

REVIEW

A Narrative Review of the Confluence of Breast Cancer and Low-wage Employment and Its Impact on Receipt of Guideline-recommended Treatment

叙述性综述乳腺癌、低薪职业及其对接受指引建议治疗之影响的汇流

Revisión narrativa de la confluencia del cáncer de mama y el empleo de baja remuneración, y su impacto sobre la recepción de tratamiento recomendado por las directrices

Robin C. Vanderpool, DrPH, *United States*; Jennifer E. Swanberg, PhD, *United States*; Mara D. Chambers, MD, *United States*

ABSTRACT

Breast cancer is the leading cause of cancer among women in the United States, costing the healthcare system, employers, and society billions of dollars each year. Despite improvements in screening and treatment, significant breast cancer treatment and survivorship disparities exist among various groups of women. One variable that has not been explored extensively as a possible contributor to breast cancer treatment disparities is employment. This is concerning, given the changing economic and employment trends in the United States favoring low-wage employment. Currently, one-quarter to one-third of all US workers are considered to be working poor, and women are disproportionately represented in this group. Characteristics of low-wage work—limited paid time off, minimal health benefits, schedule inflexibility, and economic insecurity—may become even more significant in the event of a breast cancer diagnosis. To date, there has been limited research into how job conditions inherent to low-wage work may influence working poor survivors' receipt of guideline-recommended breast cancer treatment. Therefore, the purpose of this narrative review was to critically examine the current literature to further our understanding of how employment context may impact treatment decisions and adherence—and therefore receipt of guideline-recommended care—among newly diagnosed, working poor breast cancer survivors. After under-

taking a comprehensive review, we failed to identify any published literature that explicitly addressed low-wage employment and receipt of guideline-recommended breast cancer treatment. Four articles reported circumstances where women delayed, missed, or quit treatments due to work interference, or alternatively, developed strategies that allowed them to continue to work and obtain their breast cancer treatment concurrent with medical and economic challenges. An additional five articles, while focused on other cancer and employment outcomes, described the need for increased patient-provider communication about the influence of work on treatment decisions and the development of alternative treatment plans. Due to the paucity of research in this area, future policy, practice, and research efforts should focus on the employment context of working poor breast cancer survivors as a potential contributor to cancer disparities. Engagement of women, employers, oncology providers, healthcare systems, and interdisciplinary researchers is warranted to improve cancer outcomes among this disparate population of working women.

抽象

乳腺癌是美国女性罹患癌症的主要原因，每年要花费医疗护理系统、雇主和社会数十亿美元的资金。尽管在筛选和治疗方面均有所改善，但在乳腺癌治疗和存活方面，不同的女性群体之间存在着显著的差异。在乳腺癌治疗差异的潜在影响

因素之中，一项尚未得到人们广泛承认的可变因素即为就业。鉴于美国不断变化且趋向于低薪就业的经济和就业趋势，这一点令人十分担忧。目前，在所有美国劳动者之中，有四分之一至三分之一的人被视为作为穷忙族（working poor），而其中女性占很大比例。低薪工作的特点（即带薪休假时间有限、最低的健康福利、工作时间不灵活和经济无法得到保障）可能会在诊断乳腺癌时更加突出。到目前为止，对于低薪工作所固有的工作条件可能会对穷忙族存活者接受指引建议的乳腺癌治疗产生何种影响，人们的研究十分有限。因此，本叙述性综述的目的即在于批判性地审查现有文献，从而进一步了解工作环境可能会对新诊断为乳腺癌之穷忙族存活者的治疗决定和坚持（并因而接受指引建议的护理）产生何种影响。在进行完一次全面的审核之后，我们发现，所有已发表的文献均未明确阐明低薪就业和接受指引建议的乳腺癌治疗的情况。有四篇文章报告称，存在女性因工作干扰而延迟、错过或放弃治疗的情况，或制定战略，以便在面临医疗和经济挑战的同时，一边接受乳腺癌治疗一边继续工作。另有五篇文章，尽管着重于其它癌症和工作结果，但认为有必要增加患者与提供者有关方面的沟通，而该等有关方面是指工作对治疗决定和制定替代治疗计划的影响。由于缺乏对该领域的研究，因此，今后的政策、实践和研究工作都应将穷忙族乳腺癌存活者的工作环境视为癌症差异的潜在影响因素而加以重视。若要改善这一与众不同的职业女性群体的癌症结果，女性、雇主、肿瘤治疗提供者、医疗护理系统和跨学科研究人员的集体参与是十分必要的。

Author Affiliations

University of Kentucky College of Public Health, Department of Health Behavior, Lexington (Dr Vanderpool); University of Maryland School of Social Work, Baltimore (Dr Swanberg); University of Kentucky College of Medicine, Markey Cancer Center, Comprehensive Breast Care Center, Lexington (Dr Chambers).

Corresponding Author

Robin C. Vanderpool, DrPH
robin@kcr.uky.edu

Citation

Global Adv Health Med. 2013;2(5):75-85. DOI: 10.7453/gahmj.2013.046

Key Words

Breast cancer, low-wage employment, guideline-recommended treatment, disparities, working poor, decision making, adherence

Disclosures

The authors completed the ICMJE Form for Disclosure of Potential Conflicts of Interest, and no relevant conflicts were reported. For funding information, see the "Acknowledgments" section of the article.

SINOPSIS

El cáncer de mama es la principal causa de cáncer entre la mujeres en los Estados Unidos, que cuesta al sistema sanitario, a los empleadores y a la sociedad miles de millones de dólares cada año. A pesar de las mejoras en cuanto a detección y tratamiento, existen importantes desigualdades en el tratamiento del cáncer de mama y en la supervivencia entre diversos grupos de mujeres. Una variable que no se ha investigado en profundidad como posible factor que contribuye a las desigualdades en el tratamiento del cáncer de mama es el empleo. Es algo que resulta preocupante teniendo en cuenta el cambio en las tendencias económicas y laborales en los Estados Unidos, que favorece el empleo de baja remuneración. En la actualidad se considera que entre la cuarta y la tercera parte de todos los trabajadores estadounidenses son trabajadores pobres, y en este grupo las mujeres se encuentran representadas de manera desproporcionada. Las características del trabajo de baja remuneración (limitación del tiempo libre remunerado, prestaciones sanitarias mínimas, falta de flexibilidad en los horarios e inseguridad económica)

pueden adquirir una importancia aún mayor en el caso de un diagnóstico de cáncer de mama. Hasta la fecha se ha llevado a cabo una investigación limitada en torno a cómo las condiciones laborales inherentes al trabajo de baja remuneración influyen sobre la recepción por las supervivientes que son trabajadoras pobres del tratamiento del cáncer de mama recomendado por las directrices. Por esa razón, el objetivo de esa revisión narrativa consistió en examinar con un punto de vista crítico la bibliografía actual para profundizar en nuestra comprensión sobre cómo el contexto laboral puede afectar a las decisiones en cuanto a tratamiento y al cumplimiento de este —y por consiguiente a la recepción de la atención recomendada por las directrices— entre las supervivientes de cáncer de mama recientemente diagnosticadas que son trabajadoras pobres. Tras una exhaustiva revisión no fuimos capaces de identificar ninguna publicación que abordase explícitamente el empleo de baja remuneración y la recepción del tratamiento del cáncer de mama recomendado por las directrices. En cuatro artículos se informaba de circunstancias en que determi-

nadas mujeres retrasaron, omitieron o abandonaron su tratamiento debido a la interferencia del trabajo o, alternativamente, desarrollaron estrategias que les permitían seguir trabajando y recibir su tratamiento para el cáncer de mama simultáneamente con los retos médicos y económicos. En otros cinco artículos, aunque se centraban en otros resultados en cuanto al cáncer y al empleo, se describía la necesidad de aumentar la comunicación entre pacientes y médicos en torno a la influencia del trabajo en las decisiones sobre el tratamiento y en la elaboración de planes alternativos de tratamiento. Debido a la falta de suficiente investigación en este ámbito, los esfuerzos políticos, prácticos y de investigación futuros se deberían centrar en el contexto laboral de las supervivientes de cáncer de mama que son trabajadoras pobres como posible factor que contribuye a las desigualdades en cuanto al cáncer. Está garantizado que la implicación de mujeres, empleadores, servicios de oncología, sistemas sanitarios e investigadores interdisciplinarios ha de mejorar los resultados del cáncer entre esta desigual población de mujeres trabajadoras.

INTRODUCTION

Low-wage employment, ever more prevalent in today's economy, offers women minimal autonomy, schedule inflexibility, limited paid time off, minimal health benefits, and economic insecurity. Indeed, these workplace characteristics become even more significant in the event of a breast cancer diagnosis. While much of the literature to date has focused on the impact of cancer on employment outcomes, there has been limited research into how employment context may influence working poor breast cancer survivors' receipt of guideline-recommended treatment. Our narrative review paper articulates these gaps in knowledge and proposes a related practice, policy, and research agenda focused on improving cancer outcomes among this disparate population of women experiencing both employment and health insecurity.

BACKGROUND

Breast cancer is the most commonly diagnosed cancer among women in the United States, with more than 232 000 new cases expected in 2013 and the second leading cause of cancer-related mortality, with almost 40 000 deaths expected during the same time period.¹ In 2010, female breast cancer accounted for

\$16.5 billion USD in national expenditures for cancer care, and in 2005, breast cancer was responsible for \$12.1 billion USD in lost productivity due to cancer death.² During the past 3 decades, advancements in breast cancer screening and treatment have led to an improved overall 5-year survival rate of 90% (localized, 98.6%; regional, 83.8%; distant, 23.3%) compared to 75% in the mid-1970s.³ According to national estimates, as of July 1, 2012, there were more than 2.3 million women living with a history of invasive breast cancer; this number is expected to increase to 3.8 million by 2022.³ Notably, almost three out of every five breast cancer cases are diagnosed in women between the ages of 20 and 69 years, with a median age at diagnosis of 61 years³, indicating that the majority of breast cancer cases occur among working-age women.

Despite improvements in mammography screening and breast cancer treatment options, there are still significant screening, diagnostic, treatment, and survivorship-related disparities that exist among specific population groups, including minority and medically underserved women and women of lower educational and socioeconomic status.^{4,5} In further understanding treatment and survivorship disparities, the recognition that breast cancer treatment is complex, replete with

mental and physical side effects, expensive, time-sensitive, and time-intensive and that it competes with patients' work-family-life responsibilities is critical. Depending on stage of diagnosis, estrogen/progesterone receptor status, human epidermal growth factor receptor 2 (HER2) expression, menopausal status, and lymph node involvement, guideline-recommended treatment regimens may include surgery (eg, mastectomy, lumpectomy, sentinel lymph node biopsy), specific doses and cycles of external beam or internal radiation, specific doses and cycles of chemotherapy, clinical trial participation, and/or long-term adherence to oral medications such as tamoxifen or anastrozole.⁶ The overall, active treatment process, excluding time allocated for breast reconstruction surgery, may take up to a full year or more depending on comorbidities, treatment-related toxicities and infections, and unanticipated side effects.

The complexity of breast cancer treatment, coupled with a patient's socioecological environment, may manifest in differences in delay and receipt of and adherence to guideline-recommended breast cancer treatment and attendance at clinical follow-up appointments. Specifically, breast cancer treatment disparities have been linked to a combination of patient factors (eg, clinical characteristics, sociodemographics, and psychosocial issues); provider and health system factors (eg, provider demographics and communication styles, accredited cancer programs, hospital volume); and contextual factors (eg, geography, travel time, community-level poverty).^{5,7} For example, compared to white women, minority women (eg, African Americans and Hispanics) are less likely to receive guideline-concordant breast cancer treatment, including surgery, radiation, chemotherapy, and hormonal therapy.⁸ Similarly, women living in communities with high rates of poverty and low education are less likely to receive guideline-recommended chemotherapy and hormonal therapies.⁹ A systematic review of adherence to adjuvant hormonal therapy suggests that patients with greater or younger age, increased out-of-pocket costs, follow-up with a general practitioner (vs oncologist), and treatment side effects are less likely to adhere to treatment.¹⁰ Bickell et al reported that patient knowledge and beliefs about treatment benefits, medical mistrust, older age, and comorbidities also are related to underuse of adjuvant radiation, chemotherapy, and hormonal therapy among a sample of breast cancer survivors in New York.¹¹ Compared to treatment compliance rates in clinical trials that reach almost 90%, Li et al found breast-conserving treatment (lumpectomy, axillary node dissection, radiation therapy, and clinical follow-up appointments) compliance rates in a rural Louisiana hospital reached only 36%, resulting in higher local recurrence rates.¹² Lastly, Magai et al suggest that psychosocial characteristics such as cognition, emotion regulation, and the quality of social relationships are important to breast cancer treatment adherence.⁷

Considering that the efficacy and benefit of varying breast cancer treatments are well established in reduc-

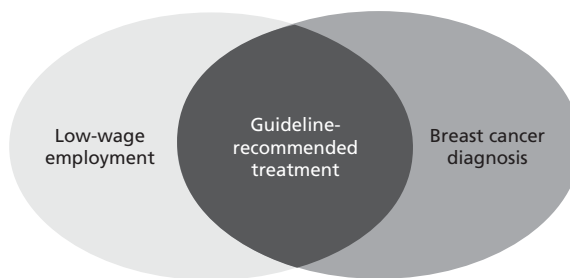


Figure The confluence of breast cancer and low-wage employment and its impact on guideline-recommended treatment.

ing overall breast cancer morbidity, mortality, and risk of recurrent disease,⁶ identifying and intervening on modifiable factors that lead to disparate rates in treatment delay, receipt, and adherence is of utmost importance. One factor that has been studied inadequately as it relates to receipt of guideline-recommended breast cancer treatment and adherence is employment (Figure). As advocated by the Institute of Medicine in its seminal text *From Cancer Patient to Cancer Survivor: Lost in Translation*,¹³ more research is needed on the impact of employment on cancer patients' treatment decision making, including initiation of and adherence to recommended treatment protocols, breast reconstruction surgery (if applicable), and missed medical appointments. While employment status (ie, employed, full/part time, unemployed, retired) is often documented in the literature, there is a lack of detailed assessment on the quality of employment, including occupation, job responsibilities, wage, job conditions, formal and informal workplace policies and practices, and employee benefits, that may influence cancer treatment disparities.¹⁴ Though employment has been studied extensively as a risk factor for poor health, including injury and disability,¹⁴ and the impact of a history of cancer on employment outcomes is well documented,¹⁵⁻¹⁹ exploring employment context as a potential contributor to cancer treatment disparities is a novel and understudied phenomenon. Moreover, a focus on diagnosis and treatment corresponds with what Mullan termed as the first season of cancer survival, the acute phase, which comprises the initial cancer diagnosis and subsequent treatment regimen, compared to long(er)-term assessments of cancer survivorship.²⁰

In reality, not all jobs are created equal and not all cancer patients can be treated alike due to differing employment contexts. This acknowledgement is a noted omission in the literature given broad variation in employment quality across the wage spectrum. Economic and employment trends over the past 3 decades indicate a decline in secure, well-paying industrial jobs and a steady rise in service-related jobs. Unfortunately, service-related positions usually pay low wages and offer little job security, few benefits, and little to no control over work hours.^{21,22} One-quarter to one-third of US workers earn low wages and could easily be classified as "working poor."^{22,23} This trend is not

going away. Projections from the US Department of Labor indicate that seven out of the ten occupations in which job growth is predicted are in low-wage occupations.²⁴ Low-wage jobs often require nonstandard work hours, offer only part-time employment, and/or provide workers with minimal, if any, form of paid time off, schedule control, flexible work arrangements, and/or health insurance.^{22,25,26} These business practices make it difficult for working poor individuals to thrive economically and emotionally. This is especially true when a low-wage worker is diagnosed with breast cancer. Without access to paid time off or flexible work arrangements, survivors may continue to work throughout treatment, taking unpaid leave to receive or recover from treatment, thereby comprising their economic security. Likewise, limited access to flexible work arrangements may restrict their availability for medical appointments increasing the risk that women may delay treatment or miss appointments.²⁷

There is no universally accepted definition of low-wage work; however, there are two general approaches based on wages: basic income and social inclusion.²⁸ The basic income approach typically uses the US poverty threshold for a family of four to determine whether a job is considered low-wage. According to this approach, a low-wage job is defined as one in which a full-time, year-round worker earns less than the poverty threshold for a family of two adults and two children. For 2013, a low-wage job paid \$11.32 USD per hour or less. In contrast, the social inclusion approach defines low-wage as two-thirds the median wage of men. Using this definition, in 2013, a low-wage job pays \$14.45 USD per hour or less. The variation in how low-wage work is measured reflects a broader conversation about the sociopolitical consequences of classifying a higher proportion of US workers as “working poor.”

Regardless of the definition used to characterize a low-wage job, women, blacks, and Hispanics are disproportionately working poor and are overrepresented in occupations that pay low wages, as are workers with low levels of education.^{22,29} For example, working poor women comprise 8% of the total workforce, whereas working poor men comprise 6% of the total workforce. Blacks and Hispanics are more likely than whites to be among the working poor; specifically, in 2011, 13.3% of blacks and 12.9% of Hispanics were among the working poor, compared with 6.1% of whites. Additionally, employees in occupations that generally do not require high levels of education and are characterized by low earnings were more likely to be among the working poor.^{22,29} As an example, 13.1% of service workers were classified as working poor in 2011. Service occupations, with 3.3 million working poor, accounted for nearly one-third of all those classified as working poor, and 53% of service occupations are held by women.³⁰

Many occupations that pay low wages typically do not offer medical care benefits or the types of employee benefits and informal supports that may enable breast cancer survivors to take time off for medical appoint-

ments, treatment, and time to heal.³¹ For example, among low-wage earners, 39% have access to employer-sponsored medical care benefits, with 24% actually participating in the benefit. Among service-related jobs, 48% of employees have access to medical care benefits and 33% actually participate. Thirty-six percent of low-wage earners have access to paid sick leave, 53% have access to vacation leave, and only 21% have access to paid personal leave.³¹ Furthermore, low-wage jobs frequently require nonstandard work hours (ie, a schedule other than Monday through Friday, 8:00 AM to 5:00 PM) and have unpredictable work schedules over which employees have little control.^{32,33} Employment in shift work, particularly at night, has been identified as a potential carcinogen³⁴; half of all workers in low-wage jobs work in shift work.²² Finally, low-wage jobs seldom provide line supervisors with adequate training on work adjustment and work-life management skills.

Considering these tenuous employment conditions, newly diagnosed, working poor breast cancer survivors may make treatment decisions in the context of work responsibilities, workplace policies, financial needs, and maintenance of health insurance coverage. Additionally, these women may be less likely to take meaningful and clinically needed time off from work following their cancer diagnosis and more likely to continue working during active treatment. This confluence of circumstances may jeopardize receipt of guideline-recommended treatment and overall cancer outcomes if these women delay, fail to initiate, miss, or discontinue their breast cancer treatment and related clinical follow-up appointments due to competing demands of employment.³⁵ Furthermore, several working poor characteristics overlap with patient characteristics associated with previously identified breast cancer treatment disparities (eg, sociodemographic factors, poverty, access to health insurance), underscoring the importance of understanding how employment in low-wage jobs may influence the receipt of cancer treatment. Therefore, the purpose of this narrative review is to critically examine the current literature to further our understanding of how employment context influences treatment choices and adherence—and therefore receipt of guideline-recommended care—among newly diagnosed, working poor breast cancer survivors.

METHODS

In early March 2013, with the assistance of a medical librarian, literature searches were run in the following databases: PubMed’s MEDLINE, the Cumulative Index of Nursing and Allied Health Literature (CINAHL), PsycInfo, Business Source Complete, and Web of Science. The Table provides details of the searches in each database, as well as the number of results retrieved from each search (N=611). The main core of literature was retrieved from MEDLINE using the National Cancer Institute (NCI)/National Library of Medicine special topic query for breast cancer as a base with additional medical subject heading (MeSH) terms and/or key

Table Breast Cancer and Low-wage Employment Narrative Review Search Strategy		
Database	Key Word Search Strategy	No. of Results
PubMed's MEDLINE	("Employment"[MeSH] OR "Employment"[Title]) AND ((breast neoplasms[majr] AND human[mh] AND english[la]) OR dcis[ti] OR lcis[ti] OR ((breast[ti] OR breasts[ti] OR mammary[ti] OR nipple[ti] OR nipples[ti]) AND ((cancer*[ti] OR carcinoma*[ti] OR adenocarcinoma*[ti] OR malignant*[ti] OR tumor*[ti] OR tumour*[ti] OR neoplasm*[ti]) OR in situ[ti])))	159
	("Absenteeism"[MeSH]) AND ((breast neoplasms[majr] AND human[mh] AND english[la]) OR dcis[ti] OR lcis[ti] OR ((breast[ti] OR breasts[ti] OR mammary[ti] OR nipple[ti] OR nipples[ti]) AND ((cancer*[ti] OR carcinoma*[ti] OR adenocarcinoma*[ti] OR malignant*[ti] OR tumor*[ti] OR tumour*[ti] OR neoplasm*[ti]) OR in situ[ti])))	15
	("Sick Leave"[MeSH]) AND ((breast neoplasms[majr] AND human[mh] AND english[la]) OR dcis[ti] OR lcis[ti] OR ((breast[ti] OR breasts[ti] OR mammary[ti] OR nipple[ti] OR nipples[ti]) AND ((cancer*[ti] OR carcinoma*[ti] OR adenocarcinoma*[ti] OR malignant*[ti] OR tumor*[ti] OR tumour*[ti] OR neoplasm*[ti]) OR in situ[ti])))	17
	("Salaries and Fringe Benefits"[MeSH]) AND ((breast neoplasms[majr] AND human[mh] AND english[la]) OR dcis[ti] OR lcis[ti] OR ((breast[ti] OR breasts[ti] OR mammary[ti] OR nipple[ti] OR nipples[ti]) AND ((cancer*[ti] OR carcinoma*[ti] OR adenocarcinoma*[ti] OR malignant*[ti] OR tumor*[ti] OR tumour*[ti] OR neoplasm*[ti]) OR in situ[ti])))	30
	("patient-provider communication"[title/abstract]) AND ((breast neoplasms[majr] AND human[mh] AND english[la]) OR dcis[ti] OR lcis[ti] OR ((breast[ti] OR breasts[ti] OR mammary[ti] OR nipple[ti] OR nipples[ti]) AND ((cancer*[ti] OR carcinoma*[ti] OR adenocarcinoma*[ti] OR malignant*[ti] OR tumor*[ti] OR tumour*[ti] OR neoplasm*[ti]) OR in situ[ti])))	10
	("Decision Making"[Mesh] AND ("Appointments and Schedules"[MeSH] OR Delay OR Timing)) AND (((breast neoplasms[majr] AND human[mh] AND english[la]) OR dcis[ti] OR lcis[ti] OR ((breast[ti] OR breasts[ti] OR mammary[ti] OR nipple[ti] OR nipples[ti]) AND ((cancer*[ti] OR carcinoma*[ti] OR adenocarcinoma*[ti] OR malignant*[ti] OR tumor*[ti] OR tumour*[ti] OR neoplasm*[ti]) OR in situ[ti])))	25
	(MM "Breast Neoplasms") AND (MH "Employment")	42
(MM "Breast Neoplasms") AND (MH "Absenteeism")	5	
(MM "Breast Neoplasms") AND (MH "Sick Leave")	12	
(MM "Breast Neoplasms") AND (MH "Salaries and Fringe Benefits")	2	
(MM "Breast Neoplasms") AND (MH "Decision Making") AND (Scheduling OR Delay OR Timing)	7	
(MM "Breast Neoplasms") AND "patient-provider communication"	9	
PsycInfo	exp Breast Neoplasms AND exp Employment Status	13
	exp Breast Neoplasms AND exp Employee Absenteeism	1
	exp Breast Neoplasms AND exp Employee Leave Benefits	1
	exp Breast Neoplasms AND exp Decision Making AND (scheduling or delay or timing).mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures]	5
	exp Breast Neoplasms AND exp Communication AND patient-provider.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures]	3
	exp Breast Neoplasms AND exp Salaries	0
	Business Source Complete	"breast cancer" AND DE "DECISION making"
"breast cancer" AND DE "SICK leave"		2
"breast cancer" AND DE "ABSENTEEISM (Labor)"		0
"breast cancer" AND DE "COMMUNICATION"		7
"breast cancer" AND DE "WAGES"		2
"breast cancer" AND DE "WORK"		3
Web of Science	Breast Cancer[topic] AND employment[title]	48
	Breast Cancer[topic]AND absenteeism[topic]	14
	Breast Cancer[topic]AND sick leave[topic]	38
	Breast Cancer[topic]AND (wages OR salar*)[topic]	40
	Breast Cancer[topic]AND patient-provider communication[topic]	48
	Breast Cancer[topic]AND decision making[title] AND (scheduling OR delay OR timing)[title]	5
Total		611

words for relevant topics. The remainder of searches used a combination of subject headings when possible and again key words germane to topics of the current review. Duplicate citations were removed in each database to produce a set of unique results (N=558; MEDLINE, n=216; CINAHL, n=71; PsycInfo, n=23; Business Source Complete, n=60; Web of Science, n=188). Each collection of citations was then exported to the reference managing software EndNote (Version X6; Thomson Reuters, New York) where duplicate citations across databases (n=125) were removed and the inclusion/exclusion coding process began. In addition to the formal database searches, reviewed articles' reference lists were used to expand our search to include grey literature, books, and governmental and nongovernmental reports. Approximately 150 pieces of published literature were evaluated for this narrative review.

Criteria considered for this review included English-language articles that assessed, either retrospectively or prospectively, the role employment—particularly the context of low-wage jobs—may have had in women's initial breast cancer treatment decisions, as well as subsequent treatment behaviors (ie, delay, adherence, missed appointments). The range of possible treatment options corresponding to an incident, primary invasive breast cancer diagnosis (Stages 1-4), were informed by NCI's Breast Cancer Treatment Physician Data Query (PDQ, National Cancer Institute, Bethesda, Maryland).⁶ In reviewing articles, we searched for breast cancer treatment behaviors using commonly accepted terms and concepts such as (non)initiation, delay, (non)adherence, (non)compliance, (non)receipt, discontinuance, (non)completion, underuse, (non)attendance, cancelled/missed/skipped appointments/follow-up, and refusal/decline. We restricted our search to studies of cancer survivors employed in jobs in the United States because the employment conditions, workplace policies, and social welfare system vary substantially in comparison to Canada or European countries. The national changing economic and employment trends described earlier may not reflect employment circumstances in Canada or Europe, particularly as those countries have had national healthcare policies in place much longer than the United States has. Similarly, these countries' workers may not be as dependent on employer-based health insurance benefits as are US workers. Lastly, within the concept of employment, we critically reviewed papers for mentions of employment status, working poor, salaries/wages, low income, job types, occupational classifications (eg, pink collar, blue collar, service), benefits, and job conditions.

RESULTS

Through the course of the narrative review process, the authors found no published studies that directly assessed the impact of low-wage employment on newly diagnosed, working poor breast cancer survivors' receipt of guideline-recommended treatment. The

majority of the work and breast cancer literature is focused on return-to-work, employment outcomes, subsequent earnings, absenteeism, and/or work disability among survivors.³⁶⁻⁴³ The breast cancer treatment literature primarily assesses sociodemographic, clinical, provider, contextual, and/or psychosocial variables as contributing factors to treatment decision making, receipt, and related adherence behaviors.^{7,10,44-48} In some instances, employment status (ie, employed, unemployed) is used as an explanatory variable in statistical analyses, but the results often are mixed with either no significant associations among employment groups or significance favoring unemployment as a risk factor for nonreceipt or noncompliance, which is to be expected. Job and workplace characteristics, individual occupation, and wages often are absent in these quantitative analyses. Typically, other socioeconomic proxy measures such as insurance status or household income measures are reported. This lack of comprehensive employment data may result from the fact that many cancer treatment receipt and adherence studies use medical record databases, insurance claims, and/or population-based cancer registry data that do not adequately capture occupation, income/wage, and industry-related variables.^{49,50} Moreover, qualitative studies that collect in-depth information directly from breast cancer patients (and providers) related to treatment decisions and behaviors also fail to capture detailed employment circumstances.^{45,51}

Based on our review, there were only four studies that addressed the impact of work on breast cancer survivors' treatment behaviors, and they provide little insight into the actual process and/or outcomes of these decisions and behaviors. First, Ashing-Giwa et al conducted focus groups with 102 multiethnic breast cancer survivors in the Los Angeles area to assess their overall breast cancer experiences, with a specific interest in the psychosocial impact of the disease.⁵² Latina breast cancer survivors (N=26) in particular perceived employment as a major concern during their breast cancer experience; several Latina focus group participants admitted that they did not attend all of their treatment appointments in order to avoid job termination and to continue financially supporting their families.⁵² Limitations to this study include the lack of reported employment details (ie, employment status, occupation, wage, workplace factors), direct income and education measurements, and further explanation of missed treatment appointments.

Second, as a part of a longitudinal study of newly diagnosed breast cancer patients identified by the Metropolitan Detroit Cancer Surveillance System, Bradley et al interviewed 201 women to examine the effects of employment-contingent health insurance on married women's labor supply after a breast cancer diagnosis.³⁵ Overall, results suggest that women with employer-provided health insurance were more likely to stay attached to the labor market compared to women with health insurance provided by their

spouse's employer.³⁵ Interestingly, several of the women participating in the study shared with the study interviewers that they quit their treatment due to job interference.³⁵ While this finding was anecdotal to the overall study, it raises important questions about the influence of health insurance coverage and "job lock" and deserves further exploration by employment context, especially low-wage work. In this study, two-thirds of the women were classified as white collar workers and more than 60% of the survivors had a household income of \geq \$75 000 USD.

Third, the 2006 *Breakaway from Cancer* national online survey conducted by Fleishman-Hillard Research in collaboration with the National Coalition for Cancer Survivorship and The Wellness Community examined "the effects of cancer on the careers and workplace environment for both cancer patients/survivors and caregivers throughout the United States."⁵³ The survey was conducted in October 2006 with 504 cancer survivors and 500 caregivers. Survey results showed that 20% of cancer survivors who were employed during at least part of their treatment period indicated that they skipped or postponed a scheduled treatment due to conflict with a work obligation; half of this group further explained that this situation happened three or more times.⁵³ Notably, those with jobs perceived as stressful (29%) were more likely to miss treatment due to work compared to those with less stressful jobs (13%); this same pattern was evident for those reporting that their job was physically demanding.⁵³ More than half of the respondents indicated that their employers provided time off for doctors' appointments (53%) and flex-time arrangements (51%). Overall, the *Breakaway from Cancer* findings were not stratified by female respondents, breast cancer survivors (21% of the sample), or employment conditions; a secondary analysis of the survey data could be feasible.

Last, Vanderpool et al conducted in-depth, semi-structured telephone interviews with 24 women in Kentucky who were diagnosed with a new, primary breast cancer in the past three years and were employed in low-wage positions (\leq \$15.00 USD/hour) at the time of diagnosis.²⁷ The purpose of the qualitative study was to understand how female breast cancer survivors employed in low-wage jobs manage the treatment and recovery process within the context of their work, family, and other life responsibilities. At the time of diagnosis, the mean hourly wage for the study sample was \$11.25 USD (SD=2.18); 18 of the 24 (75%) women had household incomes of less than \$40 000. Retail, health-care and social assistance, manufacturing, and food and accommodation services were the most commonly represented industries (n=19). More than half of the women (n=13, 54%) continued employment during their cancer treatment due to financial stress, fiscal necessity, lack of paid time off, and fear of losing their health insurance. None of the study participants indicated that they made explicit treatment decisions or missed treatment appointments due to work. However,

women provided detailed explanations of how they managed the competing demands of work and cancer treatment, concurrent with medical and economic challenges.²⁷ For example, a bookkeeper for a construction company was given only 9 days of paid time off for a double mastectomy and multiple rounds of chemotherapy. Two women (store clerk and youth counselor) described how they worked throughout their entire treatment in order to maintain their health insurance, switching from day shifts to later shifts in order to attend chemotherapy appointments scheduled during daytime hours. One woman working as a certified nursing assistant wanted to have breast reconstruction surgery, but financially, she could not afford to take additional time off of work and thereby forewent surgery. Several women described going to radiation appointments early in the morning before work or during their lunch hour. An administrative assistant explained that she scheduled her chemotherapy appointments at the end of the workday so that (1) she would miss only a few hours of work and (2) if she were to get sick from the chemotherapy, it would occur the following day, which was her vacation day. One woman who worked as an activities director at a nursing home delayed her treatment initiation as she weighed the economic costs of the prescribed treatment against the treatment itself due to a proposed reduction in work hours (and therefore wages and health insurance benefits). Finally, a retail clerk did not attend follow-up postmastectomy or mammography appointments due to cost concerns. Overall, results indicated access to paid time off, family medical leave, and short-term disability; understanding of health insurance benefits; and work environments with supportive supervisors and coworkers appeared to influence treatment-related behaviors. Limitations of the Vanderpool study include a convenience sample of women from Kentucky and lack of objective medical follow-up to assess cancer outcomes and lack of objective information about employment characteristics.

It is also worth noting that during the course of the review, we found several articles wherein authors included a discussion of the impact of work on breast cancer treatment decisions and adherence even though their studies focused on other cancer and employment outcomes. For example, Hassett et al's article on the influence of chemotherapy and radiation on breast cancer survivors' employment the year following diagnosis concludes with a discussion that considers treatment decision making in the context of significant work consequences (eg, loss of health insurance coverage) and the modest benefit of chemotherapy in some clinical situations.³⁸ Blinder and et al's 3-year longitudinal study of return-to-work in low-income non-Latina and Latina breast cancer survivors in California advocates for consideration of job responsibilities such as heavy lifting and manual labor in surgical decisions.⁵⁴ Lastly, Bradley et al have published multiple studies addressing absenteeism,³⁷ job lock due to employer-contingent health insurance coverage,³⁵ and return-to-

work⁵⁵ among breast (and prostate) cancer survivors using data from the Metropolitan Detroit Cancer Surveillance System. Though not the primary outcome of the various studies, the potential health toll and risk of breast cancer recurrence among cancer patients who do not comply with treatments due to work-employment conflicts, as well as the importance of patient-provider communication regarding employment circumstances and the possibility of tailored treatment options to help patients maintain employment, are discussed in the articles.

DISCUSSION

Mental health was defined by Freud as the ability to love and to work. Work provides self-esteem, a sense of purpose, role identity, and life satisfaction, as well as an income and social interaction. A breast cancer diagnosis for a working woman can easily undermine aspects of her identity, disrupt her sense of normalcy, and wreak havoc with her sense of control.⁵⁶ Almost immediately upon receiving her breast cancer diagnosis, a working woman must make important life decisions about her cancer treatment and subsequently about how to manage her work responsibilities, as well as other life responsibilities (eg, child and elder caregiving, social obligations), while undergoing treatment. The historical narrative surrounding cancer and employment is that workers take extended time off of work for treatment and/or to recover. However, the advancement of cancer treatments, as well as the delivery of radiation and chemotherapy in outpatient settings, has made it easier for employed women diagnosed with breast cancer to continue working or take intermittent short-term leave as needed for medical appointments, treatments, and when not feeling well. However, as described earlier, an increasing number of employees in the United States do not have access to any form of paid leave—sick, vacation, personal, or family medical leave. This circumstance, coupled with the high percentage of working poor in the United States, suggests that an increasing number of breast cancer survivors will work throughout their cancer treatment and recovery. The ramifications of this trend are profound for working women, employers, and oncology care providers. We argue that for working poor survivors, treatment decisions and resulting behaviors are more complex and temporally difficult compared to decisions made by women in management, professional, or administrative positions because their jobs characteristically come with employee benefits supportive of a breast cancer diagnosis. These complex and difficult breast cancer-employment decisions may result in nonreceipt of guideline-recommended care; however, as this literature review indicates, there is a paucity of research that examines this very issue. Moreover, working poor women—represented by higher proportions of minority and medically underserved individuals with lower rates of education and income—may be diagnosed with more advanced stages of breast cancer and may face

more aggressive treatment, increased rates of morbidity, and lower quality of life.⁴⁵ This confluence of circumstances may further exacerbate cancer treatment and survivorship disparities observed in the United States. Similarly, many of the complexities associated with low-wage employment and breast cancer also may be relevant to other chronic disease conditions such as diabetes, arthritis, and heart disease.

Researchers have previously acknowledged that breast cancer treatment and its related physical and mental side effects may threaten patients' ability to earn an income and maintain health insurance benefits.^{35,37} It is reasonable to assume this situation may be magnified among working poor survivors who choose to forgo or delay care due to potential job, wage, and benefit losses (for themselves, directly; for their households, indirectly); inability to attend numerous and lengthy treatment and follow-up medical appointments; and fear of side effects and additional out-of-pocket expenses.^{57,58} This struggle between cancer survival and economic survival may result in poorer quality of life, including functional, emotional, and affective well-being.⁵⁹

It is well documented in the literature that both oncology care providers and patients experience difficulties in communicating with one another about survivors' working circumstances.^{60,61} Bradley et al suggest that breast cancer treatment decisions are most likely provider-driven, failing to take into account the patient's work circumstance and demands, which may jeopardize treatment compliance and recovery.⁵⁵ However, if providers and patients are willing to discuss possible work-treatment conflicts throughout the diagnosis-treatment continuum, surgical, radiotherapy, and/or chemotherapy recommendations could potentially be adapted (but with respect to achieving full survival benefit), allowing patients to continue working *and* attend treatment appointments, thereby increasing overall adherence and avoiding income and benefit losses.^{37,38,54,55,62} In addition, it should be recognized that many of these patients also will need assistance managing acute and long-term treatment side effects if they continue to work throughout the course of care. Patient-centered communication and care, incorporating shared decision making, seems well-suited for newly diagnosed breast cancer patients employed in low-wage jobs.

Frazier et al outlined several ways in which the cancer care team can be involved in helping patients manage cancer and employment conflicts, including asking about employment concerns at every appointment, inquiring about patients' benefits and employer policies, brainstorming ways to manage competing work-treatment demands, and providing informational and emotional support.⁶³ Moreover, healthcare systems may consider extended and weekend clinic hours for both treatment and follow-up medical appointments, providing training to cancer center support staff (eg, patient navigators, social workers, billing staff,

nurses) to help patients with employment-related questions, providing patients with strategies for managing fatigue and other symptoms while working, and evaluating the inclusion of employment concerns in breast cancer treatment-decision aids.

Employers also play an important role in helping women manage work-treatment conflicts. For example, employers may consider offering flexible work schedules and paid leave, as well as training supervisors on how to manage employees with cancer as strategies to reduce employment barriers to treatment adherence.^{17,64,65} Other employer-sponsored programs also may assist working poor women in making treatment decisions and adhering to treatment recommendations, including physical and psychological rehabilitation programs⁶⁶ and cancer disease management plans.⁶⁷ Finally, lack of paid leave as a reason for missing appointments among working poor cancer survivors highlights the need for federally sponsored paid-leave legislation.²⁷

In addition to the practical, policy-oriented strategies described above, we highlight several ideas for incorporating survivors' employment context into future breast cancer treatment decision making and compliance research. For example, Neugut et al recently completed the multisite, 5-year Breast Cancer Quality of Care Study (BQUAL) to determine causes for non-compliance with breast cancer adjuvant chemotherapy and hormonal therapy.^{44,47,48} Though their proposed bio-psychosocial model illustrating the causes of treatment noncompliance includes important factors such as physician characteristics, patient-provider communication, provider referrals, biology, and patient characteristics that are known to influence treatment receipt, it does not include an explicit variable focused on employment.⁴⁴ Longitudinal studies such as BQUAL, with diverse geographic coverage and a large sample of racially diverse working women (42%), serve as prime opportunities to assess patients' employment circumstances and how they may influence treatment decisions. Similarly, intervention studies focused on improving breast cancer treatment compliance rates through strategies such as structured patient navigation⁶⁸ and peer education⁶⁹ are also appropriate for collecting employment-related data. Guided by research in the United Kingdom focused on colorectal cancer,⁶¹ we also recommend exploring the types of questions (if any) oncology providers and their staff members ask working poor women about their jobs, whether survivors' work schedules are factored into treatment plans, what type of information and resources are used with working breast cancer patients, and barriers/facilitators to work-treatment communication between oncology care providers and patients.

In the work and cancer research field, a recent review by Feuerstein et al that focused on work in cancer survivors identified health and well-being, symptoms, function, work demands, work environment, policies, procedures, and economic factors as key areas in a model for cancer and work practice and research.⁷⁰

We propose receipt of guideline-recommended cancer care be added to such a research agenda. To date, much of the focus has been on the unidirectional impact of breast cancer and its treatment on employment rather than a consideration of a bidirectional relationship, which also suggests employment may impact receipt of guideline-recommended breast cancer treatment. We recommend that future cancer-work studies explore this bidirectional relationship, particularly among women identified as working poor. A longitudinal study, ideally with a large population-based sample, would allow prospective data to be collected at regular points to describe not only treatment decisions and their context, but also important socioecologic, employment, work productivity, and quality-of-life measures.¹⁶ A mixed-methods approach, including collection of objective and subjective data, would provide a comprehensive assessment of women's breast cancer and work experience over time, including motivation for continued employment. This type of study could highlight points for intervention at the patient, provider, employer, and policy levels.

LIMITATIONS

To our knowledge, this is the first review of the literature on the implications of low-wage employment on treatment decisions and adherence among working poor breast cancer survivors. Like all narrative reviews, this one has several limitations. First, this is not a systematic or exhaustive review of the literature; therefore, we may have missed articles during our search despite our efforts to include the most relevant research. Secondly, authors may have measured detailed job characteristics and work context within studies that we reviewed but did not report these findings in the published literature. Third, though our focus on breast cancer was intentional, it may have been too narrow to fully understand the state of knowledge on the effect of employment on cancer survivors' treatment decisions and adherence. Nonetheless, we felt that women, many of whom are a part of the changing employment trends toward low-wage work, and breast cancer, the most commonly cancer among women in the United States, were an important, targeted focus for this narrative review. Fourth, we also realize there is more to breast cancer treatment disparities than patients' employment context. For example, in addition to important sociodemographic, clinical, provider, and community variables, poor mental health has been linked to poor treatment compliance. Anxiety and depression due to financial strain, job-related stress, and breast cancer treatment could be a contributing factor to decreases in treatment adherence behaviors⁷ among the working poor. Finally, our narrative review included only studies of employed cancer survivors in the United States. In the future, we will include studies conducted by researchers in Europe and other western countries. A crossnational comparison of work-treatment conflicts among working poor breast cancer survivors could illuminate similarities

and differences by organizational and policy context and provide insights into how employers, healthcare delivery systems, and oncology care providers in the United States could improve the cancer treatment experiences of these at-risk patients.

Acknowledgments

This publication was supported in part by a Building Independent Research Careers in Women's Health grant (No. K12 DA035150) from the Office of Women's Health Research and National Institute on Drug Abuse at the National Institutes of Health; the Rural Cancer Prevention Center Through Cooperative Agreement No. 1U48DP001932-01 from the US Centers for Disease Control and Prevention; and the Institute for Workplace Innovation at the University of Kentucky. The authors would like to thank Robert Shapiro, Mary K. Webster, Nicholas Coomer, and Ellie Parker for their assistance with the manuscript.

CONCLUSIONS

The goal of our narrative review was to address the confluence of breast cancer and low-wage employment among the working poor, a population of women at risk for poor cancer outcomes and economic insecurity, which may perpetuate the cancer disparities cycle. The development of new knowledge about how working poor breast cancer survivors make treatment decisions will inform future studies and interventions that could lead to improved treatment and employment outcomes, better patient-provider-employer communication, higher quality of life, and reductions in cancer disparities. Indeed, helping working poor breast cancer survivors make informed decisions about treatment and employment; enhancing employers' knowledge about breast cancer and ways to create supportive work environments; and engaging oncology providers to work with women and their employers to successfully balance competing research and employment demands should be a priority research area for women's health.

REFERENCES

- Siegel R, Naishadham D, Jemal A. Cancer statistics, 2013. *CA Cancer J Clin*. 2013;63(1):11-30.
- National Cancer Institute. Cancer trends progress report, 2011/2012 report, life after cancer, costs of cancer care. http://progressreport.cancer.gov/doc_details.asp?pid=1&did=2011&chid=105&coid=1026&mid. Accessed August 15, 2013.
- Siegel R, DeSantis C, Virgo K, et al. Cancer treatment and survivorship statistics, 2012. *CA Cancer J Clin*. 2012;62(4):220-41.
- Institute of Medicine. The unequal burden of cancer: an assessment of NIH research and programs for ethnic minorities and the medically underserved. Washington, DC: The National Academies Press; 1999.
- American Cancer Society. Cancer disparities: causes and evidence-based solutions. New York, NY: Springer Publishing Company; 2011.
- National Cancer Institute. Breast cancer treatment physician data query. www.cancer.gov/cancertopics/pdq/treatment/breast/healthprofessional. Accessed August 15, 2013.
- Magai C, Consedine N, Neugut AI, Hershman DL. Common psychosocial factors underlying breast cancer screening and breast cancer treatment adherence: a conceptual review and synthesis. *J Womens Health (Larchmt)*. 2007;16(1):11-23.
- Freedman RA, Virgo KS, He Y, et al. The association of race/ethnicity, insurance status, and socioeconomic factors with breast cancer care. *Cancer*. 2011;117(1):180-9.
- Wu XC, Lund MJ, Kimmick GG, et al. Influence of race, insurance, socioeconomic status, and hospital type on receipt of guideline-concordant adjuvant systemic therapy for locoregional breast cancers. *J Clin Oncol*. 2012;30(2):142-50.
- Murphy CC, Bartholomew LW, Carpentier MY, Bluethmann SM, Vernon SW. Adherence to adjuvant hormonal therapy among breast cancer survivors in clinical practice: a systematic review. *Breast Cancer Res Treat*. 2012;134(2):459-78.
- Bickell NA, Weidmann J, Fei K, Lin JJ, Leventhal H. Underuse of breast cancer adjuvant treatment: patient knowledge, beliefs, and medical mistrust. *J Clin Oncol*. 2009;27(3):5160-7.
- Li BD, Brown WA, Ampil FL, Burton GV, Yu H, McDonald JC. Patient compliance is critical for equivalent clinical outcomes for breast cancer treated by breast-conservation therapy. *Ann Surg*. 2000;231(6):883-9.
- Institute of Medicine and National Research Council. From cancer patient to cancer survivor: lost in transition. Washington, DC: The National Academies Press; 2005.
- Lipscomb H, Loomis D, McDonald M, Argue R, Wing S. A conceptual model of work and health disparities in the United States. *Int J Health Serv*. 2006;36(1):25-50.
- Feuerstein M. *Work and cancer survivors*. New York: Springer; 2010.
- Steiner J, Cavender TA, Main DS, Bradley CJ. Assessing the impact of cancer on work outcomes: What are the research needs? *Cancer*. 2004;101(8):1703-11.
- Spelten E, Sprangers M, Verbeek J. Factors reported to influence the return to work of cancer survivors: a literature review. *Psychooncology*. 2002;11(2):124-31.
- Amir Z, Brocky J. Cancer survivorship and employment: epidemiology. *Occup Med (Oxf)*. 2009;59(6):373-7.
- Mehner A. Employment and work-related issues in cancer survivors. *Crit Rev Oncol Hematol*. 2011;77(2):109-30.
- Mullan F. Seasons of survival: reflections of a physician with cancer. *N Engl J Med*. 1985;313(4):270-3.
- Kalleberg AL. *Good jobs, bad jobs*. New York: Russell Sage Foundation; 2012.
- Watson E, Swanberg J. Flexible workplace solutions for low-wage hourly workers. A framework for a national conversation. May 2011. <http://workplaceflexibility2010.org/images/uploads/whatsnew/Flexible%20Workplace%20Solutions%20for%20Low-Wage%20Hourly%20Workers.pdf>. Accessed August 15, 2013.
- US Government Accountability Office. Unemployment insurance: low-wage and part-time workers continue to experience low rates of receipt. September 2007. <http://www.gao.gov/products/GAO-07-1147>. Accessed August 15, 2013.
- US Department of Labor, Bureau of Labor Statistics. Employment Projections: 2008-18 news release. 2009; http://www.bls.gov/news.release/archives/ecopro_12102009.htm. Accessed August 15, 2013.
- Golden L. Flexible daily work schedules in U.S. jobs: Formal introductions needed? *Ind Relation*. 2009;48(1):27-54.
- Swanberg J, Pitt-Catsouphes M, Drescher-Burke K. A question of justice: disparities in employees' access to flexible schedule arrangement. *J Fam Issues*. 2005;26(6):866-95.
- Vanderpool R, Swanberg J, Webster M, Coomer N. Navigating breast cancer treatment and recovery among low-wage workers: first hand experiences. Centers for Disease Control and Prevention 2012 National Cancer Conference; August 2012; Washington, DC.
- Boushey H, Fremstad S, Gregg S, Waller M. Understanding low-wage work in the United States. Washington, DC: Center for Economic Policy and Research; 2007.
- US Department of Labor, Bureau of Labor Statistics. A profile of the working poor. 2011. 2013; www.bls.gov/cps/cpswp2011.pdf. Accessed August 15, 2013.
- US Department of Labor, Bureau of Labor Statistics. Employed persons by detailed occupation, sex, race, and Hispanic or Latino ethnicity. 2012; <http://www.bls.gov/cps/cpsaat11.pdf>. Accessed August 15, 2013.
- US Department of Labor, Bureau of Labor Statistics. Employee benefits in the United States - March 2011. <http://www.bls.gov/ncs/ebs/sp/ebnroo17.pdf>. Accessed August 15, 2013.
- Hammer L, Koske E, Anger W, Bodner T, Zimmerman K. Clarifying work-family intervention processes: the roles of work-family conflict and family-supportive supervisor behaviors. *J Appl Psychol*. 2011;96(1):134-50.
- Swanberg JE, McKechnie SP, Ojha MU, James JB. Schedule control, supervisor support and work engagement: A winning combination for workers in hourly jobs? *J Vocat Behav*. 2011;79(3):613-24.
- World Health Organization, International Agency on Cancer Research. IARC monographs on the evaluation of carcinogenic risks to humans. Painting, fire-fighting, and shiftwork. <http://monographs.iarc.fr/ENG/Monographs/vol98/monog98.pdf>. Accessed August 15, 2013.
- Bradley CJ, Neumark D, Luo Z, Bednarek HL. Employment-contingent health insurance, illness, and labor supply of women: evidence from married women with breast cancer. *Health Econ*. 2007;16(7):719-37.
- Banning M. Employment and breast cancer: a meta-ethnography. *Eur J Cancer Care*. 2011;20(6):708-19.
- Bradley CJ, Oberst K, Schenk M. Absenteeism from work: the experience of employed breast and prostate cancer patients in the months following diagnosis. *Psychooncology*. 2006;15(8):739-47.
- Hassett MJ, O'Malley AJ, Keating NL. Factors influencing changes in employment among women with newly diagnosed breast cancer. *Cancer*. 2009;115(12):2775-82.
- Satariano WA, DeLorenze GN. The likelihood of returning to work after breast cancer. *Public Health Rep*. 1996;111(3):236-41.
- Oberst K, Bradley CJ, Gardiner JC, Schenk M, Given CW. Work task disability in employed breast and prostate cancer patients. *J Cancer Surviv*. 2010;4(4):322-30.
- Bouknight RR, Bradley CJ, Luo Z. Correlates of return to work for breast cancer survivors. *J Clin Oncol*. 2006;24(3):345-53.
- Bradley CJ, Bednarek HL, Neumark D. Breast cancer survival, work, and earnings. *J Health Econ*. 2002;21(5):757-79.
- Fu AZ, Chen L, Sullivan SD, Christiansen NP. Absenteeism and short-term disability associated with breast cancer. *Breast Cancer Res Treat*. 2011;130(1):235-42.
- Neugut AI, Hillyer GC, Kushi LH, et al. The Breast Cancer Quality of Care Study (BQUAL): a multi-center study to determine causes for noncompliance with breast cancer adjuvant therapy. *Breast J*. 2012;18(3):203-13.
- Bickell NA, Cohen A. Understanding reasons for underuse: an approach to improve quality and reduce disparities in breast cancer treatment. *Mt Sinai J Med*. Jan-Feb 2008;75(1):23-30.
- Katz SJ, Hawley ST. From policy to patients and back: surgical treatment decision making for patients with breast cancer. *Health Aff (Millwood)*. 2007;26(3):761-9.

47. Neugut AI, Hillyer GC, Kushi LH, et al. Noninitiation of adjuvant chemotherapy in women with localized breast cancer: the breast cancer quality of care study. *J Clin Oncol*. 2012;30(31):3800-9.

48. Neugut AI, Hillyer GC, Kushi LH, et al. Non-initiation of adjuvant hormonal therapy in women with hormone receptor-positive breast cancer: The Breast Cancer Quality of Care Study (BQUAL). *Breast Cancer Res Treat*. Jul 2012;134(1):419-28.

49. Swanson G, Schwartz A, Burrows R. An assessment of occupation and industry data from death certificates and hospital medical records for population-based cancer surveillance. *Am J Public Health*. 1984;74(5):464-7.

50. Armenti KR, Celaya MO, Cherala S, Riddle B, Schumacher PK, Rees JR. Improving the quality of industry and occupation data at a central cancer registry. *Am J Ind Med*. 2010;53(10):995-1001.

51. Sheppard VB, Adams IF, Lamdan R, Taylor KL. The role of patient-provider communication for black women making decisions about breast cancer treatment. *Psychooncology*. 2011;20(12):1309-16.

52. Ashing-Giwa KT, Padilla G, Tejero J, et al. Understanding the breast cancer experience of women: a qualitative study of African American, Asian American, Latina and Caucasian cancer survivors. *Psychooncology*. 2004;13(6):408-28.

53. Fleishman-Hillard Research, National Coalition for Cancer Survivorship, and The Wellness Community. Breakaway from cancer: 2006 national survey of cancer patients/survivors and caregivers. St Louis, MO: Fleishman-Hillard Research; 2006.

54. Blinder VS, Patil S, Thind A, et al. Return to work in low-income Latina and non-Latina white breast cancer survivors: a 3-year longitudinal study. *Cancer*. 2012;118(6):1664-74.

55. Bradley CJ, Neumark D, Luo Z, Schenk M. Employment and cancer: findings from a longitudinal study of breast and prostate cancer survivors. *Cancer Invest*. Feb 2007;25(1):47-54.

56. Ferrell BR, Grant MM, Funk B, Otis-Green S, Garcia N. Quality of life in breast cancer survivors as identified by focus groups. *Psychooncology*. 1997;6(1):13-23.

57. Banegas M, Yabroff R. Out of pocket, out of sight? An unmeasured component of the burden of cancer. *J Natl Cancer Inst*. 2012;105(4):252-3.

58. Sherwood PR, Donovan HS, Rosenzweig M, Hamilton R, Bender CM. A house of cards: the impact of treatment costs on women with breast and ovarian cancer. *Cancer Nurs*. 2008;31(6):470-7.

59. Ell K, Xie B, Wells A, Nedjat-Haiem F, Lee P, Vourlekis B. Economic stress among low-income women with cancer: effects on quality of life. *Cancer*. 2007;112(3):616-25.

60. Maunsell E, Brisson C, Dubois L, Lauzier S, Fraser A. Work problems after breast cancer: an exploratory qualitative study. *Psychooncology*. 1999;8(6):467-73.

61. Bains M, Yarker J, Amir Z, Wynn P, Munir F. Helping cancer survivors return to work: what providers tell us about the challenges in assisting cancer patients with work questions. *J Occup Rehabil*. 2012;22(1):71-7.

62. Shewbridge A, Wiseman T, Richardson A. Working while receiving chemotherapy: a survey of patients' experiences and factors that influence these. *Eur J Cancer Care*. 2012;21(1):117-23.

63. Frazier LM, Miller VA, Miller BE, Horbelt DV, Delmore JE, Ahlers-Schmidt CR. Cancer-related tasks involving employment: opportunities for clinical assistance. *J Support Oncol*. 2009;7(6):229-36.

64. Pryce J, Munir F, Haslam C. Cancer survivorship and work: symptoms, supervisor response, co-worker disclosure and work adjustment. *J Occup Rehabil*. 2007;17(1):83-92.

65. Torp S, Nielsen RA, Gudbergsson SB, Fossa SD, Dahl AA. Sick leave patterns among 5-year cancer survivors: a registry-based retrospective cohort study. *J Cancer Surviv*. 2012;6(3):315-23.

66. Hoving JL, Broekhuizen ML, Frings-Dresen MH. Return to work of breast cancer survivors: a systematic review of intervention studies. *BMC Cancer*. 2009;9:117.

67. Lee FC. Employer-based disease management programs in cancer: experience to date. *Dis Manag Health Outcome*. 2004;12(1):9-17.

68. Ell K, Vourlekis B, Xie B, et al. Cancer treatment adherence among low-income women with breast or gynecologic cancer: a randomized controlled trial of patient navigation. *Cancer*. 2009;115(19):4606-15.

69. Rosenzweig M, Brufsky A, Rastogi P, Puhalla S, Simon J, Underwood S. The attitudes, communication, treatment, and support intervention to reduce breast cancer treatment disparity. *Oncol Nurs Forum*. 2011;38(1):85-9.

70. Feuerstein M, Todd BL, Moskowitz MC, et al. Work in cancer survivors: a model for practice and research. *J Cancer Surviv*. 2010;4(4):415-37.

GLOBAL ADVANCES IN HEALTH AND MEDICINE

Call for Articles

2014 Themes

We are pleased to announce the schedule for themed article collections in 2014. These range from nutrition in the spring of 2014 to the role of nurses in global healthcare at the end of the year. Our recent focus on health coaching included a series of timely and high-quality articles, and we are confident that this tradition of excellence will continue in our third year.

Topic	Article Submission Deadline	Editor
Gastrointestinal Health and the Microbiome	February 7, 2014	Gregory Plotnikoff
Nutrition in Clinical Practice	April 10, 2014	David Riley
Sustainable Models for Healthcare Delivery	June 7, 2014	Helmut Kiene
Neurology in Acupuncture and Oriental Medicine	September 7, 2014	Jason Hao
Nursing in Global Healthcare	November 7, 2014	Michele Mittelman

We invite manuscripts that range from case reports to clinical research and epidemiological studies to reviews. We are particularly focused on translating research results and global convergences in healthcare that support patient-centered care. Therefore, we invite articles that evaluate healthcare policy as well as ones that focus on quality, safety, and effectiveness. We are especially interested in late-breaking research and encourage authors of such articles to contact *Global Advances in Health and Medicine* or our guest editors as soon as possible. We welcome scholarly, thought-provoking editorials on these important topics.

Authors who are interested in submitting a scholarly article on a specific topic should indicate this on the cover letter accompanying the article. Papers submitted before the deadline will have the best chance of consideration for publication. Exceptions to our submission guideline can be made for late-breaking clinical trials if necessary. Questions about these themes should be addressed to GAHMJsubmissions@GAHMJ.com. Authors should consult the Instructions for Authors available at www.gahmj.com for guidelines on article preparation and submission.

Please submit your manuscript via email to gahmjsubmissions@gahmj.com.