancer institute offering the same opportunities for networking, mentoring, and companionship in roles that often are viewed as “silos.” These unique opportunities may be more readily available in larger academic centers. Nurse practitioners working alone in private practice may need to find resources through larger nurse practitioner organizations, such as ONS’s Oncology Nurse Practitioner Special Interest Group or via electronic networking sites.

Limitations

The limitations of the evaluation were a small sample size in returned surveys and the use of a nonvalidated instrument to collect data. The small sample size may skew results toward ONPs who had a very positive or very negative experience in their entry to practice, perhaps limiting generalizability to all ONPs entering practice. The instrument used in the online survey was developed by ONS members who are practicing ONPs involved in mentoring and teaching new ONPs, but was not validated by a larger group of practicing ONPs. The data, although cursory, are an important first step in understanding the educational needs of nurse practitioners in cancer care.

Implications for Nursing

The results of the survey are interesting and help to guide ONP education. Nurse practitioner education should be provided for ONPs as they enter practice. In addition, the oncology nursing community should lead the efforts for cancer care education for ONPs.

Conclusion

The knowledge and skill needs of ONPs are clear. Ways to address those needs include educational outreach with supervising physicians, cancer centers, and national organizations. ONPs in rural and underserved areas may be particularly vulnerable to inadequate training resources. Electronic or online education is necessary to ensure a nondisparate approach to ONP education. The mandatory requirement for ONP education in basic issues related to cancer care prior to working in cancer care is controversial, but is perhaps a question that needs to be addressed. The public should feel confident that ONPs are knowledgeable in key aspects of cancer care.

Nursing leadership should reach out to physicians and hiring institutions to provide guidelines and templates for optimal knowledge and skill acquisition for new ONPs. That could be accomplished through formal academic programs such as post-master’s programs or a more flexible and informal electronic format offered while ONPs are in their first months of work. Regardless of the source, some education is necessary to fill the knowledge gap that currently exists in the field.

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Table 1

Program of Nurse Practitioner Education Prior to Entering Oncology Practice

Program	n	%
Adult	43	41
Family	35	34
Acute care	11	11
Pediatrics	10	10
Geriatric	2	2
Mixed programs	2	2
Women's health	1	1

N = 104

Note. Because of rounding, not all percentages total 100.

Table 2

Rating of Educational Preparation for Clinical Components of the Oncology Nurse Practitioner Role

	Not at All Prepared		Somewhat Prepared		Prepared		Very Prepared		No Response	
Component	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Obtaining patient history	–	–	7	7	41	39	55	53	1	1
Ordering and interpreting laboratory studies	1	1	32	31	47	45	23	22	1	1
Documentation of findings	1	1	11	11	42	41	48	46	2	2
Performing a physical examination	2	2	9	9	41	39	51	49	1	1
Differential diagnosis	5	5	29	28	47	45	20	19	3	3
Presenting case to care team	8	8	34	33	43	42	18	17	1	1
Comorbidity management	11	11	42	40	39	38	8	8	4	4
Symptom management	17	16	40	39	33	32	11	11	3	3
Addressing sensitive patient issues (e.g., sexual dysfunction)	19	18	49	47	28	27	6	6	2	2
Radiologic ordering and interpretation	21	20	53	5	25	24	3	3	2	2
Formulating a patient treatment plan (i.e., diagnosis and staging)	22	21	38	37	37	36	6	6	1	1
Recognition and management of drug toxicities	27	26	36	35	34	33	6	6	1	1
End-of-life care	30	29	38	37	29	28	5	5	2	2
Recognizing and managing oncology emergencies	40	39	33	32	23	22	7	7	1	1
Billing and reimbursement	51	49	42	40	7	7	2	2	2	2
Chemotherapy or biotherapy competencies	62	60	19	18	13	13	8	8	2	2
Performing procedures specific to the practice (e.g., endometrial biopsy)	84	81	12	12	4	4	2	2	2	2

N = 104

Note. Because of rounding, not all percentages total 100.

Table 3

Clinical Learning Needs Identified at Entry to Oncology Nurse Practitioner Practice

Learning Need	n	%
Documentation of findings	3	3
Performing a physical examination	5	5
Addressing sensitive patient issues (e.g., sexual dysfunction)	5	5
End-of-life care	8	8
Presenting case to care team	9	9
Comorbidity management	11	11
Recognition and management of drug toxicities	17	16
Symptom management	19	18
Chemotherapy or biotherapy competency	22	21
Differential diagnosis	22	21
Recognizing and managing oncologic emergencies	24	23
Performing procedures specific to the practice (e.g., endometrial biopsy)	24	23
Ordering and interpreting laboratory studies	26	25
Billing and reimbursement	30	29
Formulating a patient treatment plan (i.e., diagnosis and staging)	37	36
Radiologic ordering and interpretation	44	42

N = 104

Note. Respondents could indicate more than one learning need.

Table 4

Rating of Educational Preparation for Nonclinical Components of the Oncology Nurse Practitioner (ONP) Role

	Not at All Prepared		Somewhat Prepared		Prepared		Very Prepared		No Response	
Component	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Interviewing	16	15	30	29	33	32	23	22	2	2
Negotiating specifics (i.e., salary and benefits)	41	39	36	35	25	24	1	1	1	1
Negotiating role delineation (i.e., responsibilities and degree of supervision or collaboration)	23	22	44	42	28	27	5	5	4	4
Navigating RN and ONP relationships	32	31	40	39	25	24	5	5	2	2
Negotiating for evaluation and feedback	30	29	45	43	22	22	5	5	2	2
Conflict resolution	30	29	47	45	22	22	3	3	2	2
Obtaining desired position	30	29	45	43	27	26	1	1	1	1
Navigate medical versus nursing philosophical differences in practice	25	24	42	40	25	24	10	10	2	2
Quantifying the financial contribution of ONPs to practice	48	46	32	31	18	17	4	4	2	2

N = 104

Note. Because of rounding, not all percentages total 100.