Review of Continuing Education and Published Literature Related to Women's Health and Pharmacy

Journal of Pharmacy Technology
2015, Vol. 31(2) 69–77
© The Author(s) 2014
Reprints and permissions:
sagepub.com/journalsPermissions.nav
DOI: 10.1177/8755122514552496
pharmatech.sagepub.com

Cynthia Moreau, PharmD¹ and Debbie L. Wilson, PhD¹

Abstract

Background: In 2004, the American Association of Colleges of Pharmacy and collaborating organizations created a framework for women's health instruction as a guide for integrating women's health into pharmacy curricula. This article expands on the findings of that project by identifying educational opportunities with a women's health focus that are available for pharmacists. **Objective:** To review educational opportunities available to pharmacists related to women's health and to review the pharmacist's role in women's health in the published literature. **Methods:** The continuing education requirements for each of the 50 states and the District of Columbia were reviewed, and a search of continuing education programs for pharmacists on women's health was conducted. A review of published literature about pharmacy and women's health was conducted. **Results:** One state had a continuing education requirement related to emergency contraception, and 62 continuing education programs were found to have a focus on women's health. The literature review returned 331 articles describing the role of pharmacy in women's health, of which 55 were included. **Conclusions:** Pharmacists across different practice settings have a role in women's health care. There is much emphasis placed on the pharmacist's role in relation to contraception but increased education in other topics is also important. National pharmaceutical organizations can promote women's health education for pharmacists.

Keywords

women's health, pharmacy, literature review, education, continuing education

Background

Women's health issues have recently been highlighted at the national level in the Healthy People 2020 program. The Healthy People program provides 10-year objectives for improving the health of Americans by establishing targets and monitoring progress over time.¹ Healthy People 2020 is organized into 42 different topic areas with nearly 600 objectives, many of which are relevant to women's health.² Some examples of objectives that are specific for women include increasing the proportion of women who were counseled by their providers about Pap tests, reducing hip fractures among women aged 65 and older, increasing the proportion of pregnant women who are tested for HIV, reducing invasive uterine cervical cancer, and increasing the proportion of sexually active females receiving reproductive health services.²

Data have shown that women are more likely than men to utilize health care resources. Factors that contribute to this are that women are more likely to have health problems associated with their reproductive systems and women are more susceptible to certain diseases, such as rheumatoid arthritis, osteoporosis, and depression.³ Also, prenatal care

and routine screenings, such as mammograms and Pap smears, lead to an increase in health care utilization.³ Furthermore, results from a 2008 study evaluating gender and age differences in medications dispensed from a chain drug store showed that females of all ages were dispensed more medications than males, with women receiving more prescriptions than men for 45 of the 53 drug classes that were evaluated. For example, anti-infectives—such as nitrofurantoin, fluconazole, and metronidazole—antidepressants, benzodiazepines, and levothyroxine were more commonly dispensed to women than men.⁴ Also, the most recent prescription drug use data from the Centers for Disease Control and Prevention (CDC) National Center for Health Statistics shows that 53.3% of women use at least one prescription drug, compared to 43.2% of men.⁵

It is important to identify those issues that currently affect women. According to the CDC, the leading causes of

¹University of Florida College of Pharmacy, Gainesville, FL, USA

Corresponding Author:

Cynthia Moreau, PO Box 100496, Gainesville, FL 32610-0496, USA.
Email: cmoreau@ufl.edu

death in females of all races and ethnicities in 2009 were the following: (1) heart disease, (2) cancer, (3) stroke, (4) chronic lower respiratory diseases, (5) Alzheimer's disease, (6) unintentional injuries, (7) diabetes, (8) influenza and pneumonia, (9) kidney disease, and (10) septicemia. Heart disease and cancer are also the 2 leading causes of death in men; however, stroke accounts for 6.2% of deaths in women compared to 4.3% of deaths in males.⁶ It is also worthwhile to take note of medications that are prescribed for women. There are 7 drugs on the list of top 200 drugs of 2011⁷ that have a specific indication for women: Loestrin 24 FE (norethindrone acetate/ethinyl estradiol), Premarin (conjugated estrogen tablets), Nuvaring (etonogestrel/ethinyl estradiol vaginal ring), Folic acid, Trinessa-28 (norgestimate/ethinyl estradiol), TriSprintec (norgestimate/ethinyl estradiol), and Gianvi (drospirenone/ethinyl estradiol). Additionally, Namenda (memantine HCl), which is used in the treatment of Alzheimer's disease, and Alendronate sodium, which is used in the management of osteoporosis, appeared on the list.⁷ Although these medications are not exclusively prescribed to women, Alzheimer's disease and osteoporosis are common health concerns for women.

In 2004, the Health Resources and Services Administration, the American Association of Colleges of Pharmacy (AACP), and other collaborating organizations completed a project to identify to what extent women's health issues are included in the pharmacy curriculum. At the time, 89 colleges and schools of pharmacy were recognized by the Accreditation Council for Pharmacy Education (ACPE), and women's health education was present at 34 of these institutions.⁸ Using this information, AACP and collaborating organizations created a framework for women's health instruction as a guide for integrating women's health into pharmacy curricula.

This article expands on the findings of that project by identifying educational opportunities with a women's health focus that are available for pharmacists. Also, through a review of published literature, we identify how the literature describes pharmacists' involvement with women's health issues.

Methods

Continuing Education Requirements

All states require pharmacists to complete continuing education requirements to renew their licenses. Continuing education requirements vary by state, with many states requiring completion of continuing education credits on specific topics for each license renewal. The continuing education requirements for pharmacists as stated on each of the 50 states and the District of Columbia's Board of Pharmacy Web sites were reviewed. For each state, information about special topics requirements was compiled to identify if any states had requirements relating to women's health issues.

Continuing Education Programs

A search of continuing education programs for pharmacists with a focus on women's health was conducted using a database of continuing education programs known as the Pharmacists' Learning Assistance Network (P.L.A.N.). The P.L.A.N. compiles information about continuing education activities offered by ACPE-accredited providers and allows the user to search for programs based on the type, format, location, and dates of activities.⁹

Searches using P.L.A.N. were conducted to identify programs that had a focus on women's health. The P.L.A.N. Web site requires that the type of activity and format of activity are selected for each search. The format can be either live or home-study, and the type of activity is knowledge-based, application-based, or practice-based. Searches were done for each of the combinations for type of activity and activity format: (1) knowledge, live; (2) knowledge, home study; (3) application, live; (4) application, home study; (5) practice, live; (6) practice, home study. For every search, "Any Method" was selected from the drop down list for preferred learning method. For live activities, "All States" was selected from the drop down list for preferred location. The preferred availability dates for all searches were set to July 2, 2012, to July 3, 2013. Additionally, "Women's Health" was selected from the list of topics and nothing was selected from the list of drugs/devices. Finally, "Pharmacist" was selected from the drop down list for profession.

Information for programs produced from each search was entered into a Microsoft Excel spreadsheet. For each program, the title, learning objectives, activity type, and provider information was reviewed and documented. Programs were included if the title included the words "women," "woman," or "female"; if the title mentioned a topic that exclusively affects women; or if the learning objectives mentioned how the program's topic would be addressed as it pertains to women. Programs were then categorized based on topics covered. Programs that covered multiple topics were classified as "general women's health."

Literature Review

The International Pharmacy Abstracts (IPA), PubMed, Cumulative Index to Nursing and Allied Health Literature (CINHL), Women's Studies International Forum, and Web of Science databases were searched by a research librarian. Prior to the search, it was decided to exclude articles published prior to 1991 because the HHS Office on Women's Health was established in 1991. On July 6, 2012, the research librarian conducted the search of the IPA database using the following key words: ("women's health" or "women's healthcare" or "Health care women") and ("pharmacy practice" or "pharmacist" or "pharmacists and role"). The search

also included (1) “find similar to The epidemiology of women’s disease: The pharmacist role in screening for women’s health” and (2) “find similar to Pharmacists’ practice opportunities in women’s health.” The IPA search was limited to the 1991 to 2012 and works in English. All remaining searches were conducted on July 11, 2012. The research librarian conducted the search of the PubMed database using the following strategies: (1) [“women’s health” or “women’s healthcare” or “women’s health care” or “women’s medical services”] and (“pharmacy practice” or “pharmacists” or “pharmacy” or “medication therapy management”), (2) (“women’s health” [MeSH Terms] and [“Pharmaceutical Services” [MeSH] or “Pharmacists” [MeSH] or “Pharmacy” [MeSH:Not exploded]]). The PubMed search was limited to the 1991 to 2012 time frame and works in English. The search of the CINHL database included the following subject headings: (1) [(“Pharmacy service”) or (“Pharmacists”)] and [(“Maternal Health Services+”) or (“Gynecology”) or (“Gynecologic Care”) or (“Women’s Health Services”)]. CINHL does not allow limits to be set on searches. The search of the Women’s Studies International Forum database for all fields included the following strategies: [(“pharmacists”) or (“pharmacy”) or (“pharmacy – information services”)] and [(“maternal health services”) or (“maternal health services - evaluation”) or (“maternal health services – evaluation”) or (“maternal health services – united states”) or (“maternal health care teams”) or (“women’s health services”)]. The Women’s Studies International Forum database does not allow limits on searches. The search of the Web of Science database included the following topic search strategies: [TS=(pharmacy or pharmacist or “pharmaceutical services” or pharmacies)] and [(TS=(maternal near/5 healthcare) or TS=(maternal near/5 health) or (TS=gynecolog*) or TS=(women’s near/5 health) or TS=(women’s near/5 healthcare) or (TS=women’s near/5 health near/5 services) or TS=women’s near/5 “health care”)], where “near/5” means “within 5 words.” The Web of Science search was limited to works in English published between 1991 and 2012 and cited in the Science Citation Index-Expanded, Social Science Citation Index, and Arts and Humanities Citation Index databases.

Article abstracts were reviewed and were included if they met the following criteria: (1) published from 1991 to 2012, (2) published as full article or editorial, (3) published in a peer-reviewed journal, (4) reported on a specific women’s health care topic and how it relates to pharmacy, and (5) published in English.

Data abstraction was conducted on the articles that met the inclusion criteria and recorded in a Microsoft Excel spreadsheet. For these articles, the following information was collected: (1) demographics (author(s), year of publication, journal, country of study, type of work, and type of study [if applicable]), (2) which women’s health topic was

addressed, (3) target audience (pharmacy students, pharmacists, pharmacy technicians, or pharmacy residents), and (4) focus of the article. For criterion 2, articles that covered multiple topics were classified as “general women’s health.”

Results

Continuing Education Requirements

While many states have various topic- or disease-specific continuing education requirements, California was the only state that had a continuing education requirement that was specific to women’s health. The State of California 2013 Lawbook for Pharmacy states that a pharmacist may supply emergency contraception in accordance with protocols developed by the pharmacist and an authorized prescriber or protocols developed by the board of pharmacy and Medical Board of California. According to the law, prior to furnishing emergency contraception, “a pharmacist shall complete a training program on emergency contraception that consists of at least one hour of approved continuing education on emergency contraception drug therapy.”¹⁰

Continuing Education Programs

Results from several searches conducted using ACPE’s P.L.A.N. service generated 97 programs available across the United States. After review, 35 programs were excluded because it was found that they did not focus on topics that affect women specifically. Table 1 shows the topics covered and activity types for the 62 included programs.

Ten of the 62 (16%) programs focused on education or issues related to contraception. Four programs focused solely on issues surrounding the use of emergency contraception.

After contraception programs, programs with a general focus on women’s health topics were the most common types of programs available (9 programs; 15%). These programs were categorized as “general” because they discussed overall considerations in managing women’s health care or provided information on the management of multiple disease states that affect women. Programs focusing on cancers, HIV/AIDS, and hormone replacement therapy were equally represented in the search results, with each category representing 10% of the total number of programs. Programs that covered cancers included breast, ovarian, and other gynecological cancers.

There were 4 programs available focusing on menopause, 3 programs focusing on cardiovascular disease, and 3 programs focusing on pregnancy. A total of 26 continuing education providers were responsible for the content presented in the 62 included programs (Table 2). ACCP provided 10 programs, more than any other provider.

Table 1. Continuing Education Programs Focused on Women's Health.

Topic Covered	Frequency
Contraception	10
General women's health	9
Cancers ^a	6
HIV/AIDS	6
Hormone replacement therapy	6
Emergency contraception	4
Menopause	4
Cardiovascular disease	3
Pregnancy	3
Infertility	2
Menstrual-related disorders ^b	2
Osteoporosis	2
Sexual dysfunction	2
Breastfeeding	1
Reproductive health	1
Urinary incontinence	1
Total	62

^aIncludes breast, ovarian, and other gynecologic cancers.

^bIncludes abnormal uterine bleeding, premenstrual syndrome, premenstrual dysphoric disorder, and polycystic ovarian syndrome.

Literature Review

The research librarian's searches of IPA, PubMed, CINHL, Women's Studies International Forum, and Web of Science databases produced 331 results. Of these, 55 articles were included. The remaining 276 articles were excluded for the following reasons: (1) did not discuss the role of the pharmacist or pharmacy team members in relation to a women's health topic (n = 217), (2) abstract presented at a clinical meeting (n = 29), (3) duplicate search result (n = 15), (4) not published as a full article or editorial (n = 5), (5) published in a newsmagazine or other non-peer-reviewed publication (n = 9), and (6) published prior to 1991 (n = 1).

The 55 included articles appeared in 25 different journals (Table 3). The journal that appeared most frequently was the *Journal of the American Pharmacists Association (JAPhA)*, which published 12 of the included articles between 1995 and 2012.

Articles were classified into 14 different women's health topics depending on the main focus of each article (Table 4). The category with the most articles was "women's health general," with 13 articles in this category. Articles were placed in this category if they discussed general issues related to women's health, not a specific health topic. For articles that had a specific focus, pregnancy (n = 8) and contraception (n = 7) were the most common topics covered. The other most frequently appearing topics were hormone replacement therapy (n = 5), emergency contraception (n = 4), and osteoporosis (n = 4). Fifty-one (93%) of the included articles had pharmacists as the target audience. Three

Table 2. Continuing Education Providers for Included Women's Health Programs.

Continuing Education Provider	Number of Programs
American College of Clinical Pharmacy	10
Association of Reproductive Health Professionals	8
Postgraduate Healthcare Education, LLC	4
University of South Florida College of Medicine	4
American Pharmacists Association	3
CME Outfitters, Inc	3
MED2000	3
PharmCon, Inc	3
University of Medicine and Dentistry of New Jersey	3
American Association of Diabetes Educators	2
Foundation for Care Management	2
Medical Learning Institute, Inc	2
PRIME Education, Inc	2
American College of Apothecaries, Inc	1
American College of Clinical Pharmacology	1
American Society of Health-System Pharmacists	1
The CE Solution, Inc	1
Collaborative Education Institute	1
College of Psychiatric and Neurologic Pharmacists	1
The Detroit Medical Center Department of Pharmacy Services	1
Gannett Education	1
National Pharmaceutical Association	1
Northeastern University School of Pharmacy	1
PESI Healthcare	1
Pro CE, Inc	1
University of Utah College of Pharmacy	1

articles targeted pharmacy students, one article targeted pharmacy technicians, and no articles targeted pharmacy residents. The characteristics of included articles are outlined in Table 5.

Discussion

In our review of continuing education requirements, California was the only state that included a continuing education requirement that had a focus on women's health, specifically emergency contraception. Pharmacists that are well educated on matters pertaining to contraception can

Table 3. Number of Articles Published From 1991 to 2012 Regarding Pharmacists' Involvement in Women's Health.

Journal	Frequency
<i>Journal of the American Pharmacists Association</i> ^a	12
<i>Australian Journal of Pharmacy</i>	6
<i>American Journal of Health-System Pharmacy</i>	5
<i>Journal of Women's Health</i>	3
<i>Pharmacotherapy</i>	3
<i>American Journal of Pharmaceutical Education</i>	2
<i>The Annals of Pharmacotherapy</i>	2
<i>Contraception</i>	2
<i>Journal of Managed Care Pharmacy</i>	2
<i>Journal of Pharmacy Technology</i>	2
<i>Pharmacy Practice Management Quarterly</i>	2
<i>American Journal of Obstetrics and Gynecology</i>	1
<i>American Journal of Therapeutics</i>	1
<i>Australian and New Zealand Journal of Public Health</i>	1
<i>California Pharmacist</i>	1
<i>Clinical Pharmacology & Therapeutics</i>	1
<i>Epilepsy & Behavior</i>	1
<i>International Journal of Clinical Practice</i>	1
<i>Journal of the American Sexually Transmitted Diseases Association</i>	1
<i>Journal of Patient Preference and Adherence</i>	1
<i>Journal of Public Health Policy</i>	1
<i>Perspective on Sexual and Reproductive Health</i>	1
<i>Pharmaceutical Journal</i>	1
<i>Science</i>	1
<i>Women's Health Issues</i>	1

^aPrior to 1996, JAPhA was named *American Pharmacy*, and from 1996 to 2002, the journal was known as the *Journal of the American Pharmaceutical Association*.¹¹ Articles appearing under either of these journal titles are classified as being published in JAPhA.

educate female patients about the importance of correct and consistent use of birth control to prevent unintended pregnancies; therefore, it would be worthwhile to institute this type of continuing education requirement in other states. Additionally, pharmacists are well positioned to contribute to the health of women patients by making interventions such as educating patients regarding calcium and vitamin D supplementation to prevent osteoporosis, encouraging patients to engage in regular physical activity for cardiovascular health, and ensuring that medications are used safely during pregnancy and lactation.¹² Implementing state-required CE programs on a variety of women's health issues will allow pharmacists to be better prepared to counsel female patients and have a positive impact on their care.

The review of continuing education programs showed that women's health programs focused primarily on contraception. This finding was consistent with results of the literature review, in which 7 articles focused on contraception and 4 articles focused specifically on emergency contraception.

Table 4. Topics Covered in Included Articles on Women's Health.

Topic	Frequency
General women's health	13
Pregnancy	8
Contraception	7
Hormone replacement therapy	5
Emergency contraception	4
Osteoporosis	4
Sexual health	4
Menopause	3
Mental health	2
Breastfeeding	1
Colorectal cancer	1
Epilepsy	1
Heart disease	1
Skin conditions	1

According to the CDC, 49% of pregnancies are unintended,¹³ and Healthy People 2020 aims to increase the proportion of pregnancies that are intended to 56%.¹ Pharmacists are well-positioned to educate patients regarding the proper use of contraception to decrease the proportion of unintended pregnancies. In December 2012, the American College of Obstetricians and Gynecologists recommended that oral contraceptives should be available over-the-counter in an effort to increase access to contraception.¹⁴ If the Food and Drug Administration were to approve this switch, the pharmacist will play a more important role in educating women on oral contraceptive options, contraindications, and side effects.

Our review yielded many continuing education programs and articles that addressed women's health issues in general, which are useful in providing a knowledge base for pharmacists. However, aside from results focusing on contraception, we found that other women's health topics were less common. For example, cancer is the second leading cause of death in women of all races in the United States,⁶ and continuing education programs focused on this topic made up 10% of the total number of programs available but only 2% of the included articles. Additionally, the CDC recently announced that human papillomavirus (HPV) vaccination rates among adolescent females aged 13 to 17 years failed to increase between 2011 and 2012 and that the rate of girls receiving the complete 3-dose HPV series declined,¹⁵ despite the CDC's recommendation that all 11- or 12-year-old girls receive 3 doses of HPV vaccine.¹⁶ This suggests an opportunity to provide education for pharmacists so they can improve vaccination rates among adolescent females.

Our literature review also showed that the majority of published literature was targeted toward pharmacists, although a few articles did discuss opportunities for pharmacy students to

Table 5. Characteristics of Included Articles.

Topic Covered	Target Audience	Focus
Breastfeeding	Pharmacists	Framework for pharmacists counseling breastfeeding women
Colorectal cancer	Pharmacists	Pharmacist-initiated counseling and education to increase women's awareness of colorectal cancer
Contraception	Pharmacists	ACCP Women's Health Practice and Research Network opinion paper to express support of changing oral contraceptives to OTC status as long as they are sold while a pharmacist is on duty
	Pharmacists	Pharmacists can facilitate interactions between patients and providers regarding contraceptive options
	Pharmacists	Pharmacists' refusal to fill prescriptions for birth control poses a threat to women's health
	Pharmacy technicians	Role of pharmacy workers in screening for contraindications to oral contraceptives prior to dispensing
	Pharmacists	Information for pharmacists regarding health care reform and its effect on access to contraception
	Pharmacists	Providers' perspective on challenges to contraceptive counseling in primary care clinics
	Pharmacists	Community pharmacist screenings of women for safe use of hormonal contraceptives
Emergency contraception	Pharmacists	Controversies surrounding emergency contraception and pharmacists' refusals to provide emergency contraception
	Pharmacists	Patterns in the number of patients seeking emergency contraception after pharmacists were granted emergency contraception prescriptive authority in Canada
	Pharmacists	Women's attitudes of counseling provided by pharmacists about emergency contraception
	Pharmacists	Women's experiences with pharmacist interactions when picking up emergency contraception
Epilepsy	Pharmacists	Evaluation of pharmacists' knowledge of women's issues in epilepsy
General women's health	Pharmacists	Assessment of online questions asked by women using an Ask-the-Pharmacist service
	Pharmacists	Overview of specific health threats for women and pharmacist opportunities to provide screening and education in these areas
	Pharmacists	Community pharmacists' attitudes toward discussing health issues with women patients
	Pharmacists	Importance of pharmacist-conducted medication management reviews for women
	Pharmacists	Importance of pharmacist counseling for younger women to promote long-term health
	Pharmacists	Pharmacist's role in advising and promoting preventative health screenings for women
	Pharmacists	The role of managed care pharmacists in women's health care
	Pharmacists	Overview of pharmacists' practice opportunities in women's health
	Pharmacists	Assessed counseling behaviors of pharmacists concerning women's health issues
	Pharmacists	Opportunities for community pharmacy-based women's health education programs
	Pharmacists	Role of pharmacist in reducing medication errors in women
	Pharmacists	Establishing women's health as a priority for pharmacists
Heart disease	Pharmacy students	Development of coursework related to women's health
	Pharmacy students	Relationship between community pharmacy APPE student interventions and increased awareness of heart disease risk among women

(continued)

Table 5. (continued)

Topic Covered	Target Audience	Focus
Hormone replacement therapy	Pharmacists	Need for communication between pharmacists and women about treatment options for menopausal symptoms
	Pharmacists	Pharmacists and physicians have the opportunity to provide women with information regarding hormone replacement therapy
	Pharmacists	Summarized findings of the Women's Health Initiative trial and how results should be applied to pharmacy practice
	Pharmacists	Information for pharmacists about how to counsel women patients after publication of Women's Health Initiative trial results
	Pharmacists	Women's perceptions of pharmacists as a source of information regarding hormone replacement therapy
Menopause	Pharmacists	Assessed the effects of a community pharmacy women's health education program on Management of Menopause survey scores
	Pharmacists	Need for pharmacist counseling interventions in perimenopausal women
	Pharmacists	Need for pharmacist counseling of postmenopausal women about medication adherence to improve cardiovascular health
Mental health	Pharmacists	Pharmacist's role in helping women manage panic disorders
	Pharmacists	Pharmacist's role in a women's psychopharmacy medication clinic
Osteoporosis	Pharmacy students	Organization and results of student pharmacist-run BMD screenings in women
	Pharmacists	Opportunities for osteoporosis screenings and education in community pharmacies
	Pharmacists	Role of health-system pharmacists in managing osteoporosis in postmenopausal women
	Pharmacists	Tailoring pharmacist interventions for women based upon their osteoporosis health beliefs
Pregnancy	Pharmacists	Pharmacists' ability to assist in screening diabetic pregnant women for depression
	Pharmacists	Role of pharmacists in expanding access to safe and effective medical abortion
	Pharmacists	Involvement of pharmacy in obstetric pharmacotherapy
	Pharmacists	Role of the pharmacist in perinatal management of HIV disease
	Pharmacists	Importance of understanding the effects of medications during pregnancy among health care providers
	Pharmacists	Survey of practitioner, pharmacist, and patient knowledge of folic acid supplementation to prevent neural tube defects
	Pharmacists	Pharmacists' ability to provide information to women about vaccinations during pregnancy
	Pharmacists	Pharmacy services on obstetrics/gynecology and neonatology units
	Pharmacists	Pharmacist's role in prevention and control of STDs through counseling interventions with women
Sexual health	Pharmacists	Role of pharmacists in assessing impact of progesterone receptor modulators and misoprostol in reproductive health
	Pharmacists	Women's use of pharmacists as a source of information about microbicides
	Pharmacists	Pharmacist counseling in women with HIV/women at risk of HIV
Skin conditions	Pharmacists	How pharmacists can recommend appropriate treatments for skin conditions in women

Abbreviations: ACCP, American College of Clinical Pharmacy; OTC, over-the-counter; APPE, advanced pharmacy practice experience; BMD, bone mineral density; STD, sexually transmitted disease.

promote women's health through practice experiences. The employment of pharmacists is expected to increase by 25% between 2010 and 2020¹⁷; thus, incorporation of women's

health education into pharmacy schools is necessary so that pharmacists are more prepared to handle these topics as they enter the workforce. Only one article in our review targeted

pharmacy technicians. The employment of pharmacy technicians is expected to grow by 32% between 2010 and 2020,¹⁸ greater than the expected growth of pharmacist employment. Therefore, increasing women's health education for technicians is equally important since pharmacy technicians in a community setting can identify when women should be referred to the pharmacist for counseling. No articles in our review targeted pharmacy residents. Most residents practice in hospitals or within other health systems, which presents an opportunity to develop and implement educational activities on women's health issues for pharmacy residents and other providers within a health care system. For example, the Department of Veterans Affairs' Women Veterans Health Care program provides training on women's health care issues through "mini-residencies."¹⁹ Veterans Affairs facilities are also employing more providers that are knowledgeable in women's health to provide for women veterans,¹⁹ displaying need for pharmacists with women's health expertise.

The majority of articles included were targeted toward pharmacists working in a community setting and primarily discussed the types of counseling opportunities that arise in this type of setting for women patients. For example, one article included described the implementation of a collaborative protocol to screen and counsel women for safe use of hormonal contraceptives prescribed by community pharmacists.²⁰ However, another article aimed to characterize the content of questions submitted by women using an online "ask-the-pharmacist" service. This article found that women were interested in knowing the differences in drug efficacy and adverse effects of medications.²¹ By anticipating the health care needs of women patients, pharmacists in almost any health care setting can provide better care for their patients.

National pharmacy organizations have a responsibility to promote women's health education. The results showed that ACCP provided 10 continuing education programs, which was more than any other national organization. Additionally, included articles appeared in *JAPhA* more than any other journal. These findings suggest that there are opportunities for national organizations to promote women's health education among pharmacists by providing a greater number of continuing education programs and through publications. As the voice of thousands of pharmacists, pharmacy students, and pharmacy technicians,²² the American Pharmacists Association can play a pivotal role in helping advance pharmacy's role in women's health care. Other national organizations that have the ability to promote women's health education include the American Society of Health-System Pharmacists, the National Community Pharmacists Association, and the American Society of Consultant Pharmacists.

Limitations

It is possible that some articles were excluded since the search was limited to IPA, PubMed, CINHL, Women's

Health Forum International, and Web of Science databases. Also, there may have been articles that were excluded due to the key words that were chosen to conduct the search. However, this was minimized by working closely with the research librarian. An additional limitation related to our search of continuing education programs is that the search was limited to programs available over a 1-year period. This makes it difficult to analyze trends in the availability of continuing education programs on women's health topics.

Conclusion

This review highlighted how pharmacists are educated and involved with women's health care issues. California is the only state with a continuing education requirement about women's health, specifically emergency contraception. In our review of continuing education programs, there were 62 programs relevant to women's health. There were 55 articles that described the role of the pharmacist in women's health care. Results revealed that a large proportion of currently available resources related to women's health for pharmacists are focused on issues related to contraception. National pharmaceutical organizations can promote the expansion of the pharmacist's role in women's health care through educational programs and published literature.

Acknowledgments

We would like to extend thanks to Rae Jesano, MSLS, AHIP, Librarian Liaison to the University of Florida College of Pharmacy.

Authors' Note

Cynthia Moreau, PharmD, is currently a PGY1 Pharmacy Practice Resident, Florida Hospital—Celebration Health, Celebration, Florida.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

References

1. Healthy People 2020. Office of Disease Prevention and Health Promotion, US Department of Health and Human Services. <http://www.healthypeople.gov/2020/default.aspx>. Accessed March 12, 2013.
2. US Department of Health and Human Services, Health Resources and Services Administration, Maternal and Child Health Bureau. *Women's Health USA 2011*. Rockville, MD: US Department of Health and Human Services. <http://www.>

- mchb.hrsa.gov/whusa11/more/hp2020.html. Published 2011. Accessed March 12, 2013.
3. McNamara AM, Wohletz MC. Women's health: issues and opportunities for managed care pharmacy. *J Manag Care Pharm.* 2001;7:263-267.
 4. Anthony M, Lee KY, Bertram CT, et al. Gender and age differences in medications dispensed from a national chain drug-store. *J Womens Health (Larchmt).* 2008;17:735-743.
 5. Gu Q, Dillon CF, Burt VL. Prescription drug use continues to increase: U.S. prescription drug data for 2007-2008. *NCHS Data Brief.* 2010;42:1-8.
 6. Centers for Disease Control and Prevention. Leading causes of death in females, United States, 2009. <http://www.cdc.gov/women/lcod/2009/index.htm>. Accessed March 12, 2013.
 7. Bartholow, M. Top 200 drugs of 2011. *Pharmacy Times*. <http://www.pharmacytimes.com/publications/issue/2012/July2012/Top-200-Drugs-of-2011>. Published July 10, 2012. Accessed March 12, 2013.
 8. Health Resources and Services Administration, US Department of Health and Human Services. Health professions training, education, and competency: women's health in the pharmacy school curriculum. <http://mchb.hrsa.gov/womenshealth/pharmacyschool.pdf>. Accessed March 13, 2013.
 9. Accreditation Council for Pharmacy Education. Continuing education programs. <https://www.acpe-accredit.org/pdfweb-tool/plan/SearchPLAN.aspx>. Accessed March 8, 2013.
 10. State of California Board of Pharmacy. Business and Professions Code, 2013 Lawbook for pharmacy. http://www.pharmacy.ca.gov/laws_regs/lawbook.pdf. Accessed March 9, 2013.
 11. Worthen DB. *Journal of the American Pharmaceutical Association* (1996-2002) and *Journal of the American Pharmacists Association* (2003-2011). *J Am Pharm Assoc.* 2012;52:110-114.
 12. American Pharmacists Association. Women's health issues: 2014 update. <http://www.pharmacist.com/women-s-health-issues-2014-update>. Accessed August 6, 2014.
 13. Centers for Disease Control and Prevention. Unintended pregnancy prevention. <http://www.cdc.gov/reproductive-health/unintendedpregnancy/>. Accessed March 20, 2013.
 14. Committee on Gynecologic Practice. The American College of Obstetricians and Gynecologists. Over-the-counter access to oral contraceptives. <http://www.acog.org/Resources%20And%20Publications/Committee%20Opinions/Committee%20on%20Gynecologic%20Practice/Over-the-Counter%20-Access%20to%20Oral%20Contraceptives.aspx#table1>. Accessed March 20, 2013.
 15. Centers for Disease Control and Prevention. Human papillomavirus vaccination coverage among adolescent girls, 2007-2012, and postlicensure vaccine safety monitoring, 2006-2013—United States. http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6229a4.htm?s_cid=mm6229a4_w#tab1. Accessed August 10, 2013.
 16. Centers for Disease Control. 2014 recommended immunizations for children from 7 through 18 years old. <http://www.cdc.gov/vaccines/who/teens/downloads/parent-version-schedule-7-18yrs.pdf>. Accessed August 10, 2013.
 17. Bureau of Labor Statistics, US Department of Labor. Occupational Outlook Handbook, 2012-13 Edition, Pharmacists. <http://www.bls.gov/ooh/healthcare/pharmacists.htm>. Accessed March 13, 2013.
 18. Bureau of Labor Statistics, US Department of Labor. Occupational Outlook Handbook, 2012-13 Edition, Pharmacy Technicians. <http://www.bls.gov/ooh/healthcare/pharmacy-technicians.htm>. Accessed March 26, 2013.
 19. US Department of Veterans Affairs. Women Veterans health care. http://www.womenshealth.va.gov/womenshealth/about.asp#womens_health. Accessed March 26, 2013.
 20. Gardner JS, Miller L, Downing DF, Le S, Blough D, Shotorbani S. Pharmacist prescribing of hormonal contraceptives: results of the Direct Access study. *J Am Pharm Assoc (2003).* 2008;48:212-221.
 21. Jariangprasert CS, El-Ibiary SY, Tsourounis C, Assemi M. What women want to know: an assessment of online questions asked by women using an ask-the-pharmacist service. *J Pharm Technol.* 2007;23:214-220.
 22. American Pharmacists Association. History of APhA. <http://www.pharmacist.com/history-apha>. Accessed June 30, 2013.