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How Healthy Are Colorado Women of Reproductive Age? An Evaluation of Preconception Risk and Protective Factors

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Introduction

In Colorado, 39 percent of births result from pregnancies that are unplanned and thousands of women are at risk for unintended pregnancy.¹ Unplanned or mistimed pregnancies are associated with late entry into prenatal care, low birth weight, elective abortions, child abuse and behavioral problems in children.² Most fetal organs and placental vessels are formed by the twelfth week after conception and many interventions to prevent poor maternal and infant outcomes come too late in pregnancy to have an impact. Scientific evidence indicates that the improvement of a woman's health before pregnancy can improve pregnancy outcomes for both mother and infant.³ Protective behaviors, like taking folic acid, improve health, while risk behaviors, such as smoking and drinking alcohol, diminish health status. Reducing risk factors and promoting protective factors, regardless of pregnancy intention, is critical for the health of all women of reproductive age and any potential offspring. Medical providers and public health professionals have a role in addressing these risk and protective factors before pregnancy, collectively known as preconception health.

The purpose of this report is to examine preconception health among Colorado women of reproductive age. In addition, the report highlights data on health factors of women who want to have a child sooner compared to later. The health of women who want to have a child sooner is of particular interest, since their health before pregnancy is paramount to the health of their future children.

Methodology

The Colorado Behavioral Risk Factor Surveillance System (BRFSS) is a statewide telephone survey on health conducted by random-digit dialing of adults 18 years and older living in households with a landline telephone. The Survey Research Unit of the Colorado Department of Public Health and Environment conducts the survey annually in collaboration with

the Centers for Disease Control and Prevention. This report describes preconception risk and protective factors related to maternal and infant health outcomes among Colorado women ages 18 to 44 using data gathered from the BRFSS for years 2004 – 2006. A total of 4,250 women were included in this analysis. Not all questions were asked each year; therefore some of the data are only available for one or two years.

Risk factors in this analysis included smoking, being overweight or obese, poor mental health and alcohol use. A woman who smoked at least 100 cigarettes in a lifetime and smoked every day or some days was designated as a smoker. Women with a body mass index of 25 or greater were considered overweight or obese. Poor mental health was defined as one's mental health being not good on at least one occasion in the past month. The definition of alcohol use included any woman who drank any type and amount of alcoholic beverage in the last month. During 2004 – 2006, the definitions for binge drinking were not consistent; therefore, binge drinking was defined as four or more drinks or five or more drinks in one sitting.

Protective factors in this analysis included eating well, taking folic acid and exercising. Eating well consisted of eating five or more servings of fruits and vegetables per day. This question was only asked in 2005 of 1,417 women of reproductive age. Taking folic acid was defined as taking vitamins containing 400 micrograms of folic acid. Exercising includes women who either exercised moderately for at least 30 minutes per day five times a week or vigorously for 20 minutes per day three times a week. The questions on folic acid and exercising were only asked in 2004 and 2006 of 2,833 women of reproductive age.

The desire for a child was determined by identifying respondents who indicated they wanted to have a child now or sometime in the future. Their responses were grouped according to those who wanted a child within two years and those who wished to wait two or more years from the time of the survey.

Data were available from responses collected for half the year in 2005 and 2006.

Descriptive analyses were conducted to identify differences between age groups (18 to 29 years and 30 to 44 years), ethnicity (Hispanic and non-Hispanic) and by when a child was desired. Ninety-five percent confidence intervals were calculated to assess statistical differences in risk and protective factors between groups. The confidence intervals are shown as vertical lines on the graphs below. Non-overlapping confidence intervals indicate statistically significant differences between groups. Data were analyzed using SAS v9.2.

Results

Women ages 18 to 44 years

Several risk factors are common among all women of reproductive age. As seen in Figure 1, 20 percent of women smoke, 42 percent of women are overweight or obese, 45 percent of women experience poor mental health, 59 percent of women use alcohol and 15 percent of women admit to binge drinking. There are no significant differences in the prevalence of smoking, poor mental health or alcohol use among younger women (ages 18 to 29), compared to older women (ages 30 to 44). However, women under age 30 are significantly less likely to be overweight or obese (37 percent) compared to women age 30 or older (45 percent). Younger women, however, are significantly more likely to binge drink (19 percent versus 11 percent).

Figure 1. Preconception risk factors among Colorado women ages 18-44, BRFSS, 2004-2006

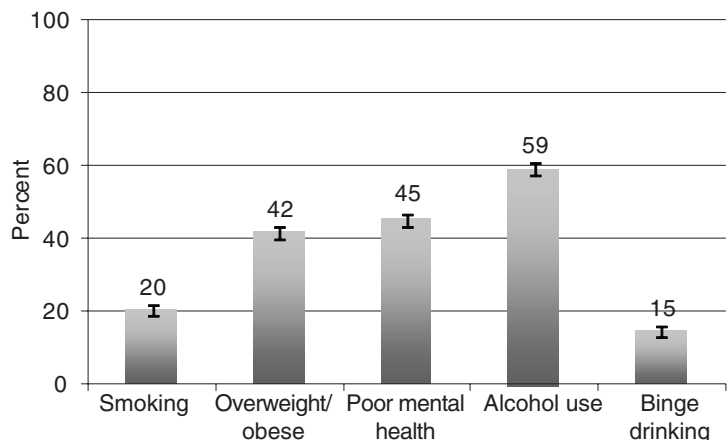
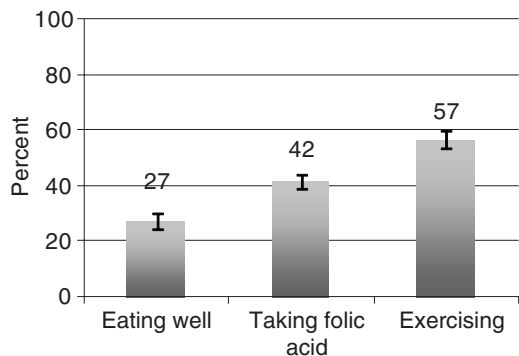


Figure 2 illustrates the prevalence of three protective factors that, when present, may enhance women’s health and potentially birth outcomes. Twenty-seven percent of Colorado women ages 18 to 44 reported eating five or more servings of fruits and vegetables daily (labeled “eating well”), and 42 percent took folic acid. Fifty-seven percent of women reported either moderately intense physical activity or vigorous activity (labeled “exercising”). The prevalence of these protective factors was similar for younger women and older women.

Figure 2. Preconception protective factors among Colorado women ages 18-44, BRFSS, 2004-2006

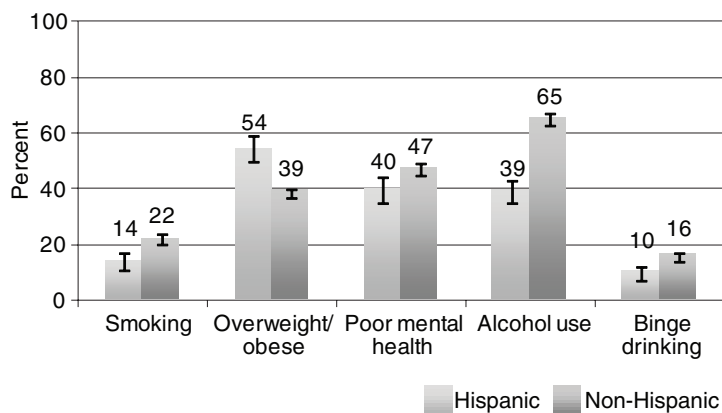


Note: Eating well data are available for 2005 only.

Ethnicity

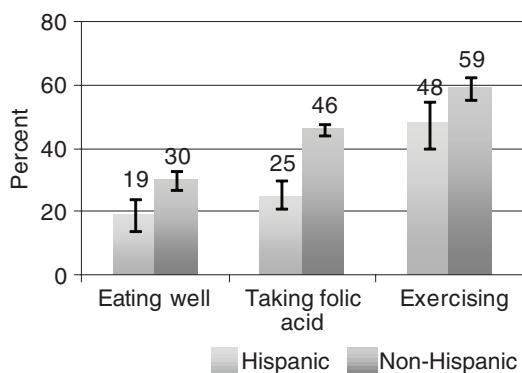
Figure 3 shows the prevalence of preconception risk factors for Hispanic and non-Hispanic women. Hispanic women are significantly less likely than non-Hispanic women to be smokers (14 percent versus 22 percent), report poor mental health (40 percent versus 47 percent), use alcohol (39 percent versus 65 percent) or binge drink (10 percent versus 16 percent). Hispanic women are significantly more likely to be overweight or obese (54 percent) compared to 39 percent of non-Hispanic women.

Figure 3. Preconception risk factors among Colorado women by ethnicity, BRFSS, 2004-2006



The prevalence of preconception protective factors is significantly lower among Hispanic women, compared to non-Hispanic women as shown in Figure 4. Nineteen percent of Hispanic women report eating five or more servings of fruits and vegetables daily, compared to 30 percent of non-Hispanic women. Twenty-five percent of Hispanic women take folic acid, compared to 46 percent of non-Hispanic women. Just under half (48 percent) of Hispanic women report moderate or vigorous physical activity, compared to 59 percent of non-Hispanic women.

Figure 4. Preconception protective factors among Colorado women by ethnicity, BRFSS, 2004-2006

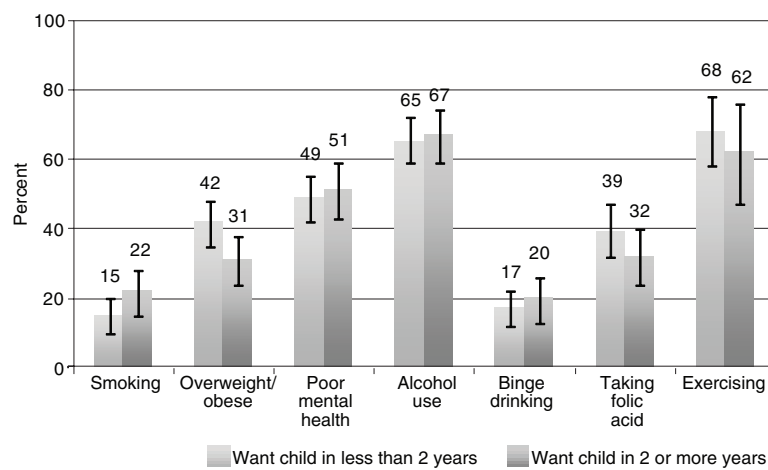


Note: Eating well data are available for 2005 only.

Desire for a child

Figure 5 displays the prevalence of preconception risk and protective factors for two groups of women, those desiring a child within two years of the survey and those who wished to wait two or more years.

Figure 5. Preconception risk and protective factors among Colorado women who want a child by when child is wanted, BRFSS, 2004-2006



There are no statistically significant differences in the prevalence of risk factors among Colorado women based on when they want to have a child. Women wanting a child in the near future are just as likely as women who want a child later in life to smoke (15 percent versus 22 percent), be overweight or obese (42 percent versus 31 percent), report poor mental health (49 percent versus 51 percent), use alcohol (65 percent versus 67 percent) or binge drink (17 percent versus 20 percent). Folic acid consumption did not differ between women wanting a child sooner (39 percent) compared to women wanting a child later (32 percent). Likewise, 68 percent of women wanting a child sooner report exercising compared to 62 percent of women wanting a child later. There were not enough responses about fruit and vegetable consumption between the two groups to make a statistical comparison.

Discussion

Many Colorado women of reproductive age engage in a variety of behaviors that are unhealthy. Substantial proportions of women smoke tobacco, are overweight or obese, suffer from poor mental health and use alcohol. Some women take steps to improve or maintain their health by eating fruits and vegetables and many more do so by exercising and taking folic acid. Young women are less likely to be overweight or obese, but they are also more likely to binge drink. Risk factors are less prevalent among Hispanic women, but protective factors are less prevalent in this population as well.

This report reveals health behaviors of women who want to have a child sooner are no different from health behaviors of women who desire a child later. Overall, women who desire a child in the near future are just as likely to smoke, be overweight or obese, report poor mental health, drink alcohol and binge drink as women who want to wait at least two years before having a child. In addition, women are not improving their health by eating well, taking folic acid daily and regularly exercising moderately or vigorously. These findings highlight the importance of preconception health and its clear message that women of reproductive age should minimize risk factors and maximize protective factors before planning pregnancy or before an unplanned pregnancy. In so doing they will improve their own health and contribute to the health of the next generation.

Providers and public health professionals should encourage women to modify risk factors and support protective factors regardless of pregnancy intention. The following are recommendations to improve preconception health.

- **Incorporate smoking cessation strategies supported by clinical evidence into routine health care visits.**⁴ Smoking among women continues to be a major public health concern in Colorado. Smoking cessation before pregnancy improves health and reduces the risk for preterm birth and low birth weight.
- **Regularly measure and document body mass index and offer specific strategies to improve patient nutrition and physical activity levels.** The prevalence of overweight and obesity in the United States has increased dramatically in the last few decades. A recent analysis of Colorado birth certificate data found women who are overweight, obese or morbidly obese prior to pregnancy have an increased risk for gestational diabetes, gestational hypertension, induced labor, cesarean section delivery and large-for-gestational-age infants.⁵ Additionally, women who enter pregnancy overweight give birth to children who have an increased risk of obesity during their preschool years.⁶ Hispanic and older women are significantly more likely to be overweight or obese.
- **Discourage alcohol use among women desiring pregnancy, with particular attention to young women ages 18 to 29 years, who have a significantly higher rate of binge drinking.** There is no safe amount of alcohol intake during pregnancy. Any alcohol intake during pregnancy increases a woman's risk for having an infant born with fetal alcohol spectrum disorder, which can consist of facial deformity, hearing and vision problems, growth deficits, and developmental delay.⁷ Effects from alcohol exposure can occur before pregnancy is evident. Women who drink alcohol can be prescribed an effective birth control method to prevent unplanned pregnancy.
- **Incorporate mental health promotion, screening and referral into clinical visits and public health prevention efforts.**⁸ Increased reports of poor mental health indicate gaps in consumer knowledge about mental health, when to seek professional help and treatment options. Mental health conditions are associated with an increased risk of postpartum depression, increased rates of substance abuse,

lower use of prenatal care and adverse infant and family outcomes.⁹

- **Discuss the role of fruit and vegetable intake in maintaining a healthy diet.** Eating at least five servings of fruits or vegetables per day helps reduce the risk of some cancers, heart disease and many other chronic conditions. Chronic conditions affect women's health during pregnancy and can have a lifetime impact on infants.¹⁰ Colorado Hispanic women are less likely than non-Hispanic women to eat five fruits or vegetables each day.
- **Advise all women of reproductive age to take a daily multivitamin containing 400 micrograms of folic acid.** Taking folic acid before and during pregnancy can prevent from 50 to 70 percent of neural tube defects.¹¹ The Centers for Disease Control and Prevention reports Latinas in the United States consume the least amount of folic acid and have the least knowledge about folic acid.¹² This finding was observed in Colorado where only 25 percent of Hispanic women reported taking a daily multivitamin compared to nearly 50 percent of non-Hispanic women.
- **Promote exercise and address barriers to reduce poor health outcomes associated with inactivity.** Moderate exercise reduces the risk for heart disease, stroke, breast cancer, colon cancer, diabetes, high blood pressure and obesity.¹³ Exercise is a protective factor with benefits that can improve the overall physical and mental wellness of a woman before pregnancy. Although one in two Colorado women of reproductive age reported the recommended level of exercise, Hispanic women were less likely to exercise compared to their non-Hispanic peers. Major barriers to increasing physical activity are time, access to convenient exercise facilities and safe environments in which to be active.¹³
- **Discuss reproductive goals with women and men to**

promote individual responsibility across the lifespan.¹⁴

The Centers for Disease Control recommends each woman, man and couple have a reproductive life plan. The plan sets personal goals related to reproductive decisions. Reproductive life plans provide women and men an opportunity to consider health before conception.

Paul Wise, MD, MPH, Director of the Center for Policy, Outcomes and Prevention at Stanford University, states, "At some point, the public health approach to improving birth outcomes in the United States must recognize that the only way to reach this goal is by addressing the requirements of women's health regardless of pregnancy status."¹⁵ In Colorado, recent public health efforts encourage women and providers to address risk and protective factors prior to pregnancy. The Colorado Department of Public Health and Environment is developing, evaluating and disseminating a life plan booklet designed to educate and help a woman set life goals, including plans for having children in the future, and to consider preconception health factors even if they do not desire future pregnancy. For Colorado health care providers, Healthy Women Healthy Babies and Health TeamWorks developed a preconception and interconception clinical guideline to promote preconception health during every office visit.¹⁶ Public policies, such as tobacco tax increases and public smoking bans, aimed at reducing risk factors and promoting protective factors, also contribute to improving the preconception health status of Colorado women.

The data in this report indicate that the health of women of reproductive age is not optimal and that the health of women who desire a child in the near future is no better than that of women who want to delay having a child. Whether pregnancies are planned or unplanned, the health of the mother impacts the health of the child. Improving preconception health requires changes in knowledge, attitudes and behaviors of individuals, families, communities and institutions. Incorporating components of preconception health in existing public

health programs can help women modify risk factors and promote protective factors. By encouraging healthy behaviors *before* pregnancy, prevention experts have the opportunity to help women attain optimal health over a lifetime and across generations.



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