ABSTRACT

Because of the magnitude of women’s health issues within the larger context of public health and healthcare systems, this paper was written to help define the current status of women’s health in Wisconsin. Utilizing critical women’s health areas identified by the Wisconsin Women’s Health Foundation and the Wisconsin Division of Public Health, 16 specific measures of women’s health were chosen for this analysis. The most recent data available for each measure were collected with Wisconsin data being compared to national averages as well as to Healthy People 2010: Objectives for Improving Health targets. Wisconsin women fare better than national averages in nine of the selected health measures; however, there are still many improvements to be made in order to meet Healthy People 2010 targets. The areas where the most improvements are needed include binge drinking, tobacco use, diabetes, and stroke mortality. Other significant findings include the lack of uniformly collected data in the areas of domestic violence, osteoporosis, and mental illness.

INTRODUCTION

Whether viewed from a financial, health systems, or individual health perspective, women’s health is a leading issue. Women make up roughly half of the nation’s population but account for 61% of physician visits. Four out of every five national health care dollars are spent on women’s health, and women account for 19 of the 32 million people on Medicare in the United States. The situation is no different in Wisconsin, with women acting as major players in the health care system. Wisconsin women under 65 are more likely to have seen a physician in the past year than men. Additionally, 71% of Wisconsin’s nursing home residents are women.

Despite the dominant financial and functional influence of women’s health on the nation’s health care system, women’s health issues have historically been marginalized. It has only been in the last 20 years that women’s health issues have come to the forefront. In the past, women were typically excluded from medical research with clinical trials conducted on men and results generalized to women. Although federal law mandated inclusion of women in clinical trials in 1993, the number of women in trials regarding congestive heart failure and arrhythmias remains low. Other areas of contention have included inadequate coverage for maternity-related hospital stays or for female cancer screening procedures.

Progress has been made in addressing disparate treatment of women’s health issues both on the local and federal levels. In Wisconsin, the Wisconsin Women’s Health Foundation (WWHF) was established in 1997 to “promote and support those programs and services that work to improve the health of women in Wisconsin.” The WWHF has identified six issues that disproportionately affect women, or that affect women differently from men, and span a woman’s entire life cycle: cardiovascular disease, osteoporosis, breast cancer, mental illness, tobacco addiction, and domestic violence.

Many of the issues identified by the WWHF are, not surprisingly, the same as those recognized by national public health leaders. Specifically, the federal document, Healthy People 2010: Objectives for Improving Health, presents a comprehensive national health promotion and disease prevention agenda that identifies key goals...
and indicators of the health of the nation. Data were collected and targets set for 467 objectives for the United States to achieve by 2010. The overall goals of Healthy People 2010 are twofold: (1) to increase quality and years of healthy life, and (2) to eliminate health disparities. In the document, data stratified by gender are included when available and the role gender plays within the goal of eliminating health disparities is highlighted, thus acknowledging the importance of women’s health.

This paper reports on selected measures of women’s health in Wisconsin. We examined the parameters identified by the WHF and Healthy People 2010 as priority areas and chose six specific issues to focus on in this research: cardiovascular disease, cancer, substance abuse, injury/violence, access to health care, and mental health. Establishing these women’s health issues as priority areas and accurately measuring their trends over time are crucial steps in an effort to improve women’s health in Wisconsin. Knowledge of which health issues need the most improvement will help guide public health policy and help determine where Wisconsin’s health resources are best directed.

METHODS

Data for this paper were obtained from two on-line interactive sources maintained by national centers within the Centers for Disease Control and Prevention (CDC). The first was the National Center for Health Statistics (NCHS) Interactive database system Data 2010. This query system, updated quarterly, includes data for all the objectives and subgroups identified in Healthy People 2010. The second source was the Behavior Risk Factor Surveillance System (BRFSS) at the National Center for Chronic Disease Prevention and Health Promotion. The BRFSS is a randomized telephone survey that tracks health risk factors (such as cancer screening tests, substance abuse, and nutrition). The BRFSS data are useful for making comparisons for risk factors from the national to the state level.

In the analysis, we categorized these indicators into three groups based on comparison of state and national data: (1) Wisconsin women fare better than US women; (2) Wisconsin women fare worse than US women; and (3) Wisconsin women fare about the same as US women. Next, Wisconsin data were compared to Healthy People 2010 objectives, and percent of change needed for the state to reach each goal was calculated. The formula used to calculate the percent change was: 

\[
\text{Percent Change} = \left( \frac{H \text{ealthy People 2010 target-Wisconsin women's value}}{\text{Wisconsin women's value}} \right) \times 100 = \%
\]

This analysis provides a benchmark for Wisconsin to work from, as well as identifies areas that the state needs to direct attention toward to improve Wisconsin women’s health.

RESULTS

Table 1 presents our selected measures of women’s health in Wisconsin. They met specific criteria: (1) recent values were available for women nationwide and in Wisconsin; and (2) they are measurable objectives with targets in Healthy People 2010. The most recent data available for Wisconsin women were compared to national averages and to Healthy People 2010 targets to obtain an overall picture of the state of women’s health in Wisconsin.

Table 2 displays data for each selected measure of women’s health in Wisconsin and the United States, as well as the percent change needed for Wisconsin women to reach the Healthy People 2010 target. We begin by comparing Wisconsin women to US women. First, we examine the areas in which Wisconsin women fare better than US women, and then we turn to areas in which Wisconsin women fare about the same as, or worse than, US women.

Wisconsin women fare better than national averages in nine of the selected health measures. Wisconsin women are less likely to die from diabetes-related causes, coronary heart disease, lung cancer, breast cancer, or homicide than women nationwide. Additionally, Wisconsin women are more likely to have reduced their risk factors for disease by having lower rates of obesity, engaging in leisure time physical activity, and, if aged 40 or older, they are more likely to have had a mammogram in the past 2 years. Women under age 65 in Wisconsin are also fortunate in that they are more likely to have health insurance than similarly aged women nationwide. Wisconsin women and women nationwide fare about the same in five areas including stroke mortality, cholesterol screening, motor vehicle deaths, first trimester prenatal care, and suicide. Wisconsin women fare worse than women nationwide in rates of binge drinking and slightly worse than women nationwide in rates of tobacco use.

Although Wisconsin women fare well when compared to national averages for selected health measures, there are still many improvements to be made in order to meet Healthy People 2010 targets. As shown in Table 2, the areas of largest improvements are needed in rates of binge drinking, tobacco use, diabetes mortality, and stroke mortality. Additional improvements are needed in reducing obesity, breast cancer mortality, and motor vehicle deaths, while increases are needed in rates of insurance coverage, blood cholesterol screening, physical...
activity, and prenatal care. Wisconsin has already met the targets set for binge drinking, lung cancer deaths, coronary heart disease deaths, homicide, suicide rates, and mammogram screening rates.

**DISCUSSION**

Based on comparisons within the selected health areas, it seems that the status of women's health in Wisconsin is slightly better than average when compared to the health of women nationwide. However, improvements in 11 of the 16 selected health areas must be realized for Wisconsin to meet the Healthy People 2010 objectives. This assessment is fairly consistent with a report issued by the National Women's Law Center that ranked Wisconsin 22nd out of 51 states and territories measured. In general, improved data collection, screening efforts, education, and improved public policy will all be instrumental in affecting changes needed to improve overall women's health in Wisconsin and to meet Healthy People 2010 goals and objectives. A detailed discussion of data on each of our selected measures of women's health follows.

**Cardiovascular Disease (CVD)**

Cardiovascular disease is the leading cause of death for women in Wisconsin and nationwide. The data in this paper present a mixed picture of the status of Wisconsin women and cardiovascular disease. Wisconsin women have relatively low rates of coronary heart disease-related mortality and, in fact, have met Healthy People 2010 objectives. On the other hand, stroke mortality and diabetes-related mortality must decrease by 20% and 32%, respectively, to meet the Healthy People 2010 objectives. In contrast with commonly held opinions about Wisconsinites, women in the state compare favorably versus national averages in rates of physical activity and obesity. However, Wisconsin women need to improve in both areas to meet Healthy People 2010 objectives. Our final selected measure for cardiovascular disease, proportion of adults receiving a blood cholesterol screening, needs to improve from 73% to 80% of Wisconsin women. It is evident that changes need to occur in order for Wisconsin women to meet Healthy People 2010 objectives. These include preventive measures such as a healthy diet and exercise, as well as becoming diligent about monitoring individual risk for heart disease through recommended cardiovascular disease screenings and tests.

**Cancer**

The leading cause of cancer death among American women is breast cancer. Wisconsin has already met the targets set for reducing the lung cancer death rate, breast cancer death rate, and mammogram screening rate. However, improvements in reducing the proportion of women >40 years who received a mammogram within the preceding 2 years must be realized for Wisconsin to meet Healthy People 2010 objectives.

### Table 1. Measures of women's health status and corresponding indicators measured by Healthy People 2010

<table>
<thead>
<tr>
<th>Selected Measures of Women's Health</th>
<th>Related Objective from Healthy People 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cardiovascular disease</strong></td>
<td>Reduce the diabetes death rate</td>
</tr>
<tr>
<td></td>
<td>Reducing the stroke mortality death rates</td>
</tr>
<tr>
<td></td>
<td>Increase the proportion of adults who have had their blood cholesterol checked within the preceding 5 years</td>
</tr>
<tr>
<td></td>
<td>Reduce the proportion of adults who are obese</td>
</tr>
<tr>
<td></td>
<td>Reduce the proportion of adults who engage in no leisure-time physical activity</td>
</tr>
<tr>
<td><strong>Cancer</strong></td>
<td>Reduce the lung cancer death rate</td>
</tr>
<tr>
<td></td>
<td>Reduce the breast cancer death rate</td>
</tr>
<tr>
<td></td>
<td>Increase the proportion of women &gt;40 years who received a mammogram within the preceding 2 years</td>
</tr>
<tr>
<td><strong>Substance use</strong></td>
<td>Reduce the proportion of persons engaging in binge drinking* of alcoholic beverages</td>
</tr>
<tr>
<td><strong>Injury/violence</strong></td>
<td>Reduce tobacco use by adults</td>
</tr>
<tr>
<td></td>
<td>Reduce deaths caused by motor vehicle crashes</td>
</tr>
<tr>
<td><strong>Access to health care</strong></td>
<td>Reduce homicides</td>
</tr>
<tr>
<td></td>
<td>Increase the proportion of persons with health insurance</td>
</tr>
<tr>
<td></td>
<td>Increase the proportion of pregnant women who receive early and adequate prenatal care (beginning in first trimester)</td>
</tr>
<tr>
<td><strong>Mental health</strong></td>
<td>Reduce the suicide rate</td>
</tr>
</tbody>
</table>

* Binge drinking is defined by Healthy People 2010 as drinking 5 or more alcoholic beverages at the same time or within a couple of hours of each other during the past 30 days.
Table 2. Comparison of selected measures of women’s health, including Healthy People (HP) 2010 objectives, Wisconsin to the United States

<table>
<thead>
<tr>
<th>Selected measures of women’s health</th>
<th>Related HP 2010 objective</th>
<th>Current data</th>
<th>Wisconsin compared to US</th>
<th>HP 2010 target</th>
<th>Percent change Wisconsin needs to reach HP 2010 target†</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cardiovascular disease</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduce the diabetes death rate</td>
<td>66*</td>
<td>69*</td>
<td>Better</td>
<td>45</td>
<td>32%</td>
</tr>
<tr>
<td>Reduce coronary heart disease deaths</td>
<td>133*</td>
<td>156*</td>
<td>Better</td>
<td>166</td>
<td>No change necessary</td>
</tr>
<tr>
<td>Reduce stroke mortality</td>
<td>60*</td>
<td>60*</td>
<td>Same</td>
<td>48</td>
<td>20%</td>
</tr>
<tr>
<td>Increase proportion</td>
<td>73%</td>
<td>72%</td>
<td>About the same</td>
<td>80%</td>
<td>10%</td>
</tr>
<tr>
<td>of adults with blood cholesterol checked within preceding 5 years</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduce the proportion</td>
<td>18%</td>
<td>19.8%</td>
<td>Better</td>
<td>15%</td>
<td>17%</td>
</tr>
<tr>
<td>of adults who are obese</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduce the proportion</td>
<td>22%</td>
<td>28%</td>
<td>Better</td>
<td>20%</td>
<td>9%</td>
</tr>
<tr>
<td>of adults who engage in no leisure-time physical activity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Cancer</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduce the lung cancer death rate</td>
<td>36.0*</td>
<td>41.8*</td>
<td>Better</td>
<td>44.9</td>
<td>No change necessary</td>
</tr>
<tr>
<td>Reduce the breast cancer death rate</td>
<td>25.7*</td>
<td>27.1*</td>
<td>Better</td>
<td>22.3</td>
<td>13%</td>
</tr>
<tr>
<td>Increase the proportion</td>
<td>75%</td>
<td>70%</td>
<td>Better</td>
<td>70%</td>
<td>No change necessary</td>
</tr>
<tr>
<td>of women &gt; 40 years who received a mammogram within the preceding 2 years</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Substance use</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduce the proportion</td>
<td>24%</td>
<td>16%</td>
<td>Worse</td>
<td>6%</td>
<td>75%</td>
</tr>
<tr>
<td>of persons engaging in binge drinking‡ of alcoholic beverages</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduce tobacco use by adults</td>
<td>24%</td>
<td>22%</td>
<td>Worse</td>
<td>12%</td>
<td>50%</td>
</tr>
<tr>
<td><strong>Injury/violence</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduce deaths caused</td>
<td>9.9*</td>
<td>9.5*</td>
<td>About the same</td>
<td>9.2</td>
<td>7%</td>
</tr>
<tr>
<td>by motor vehicle crashes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduce homicides</td>
<td>1.7*</td>
<td>2.8*</td>
<td>Better</td>
<td>3.0</td>
<td>No change necessary</td>
</tr>
<tr>
<td><strong>Access to health care</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increase the proportion</td>
<td>91%</td>
<td>88%</td>
<td>Better</td>
<td>100%</td>
<td>10%</td>
</tr>
<tr>
<td>of persons with health insurance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increase the proportion</td>
<td>84%</td>
<td>83%</td>
<td>About the same</td>
<td>90%</td>
<td>7%</td>
</tr>
<tr>
<td>of pregnant women who receive early and adequate prenatal care (beginning in first trimester)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Mental health</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduce the suicide rate</td>
<td>4.4*</td>
<td>4.0*</td>
<td>About the same</td>
<td>5.0</td>
<td>No change necessary</td>
</tr>
</tbody>
</table>

*Age-adjusted per 100,000 standard population
† The formula to calculate percent change is: 
(HP 2010 Target – Wisconsin women’s value)/[Wisconsin women’s value]) X 100 = ____ %.
‡ BRFSS defines binge drinking as the percentage of women who answered “yes” to drinking any alcoholic drinks during the past 30 days and 5 or more drinks on an occasion during those 30 days.
women is lung cancer.\textsuperscript{11} Although Wisconsin's rate is lower than national rates and Wisconsin has met the Healthy People 2010 objective for lung cancer mortality, there is still work to be done. Primary prevention of lung cancer through smoking cessation is vital for the health of Wisconsin's women and will also contribute to improving rates for the many other diseases affected by tobacco use. Breast cancer is the second leading cancer killer of women nationwide.\textsuperscript{11} Despite the fact that more Wisconsin women receive mammograms than women nationally, breast cancer mortality affects Wisconsin women at about the same rate as the rest of the nation. Breast cancer mortality rates in Wisconsin must decrease by 13\% to reach the Healthy People 2010 objective. These improvements may be achieved through health education, screenings, and improved treatment options for women facing the disease.

Substance Use/Tobacco Addiction
In Wisconsin, women are more likely to binge drink than women nationwide. In fact, the rate of binge drinking must decrease by 75\% of its present value to meet Healthy People 2010 goals. The prevalence of tobacco smoking among Wisconsin women is also higher than the rest of the population. Although not included in this analysis, rates of smoking during pregnancy in Wisconsin are also higher than the national average.\textsuperscript{12,13} The overall prevalence of Wisconsin women smoking must decrease by nearly 50\% to meet the Healthy People 2010 objective. It must be emphasized that alcohol and smoking cessation services are a much needed resource for Wisconsin women. It is also important not to overlook the importance of prevention in regard to both tobacco and alcohol use, especially by youth. Ongoing efforts in public education and the availability of cessation and rehabilitation services will provide Wisconsin women the services and help they need to be healthy.

Injury/Violence
Wisconsin women are less likely than women nationwide to die by homicide, but are slightly more likely to die in a motor vehicle accident. Although only 7\% change is necessary to meet Healthy People 2010 objectives for motor vehicle accidents, prevention strategies and initiatives to encourage safe driving and public safety are always desirable.

Domestic violence is defined by the Family Violence Prevention Fund as a pattern of assaultive and coercive behaviors, including physical, sexual, and psychological attacks as well as economic coercion that adults or adolescents use against their intimate partners.\textsuperscript{14} The term domestic violence is not used explicitly in Healthy People 2010. However, data to measure these objective areas are not included in the BRFSS, the data source used for our research. Unfortunately, there is currently no standard method of measuring domestic violence in use nationwide. Thus, uniform data collection systems at the national and state level are needed before accurate comparisons of rates of domestic violence can be made. Of course, in addition to uniform data collection systems, domestic violence prevention programs and local resources for abused women are absolutely vital in serving the needs of Wisconsin women in regard to this health objective.

Access to Health Care
Women in Wisconsin under age 65 are more likely to have health insurance than women of the same age nationwide, but a 10\% increase is needed to reach the Healthy People 2010 objective of 100\% insured adults. The prevalence of prenatal care received during the first trimester in Wisconsin is about equal to the rest of the nation and, again, only a small percentage increase (7\%) is needed to reach the objective for Healthy People 2010.

We should be careful not to conclude Wisconsin's progress in access to health care is a success. Affordability of care can be a major issue for women—even women with insurance are sometimes unable to make a trip to their health care provider due to the costs of the visit and prescriptions. Other barriers include not having enough clinics and/or providers in a community, lack of transportation, lack of childcare, clinic hours, and cultural or language differences. These issues also need to be addressed in efforts to continue improving Wisconsin women's access to health care.

Mental Health
Wisconsin women have a lower suicide rate than the US average and have met the Healthy People 2010 objective. However, there are several other applicable and appropriate measures of mental health that could not be included in this analysis due to incongruent data sources and measurements. For example, national data show that women are more likely to suffer clinical depression than men.\textsuperscript{6} This issue is especially pertinent in Wisconsin with 47.8\% of women stating that they have had bad mental health days in the last 30 days (versus only 37.3\% of women nationwide).\textsuperscript{10} Other indicators, such as the percentage of women with depression who receive treatment, were measured nationally, but no Wisconsin state-
level data were available. Uniform availability of this
type of data will help form a more comprehensive pic-
ture of the state of women’s mental health in Wisconsin.

Limitations
This research includes several limitations. Past research
has demonstrated the salient influence of race, socio-
economic status, and geographic location on health. Additional analysis of health areas based on race/eth-
nicity, socioeconomic status, and geographic location
would be useful in identifying specific at-risk popula-
tions, but are not included in this research because gender- and Wisconsin-specific data for these indicators
were not available for comparison. Also, because age-
stratified data were often not available by gender, strati-
fication of results by age were not included in this
analysis. Data are age-adjusted where appropriate and
exclusion of age groups for some indicators is indicated.
Trends over time are not included in this analysis as
often values for many years are not available.

Other limitations include the lack of uniformly col-
lected data on important women’s health topics, espe-
cially domestic violence, mental health, and osteoporo-
sis. As stated above, domestic violence is a women’s
health issue of considerable proportions, yet there is no
national uniform data collection system in place at this
time. Additionally, there are no state-based data in the
Healthy People 2010 database on osteoporosis. While
the nationwide incidence of osteoporosis is 16% for
women over 50 and the Healthy People 2010 objective
for incidence is 6%, there is currently no way to mea-
sure progress in Wisconsin. The lack of a uniform data
collection system for osteoporosis incidence was a lim-
itation in this research.

CONCLUSIONS
Women in Wisconsin fare better than the national aver-
age in nine of the 16 parameters included in this analy-
sis. Although this is an encouraging finding, we must re-
member that for each health measure, Wisconsin
women were compared to a national average and not to
other states’ averages. Additionally, Wisconsin still
needs to improve upon 11 of the health objectives stud-
ied in order to meet Healthy People 2010 targets.
Comparison of Wisconsin data to a national bench-
mark, such as Healthy People 2010, is an important step
in developing an accurate understanding of how our
state is advancing in regard to women’s health and what
changes or improvements need to be implemented.
Every women’s health issue can be improved upon; even
those which meet the Healthy People 2010 targets.

Resources for Wisconsin Women
The following resources are available to Wisconsin
women and address the health issues presented in this paper:

Wisconsin Women’s Health Hotline
800.218.8408 24 hours/day, 7 days/week
Provides information and links to organizations providing
services relating to women’s health issues including
osteoporosis, heart disease, breast and cervical cancer,
diabetes health maintenance, depression, domestic vio-
ence, sexual assault, substance abuse, and mental
health.

The Wisconsin Maternal and Child Health (MCH)
Hotline
800.722.2295 24 hours/day, 7 days/week
Provides information and links to services and re-
sources for women before, during, and after pregnancy
and for children, including children with special health
care needs.

Wisconsin Tobacco Quitline
877.270.STOP (7867)
En español: 877.2NO.FUME (66-3863)
Provides one-on-one telephone cessation counseling
as well as referrals to local cessation programs and
services.

National Domestic Abuse Hotline
800.799.SAFE (7233)

Wisconsin Coalition Against Domestic Violence
608.255.0539

National Sexual Assault Hotline
800.656.HOPE (4673)
Wisconsin Coalition Against Sexual Assault
608.257.1516

National Hopeline Network
800.SUICIDE (784.2433)
Hotlines by Wisconsin County or City can be found at:
http://suicidehotlines.com/wisconsin.html

National Alliance on Mental Illness-Wisconsin
608.242.7223, 800.236.2988

Wisconsin Women’s Health Foundation
800.448.5148, www.wwhf.org

Department of Health and Family Services
http://www.dhfs.state.wi.us

Wisconsin Division of Public Health
http://www.dhfs.state.wi.us/programs/publichealth.htm
A significant result of this research was finding the lack of uniform data on certain women's health topics. Three of the six core health issues identified by the Wisconsin Women's Health Foundation (domestic violence, osteoporosis, and mental health) were not able to be included in this analysis, or were not covered as extensively as we would have liked, because data were not available. To improve the state of women's health in Wisconsin, comprehensive quality data must be collected on all women's health issues. Also, publicly funded, prevention-oriented programs addressing women's health must receive continued support and sustainable funding. It is through this type of a multifaceted approach that we as a state will strive to improve the status of women's health in Wisconsin.

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REFERENCES
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