# Health-Related Quality of Life for Women Ever Experiencing Infertility or Difficulty Staying Pregnant

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## Abstract

**Introduction**—Information on the health-related quality of life (HRQOL) for women with infertility is limited and does not account for the co-occurrence of chronic conditions or emotional distress.

**Methods**—We used data from state-added questions on reproductive health included in the 2013 Behavioral Risk Factor Surveillance System in seven states. HRQOL indicators included: self-reported health status; number of days in the past 30 days when physical and mental health was not good; number of days in the past 30 days that poor physical or mental health limited activities. We computed rate ratios for HRQOL for women ever experiencing infertility or difficulty staying pregnant compared with women never reporting these conditions; interactions with chronic conditions and depressive disorders were assessed.

**Results**—Of 7,526 respondents aged 18–50 years, 387 (4.9%) reported infertility only and 339 (4.3%) reported difficulty staying pregnant only. Infertility was associated with an increase in average number of days with poor physical health for women with chronic conditions [rate ratio (RR) 1.85, 95% confidence interval (CI) 1.04–3.29] but was protective for women without chronic conditions (RR 0.47, 95% CI 0.29–0.75). Difficulty staying pregnant was associated with an increase in average number of days of limited activity among both women with chronic conditions (RR 2.14, 95% CI 1.32–3.45) and women with depressive disorders (RR 1.72 95% CI 1.14–2.62).

**Discussion**—Many HRQOL measures were poorer for women who had infertility or difficulty staying pregnant compared to their counterparts; the association was modified by presence of chronic conditions and depressive disorders.

## Introduction

Approximately 11% of US women 15–44 years of age are unable to get pregnant or carry a baby to term (Chandra et al. 2013). A diagnosis of infertility and corresponding medical treatments can lead to emotional distress and increase the risk for developing depression

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and anxiety, particularly when treatments are not successful (Holley et al. 2015; Volgsten et al. 2008; Williams et al. 2007). Many factors associated with infertility, such as chronic conditions (e.g., diabetes or cancer), obesity, and smoking, can also negatively impact the physical and mental health status of women (Homan et al. 2007; Macaluso et al. 2010).

While there are studies on the psychological effects of infertility, such as stress, depression, and anxiety (Cousineau and Domar 2007; Greil et al. 2011; Kolte et al. 2015; Luk and Loke 2015; Monga et al. 2004; Schmidt 2006), many are limited to women seeking treatment, usually those undergoing vitro fertilization (Boivin et al. 2011; Pasch et al. 2012; Vahratian et al. 2011; Verhaak et al. 2007). Moreover, information on the overall health status of the general population of US women with infertility is lacking, although results from a population-based study of infertile and fertile women in Norway suggests that infertility was associated with poor self-reported health and functional impairment (Rostad et al. 2014).

The Behavioral Risk Factor Surveillance Survey (BRFSS), a telephone survey that collects state-specific information on health behaviors and chronic conditions for US residents, includes a series of questions on an individual's perceived health status and mental and physical functioning that can be used to assess health related quality of life (HRQOL) (Behavioral Risk Factor Surveillance System 2014). The HRQOL construct is an established indicator of service needs and a predictor of morbidity and mortality (DeSalvo et al. 2006; Dominick et al. 2002). Furthermore, the individual components of the HRQOL construct have been shown to be predictors of adverse health outcomes (Dominick et al. 2002). In 2013, seven states added questions on infertility or difficulty staying pregnant to the BRFSS. We aimed to use the HRQOL indicators to separately compare the health status of women reporting having ever experienced either infertility or difficulty staying pregnant to women that did not report either of these conditions. We hypothesized that women who ever had infertility or difficulty staying pregnant would have poorer HRQOL than women who never had these conditions and that ever having chronic conditions or a diagnosis of depressive disorder would modify this association.

## Methods

The data used for this study were derived from the 2013 BRFSS, a cross-sectional health-related telephone survey that collects state-specific data on risk behaviors and preventive health practices for all 50 states, Washington DC, Puerto Rico, Guam, and US Virgin Islands (Behavioral Risk Factor Surveillance System 2014). Both landline and cellular telephone surveys have been included in the BRFSS since 2011. For the landline telephone survey, a randomly selected adult living in the household is interviewed. The cellular telephone survey collects data from an adult without an alternate landline who resides in a private residence or college housing. The BRFSS questionnaire includes a core component that consists of a standard set of questions used by all states, optional modules on specific topics that states can elect to use, and state-added questions developed by individual states. During 2013, seven states (Connecticut, Kentucky, Massachusetts, Mississippi, Ohio, Texas, and Utah) incorporated state-added questions on reproductive health for women ages 18–50 that included questions on prior pregnancies and live births, prior vaginal and cesarean

deliveries, childbearing intentions, contraceptive use during last sexual intercourse, and having ever experienced infertility or difficulty staying pregnant.

Women who reported that they had ever experienced infertility (inability to become pregnant after a year of trying) and those who ever had difficulty staying pregnant after a year of trying were included in the study group. Women who reported that they never tried to get pregnant were excluded because infertility status for those women may not be known. We also excluded women who reported that infertility was experienced only by their spouse, both partners, or was undetermined were excluded so we could examine outcomes for couples with female infertility or recurrent pregnancy loss only. Women reporting both infertility and difficulty staying pregnant were also excluded so that separate estimates could be derived for each group. The comparison group included women with no report of infertility or difficulty staying pregnant among women that had ever tried to get pregnant.

We evaluated four health-related quality of life (HRQOL) indicators: (1) self-reported general health status, (2) number of days in the past 30 days when physical health was not good, (3) number of days in the past 30 days when mental health was not good, (4) number of days in the past 30 days that poor physical or mental health limited usual activities (among those reporting physical or mental health limitations). Responses to the health status question were categorized as fair or poor versus good, very good or excellent. Number of days were evaluated as count variables.

We assessed demographic (age, race/ethnicity, marital status, education, annual household income, and health care coverage) and health characteristics (body mass index (BMI), ever smoked at least 100 cigarettes, respondent was ever told they have a depressive disorder, and respondent was ever told they have a chronic condition) of women with infertility and women who had difficulty staying pregnant and compared these with women who did not report either infertility or difficulty staying pregnant. Women were classified as having a chronic condition if they were ever told they had arthritis, asthma, cardiovascular disease (heart attack, angina or coronary heart disease, or stroke), cancer (excluding skin), chronic obstructive pulmonary disease, or diabetes. We used 2-tailed Satterthwaite adjusted Chi square tests and confidence intervals around the proportions to compare differences in the distribution of these characteristics for both women with infertility and women with difficulty staying pregnant versus women who had never experienced either infertility or difficultly staying pregnant.

Next, we calculated propensity scores to improve the comparability of the study and comparison groups with regard to baseline characteristics. We constructed two separate logistic regression models with infertility and difficulty staying pregnant as outcomes and never experiencing either infertility or difficulty staying pregnant as the reference value. Predictors included age, race, marital status, education, health care coverage, smoking, and the interaction of smoking and age. Household income and BMI were not included due to a high proportion of missing data (12.8 and 8.4%, respectively). The propensity score models did not include clustering and stratification information associated with the complex sample design of the BRFSS as the models are intended to account for covariate imbalance and not to provide population-based estimates (Dugoff et al. 2014). However, the survey weight

was included as an additional predictor to capture other factors related to the probability of response (Dugoff et al. 2014). Using the estimated propensity scores, we applied the inverse probability of treatment weighting (IPTW) method and assessed covariate imbalance using standardized differences (Austin and Stuart 2015). After IPTW, all standardized differences were <10%, suggesting negligible imbalance.

We calculated the prevalence of the four HRQOL indicators separately for women with infertility and for women with difficulty staying pregnant compared with those with neither infertility nor difficulty staying pregnant. We used predicted marginal proportions from logistic regression models to compute prevalence ratios comparing fair or poor health status for the study and comparison groups (Bieler et al. 2010). Negative binomial regression was used to compute rate ratios for number of days with poor physical or mental health or activity limitations. We assumed *a priori* that chronic conditions and depressive disorders would modify the association between infertility or difficulty staying pregnant and HRQOL; thus we constructed two models for each outcome. One model included the interaction of infertility or difficulty staying pregnant and chronic conditions, and the other included the interaction of infertility or difficulty staying pregnant and depressive disorders.

All estimates were adjusted to account for the BRFSS complex survey sample design. The propensity scores were incorporated into the analysis by multiplying the BRFSS sample weight and the IPTW to derive a composite weight (Dugoff et al. 2014) SAS version 9.3, SUDAAN version 11.0 and Stata version 14 were used for the analyses. *P*-values <0.05 were considered statistically significant. Due to small sample size for some outcomes, we calculated relative standard errors (RSEs) (standard error/prevalence estimate × 100) and flagged estimates with high variability (RSE between 30–50%). Estimates with RSEs >50% were not shown. The BRFSS is a publicly available database that does not contain direct personal identifiers; thus institutional review board approval was not needed.

## Results

A total of 8,691 women aged 18–50 years participated in the BRFSS reproductive health module. Of those, 992 [10.1, 95% confidence interval (CI) 8.5–12.0] women indicated that they had ever experienced infertility and/or difficulty staying pregnant, and 6,800 reported never having either infertility or difficulty staying pregnant (Fig. 1). Among women who reported ever having infertility and/or difficulty staying pregnant, 387 reported only infertility, 339 reported only difficulty staying pregnant, and 218 reported both. After excluding women who reported both infertility and difficulty staying pregnant, the final sample included 7526 women. The weighted prevalence estimates of ever experiencing infertility only or difficulty staying pregnant only were 4.9, 95% CI 3.7–6.5 and 4.3, 95% CI 3.3–5.5, respectively. The mean response rate for the BRFSS in the seven states included in the analysis was 44.2%.

Compared with women who never experienced either infertility or difficulty staying pregnant, those with infertility were more likely to be older, married, and have health care coverage (Table 1). Women with infertility also had a higher prevalence of chronic conditions than women without (46.7 vs. 30.2%). Similarly, women reporting difficulty

staying pregnant had a higher prevalence of lifetime smoking than women without infertility or difficulty staying pregnant (50.7 vs. 33.9%). Approximately 40.5% of women with difficulty staying pregnant reported ever being diagnosed with a depressive disorder compared with 25.1% of women without infertility or difficulty staying pregnant.

On average, women ever experiencing infertility reported twice as many days with poor physical health in the past 30 days than women who never experienced infertility or difficulty staying pregnant [6.8 vs. 3.2 days, rate ratio (RR) 2.13, 95% CI 1.26–3.59] (Table 2). Similar differences in number of days with poor physical health were observed for women with a history of chronic conditions (RR 1.85, 95% CI 1.04–3.29) or depressive disorders (RR 2.01, 95% CI 1.33–3.03). In contrast, among women without chronic conditions, women with infertility had fewer days with poor physical health (RR 0.47, 95% CI 0.47–0.75). Among women without depressive disorders, those with infertility were less likely to report fair or poor health status than women without infertility or difficulty staying pregnant (4.0 vs. 10.1%, RR 0.40, 95% CI 0.18–0.90).

Overall, women who reported ever having difficulty staying pregnant reported 1.8 times as many days with poor mental health in the past month compared with women without report of infertility or difficulty staying pregnant (8.1 vs. 4.5 days, RR 1.81, 95% CI 1.14–2.89) (Table 2). Likewise, women with difficulty staying pregnant reported nearly twice as many days with limited activity as women in the comparison group (8.6 vs. 4.3 days, RR 1.98, 95% CI 1.33–2.96). Compared with women without infertility or difficulty staying pregnant, women with difficulty staying pregnant had a higher average number of days of limited activity overall; however when stratified, the association only was significant among women with chronic conditions (RR 2.14, 95% CI 1.32–3.45) and women with depressive disorders (RR 1.72 95% CI 1.14–2.62). In addition, ever having difficulty staying pregnant was associated with fair or poor health status among women with depressive disorders only (RR 1.68, 95% CI 1.05–2.68).

## Discussion

In general, our findings suggest that women who reported ever experiencing infertility or difficulty staying pregnant had lower health-related quality of life measures than women who never experienced infertility or difficulty staying pregnant. However, for women with a history of infertility, this association was modified by a history of chronic conditions or depressive disorders. Notably, women who ever had infertility had a twofold increase in the average number of days with poor physical health during the past month compared with women who never had infertility or difficulty staying pregnant. Whereas this association was evident among women with a history of chronic conditions and those with a history of depressive disorders, the converse was true for women who never had these conditions. As such, it is possible that a history of chronic conditions or depressive disorders and infertility may have a synergistic negative effect on physical health. However, because we are unable to assess the temporality of the chronic conditions in relation to the onset or continuation of infertility or difficulty staying pregnant due to the cross-sectional nature of BRFSS, we were unable to determine the excess risk of poor health attributable to either condition.

Overall, women who ever experienced difficulty staying pregnant had more days with poor mental health and activity limitations than women without infertility or difficulty staying pregnant. When stratified by ever diagnosis of chronic conditions or a depressive disorder, women ever experiencing difficulty staying pregnant generally had poorer HRQOL than women who never experienced infertility or difficulty staying pregnant; however some associations did not reach statistical significance potentially due to diminished sample size within the strata. The consistency of this association suggests that factors other than chronic conditions or depressive disorders may contribute to poorer HRQOL in these women. Indeed, the etiology of difficulty staying pregnant, also known as recurrent pregnancy loss (defined as two or more failed clinical pregnancies), is largely unknown with a diagnosis confirmed in only half of the cases (American Society for Reproductive Medicine 2012). In addition, recurrent pregnancy loss is associated with high rates of emotional stress, depression and anxiety such that a psychological etiology has been suggested but not confirmed (Kolte et al. 2015; American Society for Reproductive Medicine 2012).

In our sample, the prevalence of ever having infertility only among women 18–50 years that have ever tried to get pregnant was 4.9%. Due to differences in the definition of infertility, our estimate cannot be compared with those derived from other national surveys, such as the National Survey of Family Growth. We found that 4.3% of women reported ever having difficulty staying pregnant only which is slightly lower than other published estimates suggesting that less than 5% of women will have two consecutive miscarriages (American Society for Reproductive Medicine 2012). Our estimates of the prevalence of chronic conditions among women with and without infertility or difficulty staying pregnant (range: 30.2–46.7%) are also generally consistent with national estimates indicating that approximately half of all adult women in the US have one or more chronic conditions (Ward et al. 2014).

The prevalence of depressive disorders in our sample ranged from 25.1% for women without infertility or difficulty staying pregnant to 40.5% for women with difficulty staying pregnant; these estimates are consistent with other reports using BRFSS data (Heo et al. 2008) but are higher than estimates from a nationally representative survey of all women (Pratt and Brody 2014) and clinic-based studies of women with recurrent pregnancy loss (Kolte et al. 2015) or those undergoing infertility treatment (Vahratian et al. 2011; Volgsten et al. 2008).

Our findings are subject to several limitations. First, women's accounts of whether they had ever experienced infertility and difficulty staying pregnant were based on self-report and may be subject to misclassification due to recall bias or interpretation of the definition of infertility. Recurrent pregnancy loss is clinically defined as 2 failed clinical pregnancies; however the BRFSS survey question did not define difficulty staying pregnant nor did it specify a minimum number of failed pregnancies. Next, the questions used to create the HRQOL construct could be affected by recall bias or subjective interpretation of poor physical or mental health and activity limitations; however, several studies have shown the HRQOL is reliably correlated with morbidity, mortality and use of health care services (DeSalvo et al. 2006; Dominick et al. 2002; Hennessy et al. 1994) and that the individual measures have good reliability and internal validity (Andresen et al. 2003; Pierannunzi

et al. 2013) Another important limitation is that we could not assess the temporality of infertility or difficulty staying pregnant in relation to the HRQOL measures. A history of infertility or pregnancy loss, particularly if the condition was resolved, may not be directly relevant to report of physical and mental health impairment within the past month and, for couples undergoing infertility treatment, HRQOL may vary over the course of treatment. Likewise, due to the cross-sectional nature of the survey we could not evaluate timing of the diagnosis of chronic conditions and depressive disorders. Also, small sample size precluded assessment of the joint effects of chronic conditions and depressive disorders on HRQOL for women with infertility and assessment of HRQOL for women with both infertility and recurrent pregnancy loss. Diminished sample size also prevented assessment of differences in HRQOL for women with primary versus secondary infertility. Our estimates are only representative of the seven states that implemented the optional module and may be affected by selection bias. Finally, our propensity scores models could not account for baseline differences in income and BMI due to high frequency of missing responses.

## Conclusions

Infertility and difficulty staying pregnant are stressful events that are associated with decreased physical and mental health quality of life. We found that a history of chronic conditions or depressive disorder mediated the association between infertility and HRQOL. However, women with difficulty staying pregnant tended to have poorer HRQOL irrespective of whether chronic conditions or depressive disorders were present, although many associations did not reach statistical significance due to small sample size. Given the substantial emotional burden associated with infertility, the health risks associated with its treatment, and the known correlation with chronic conditions (Centers for Disease Control and Prevention 2014), the quality of life for women and men affected by infertility is an important public health concern. As noted in CDC's *National Public Health Action Plan for the Detection, Prevention, and Management of Infertility*, more studies are needed to better understand the mechanisms by which chronic conditions may contribute to infertility risks and exacerbate adverse health outcomes. To maximize effectiveness, programs and policies for the prevention and treatment of infertility should incorporate strategies related to chronic disease prevention and health promotion.

## Acknowledgments

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## Significance

**What is already known on this subject?**

Infertility and the medical treatments to overcome infertility have been found to be associated with emotional distress. Infertility often co-occurs with chronic conditions which can also have negative impacts on physical and mental health.

**What this study adds?**

Infertility and difficulty staying pregnant were associated with decreased physical and mental health quality of life and this association was mediated by chronic conditions or depressive disorders. However, women with difficulty staying pregnant tended to have poorer health status regardless of whether chronic conditions or depressive disorders were present.
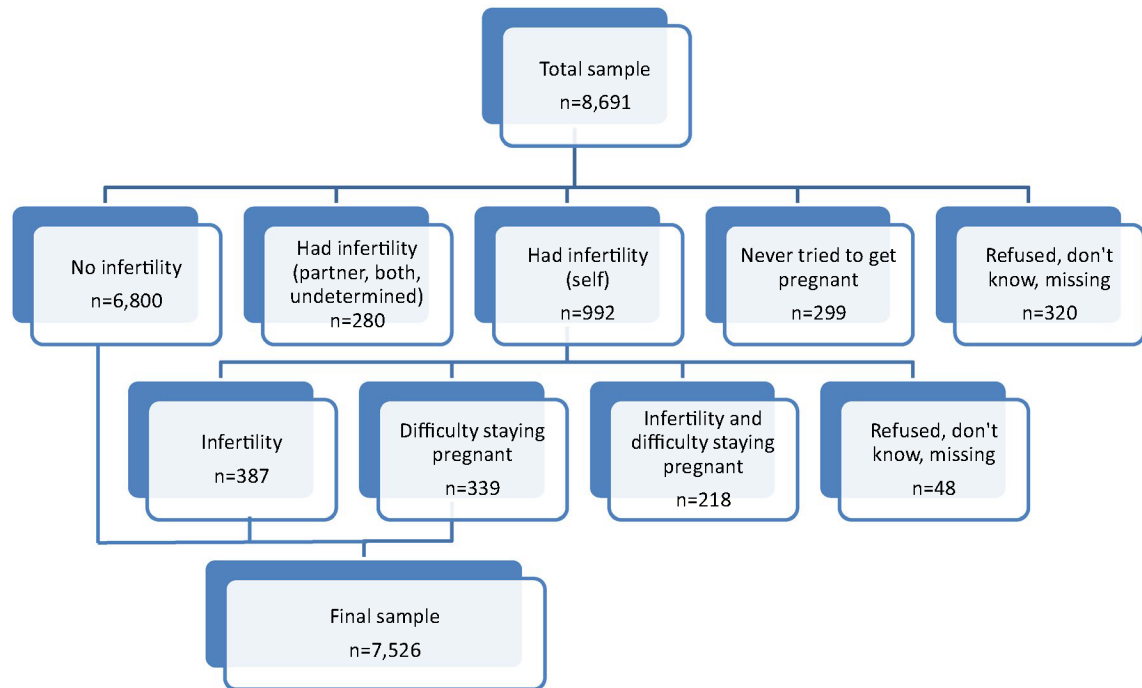
**Fig. 1.**
Diagram of study sample selection, female respondents aged 18–50, state-added reproductive health questions, 2013 BRFSS

**Table 1**

Characteristics of women 18–50 years with and without report of infertility or difficulty staying pregnant, 2013 BRFSS

| Characteristic | Neither infertility nor difficulty staying pregnant | | Infertility | | Difficulty staying pregnant | |
|---|---|---|---|---|---|---|
| | Unweighted n | Weighted %[a] (95% CI) | Unweighted n | Weighted %[a] (95% CI) | Unweighted n | Weighted %[a] (95% CI) |
| Overall | 6800 | | 387 | | 339 | |
| Age | | | | | | |
| 18–29 | 1523 | 33.1 (30.5–35.9) | 46 | 13.0 (7.3–22.1)[b] | 66 | 38.8 (26.1–53.4) |
| 30–34 | 1009 | 18.0 (15.5–20.7) | 52 | 19.8 (10.3–34.6) | 47 | 17.8 (10.4–28.7) |
| 35–39 | 1123 | 13.6 (11.9–15.5) | 76 | 10.6 (6.9–15.9) | 60 | 14.3 (9.1–21.8) |
| 40–44 | 1280 | 16.6 (14.7–18.8) | 87 | 29.3 (17.2–45.3) | 66 | 13.3 (8.8–19.7) |
| 45–50 | 1865 | 18.8 (16.9–20.8) | 126 | 27.4 (17.0–41.0) | 100 | 15.7 (10.8–22.4) |
| Race/ethnicity | | | | | | |
| Non-Hispanic white | 4953 | 57.8 (54.9–60.7) | 324 | 66.7 (51.3–79.2) | 269 | 60.6 (46.3–73.3) |
| Non-Hispanic black | 864 | 13.2 (11.2–15.5) | 23 | 9.1 (4.0–19.6)[d] | 33 | 10.3 (5.4–19.0)[d] |
| Hispanic | 688 | 23.9 (21.3–26.7) | 18 | 11.1 (4.6–24.4)[d] | 24 | 24.7 (12.7–42.6)[d] |
| Other | 295 | 5.1 (4.1–6.3) | 22 | 13.1 (5.3–29.1)[d] | 13 | 4.4 (1.8–10.2)[d] |
| Marital status | | | | | | |
| Married/coupled | 3922 | 54.9 (52.1–57.7) | 287 | 74.3 (62.3–83.5)[b] | 226 | 64.7 (53.1–74.7) |
| Divorced/separated/widowed | 1164 | 15.2 (13.4–17.2) | 74 | 13.5 (8.1–21.5) | 65 | 12.3 (7.6–19.4) |
| Never married | 1688 | 29.9 (27.3–32.6) | 26 | 12.2 (5.8–24.1)[d] | 48 | 23.0 (14.8–33.9) |
| Education | | | | | | |
| High school graduate or less | 4187 | 75.0 (72.9–77.0) | 193 | 64.6 (50.6–76.4) | 187 | 75.6 (67.3–82.4) |
| College graduate or more | 2600 | 25.0 (23.1–27.1) | 194 | 35.5 (23.6–49.4) | 152 | 24.4 (17.6–32.7) |
| Annual household income | | | | | | |
| <$25,000 | 1770 | 36.6 (33.7–39.5) | 77 | 28.7 (17.0–44.0) | 86 | 41.9 (28.6–56.5) |
| $25,000–74,999 | 2216 | 33.2 (30.5–36.1) | 115 | 24.6 (14.5–38.5) | 111 | 31.1 (20.8–43.7) |
| $75,000 | 1934 | 30.2 (27.4–33.2) | 156 | 46.8 (32.3–61.8) | 119 | 27.1 (19.2–36.7) |
| Health care coverage | | | | | | |
| Yes | 5623 | 75.2 (72.6–77.7) | 341 | 92.9 (88.1–95.8)[b] | 283 | 82.5 (72.2–89.6) |

| Characteristic | Neither infertility nor difficulty staying pregnant | | Infertility | | Difficulty staying pregnant | |
|---|---|---|---|---|---|---|
| | Unweighted n | Weighted %[a] (95% CI) | Unweighted n | Weighted %[a] (95% CI) | Unweighted n | Weighted %[a] (95% CI) |
| No | 1149 | 24.8 (22.3–27.4) | 46 | 7.1 (4.2–11.9) | 54 | 17.5 (10.5–27.8) |
| BMI | | | | | | |
| <25 (underweight/normal) | 2698 | 42.7 (39.7–45.8) | 143 | 32.1 (20.8–46.1) | 125 | 41.4 (31.0–52.6) |
| 25–29 (overweight) | 1713 | 27.5 (24.8–30.3) | 95 | 33.9 (20.0–51.2) | 83 | 23.1 (15.5–32.9) |
| 30 (obese) | 1814 | 29.8 (27.2–32.6) | 122 | 34.0 (21.3–49.5) | 93 | 35.5 (25.7–46.8) |
| Smoked 100 cigarettes in life | | | | | | |
| Yes | 2434 | 33.9 (31.4–36.6) | 138 | 35.5 (22.7–50.8) | 151 | 50.7 (38.3–63.0)[b] |
| No | 4340 | 66.1 (63.4–68.6) | 248 | 64.5 (49.2–77.3) | 188 | 49.4 (37.0–61.7) |
| Ever diagnosed with depressive disorder | | | | | | |
| Yes | 1727 | 25.1 (22.8–27.5) | 135 | 38.1 (24.9–53.5) | 119 | 40.5 (29.5–52.6)[b] |
| No | 5051 | 74.9 (72.5–77.2) | 252 | 61.9 (46.6–75.1) | 220 | 59.5 (47.4–70.5) |
| Ever diagnosed with one or more chronic condition[c] | | | | | | |
| Yes | 2329 | 30.2 (27.8–32.8) | 152 | 46.7 (32.4–61.5)[b] | 135 | 40.9 (29.8–53.0) |
| No | 4348 | 69.8 (67.2–72.2) | 229 | 53.3 (38.5–67.6) | 195 | 59.1 (67.2–72.2) |

Missing data < 0.5% for all variables except annual household income (12.8%) and BMI (8.4%)

[a] Proportion as a percentage

[b] Chi-square P-value <0.05

[c] Chronic conditions include arthritis, asthma, cardiovascular disease (heart attack, angina or coronary heart disease, or stroke), cancer (excluding skin), chronic obstructive pulmonary disease, and diabetes

[d] Relative standard error (RSE) for the estimate is between 30–50%

**Table 2**

Prevalence of health related quality of life indicators among women 18–50 years reporting infertility or difficulty staying pregnant and those without infertility or difficulty staying pregnant, 2013 BRFSS

| Indicator | Neither infertility nor difficulty staying pregnant n = 6800 | Infertility n = 387 | | Difficulty staying pregnant n = 339 | |
| --- | --- | --- | --- | --- | --- |
| | Mean | Mean | Rate ratio[a] (95% CI) | Mean | Rate ratio[a] (95% CI) |
| Fair or poor health status (Percent, 95% CI) | 14.7 | 20.6 | 1.40 (0.82–2.40) | 21.9 | 1.48 (0.81–2.68) |
| No. days with poor mental health in the past 30 days | 4.5 | 5.6 | 1.26 (0.81–1.97) | 8.1 | **1.81 (1.14–2.89)** |
| No. days with poor physical health in the past 30 days | 3.2 | 6.8 | **2.13 (1.26–3.59)** | 5.3 | 1.67 (0.99–2.83) |
| No. days with limited activity in past 30 days | 4.3 | 6.5 | 1.51 (0.85–2.67) | 8.6 | **1.98 (1.33–2.96)** |
| Chronic conditions = yes | | | | | |
| Fair or poor health status (Percent, 95% CI) | 29.6 | 31.0[b] | 1.05 (0.54–2.03) | 33.7 | 1.14 (0.66–1.94) |
| No. days with poor mental health in the past 30 days | 6.8 | 7.9 | 1.17 (0.66–2.09) | 8.8 | 1.29 (0.83–2.02) |
| No. days with poor physical health in the past 30 days | 6.1 | 11.3 | **1.85 (1.04–3.29)** | 9.2 | 1.50 (0.87–2.57) |
| No. days with limited activity in past 30 days | 5.8 | 8.5[b] | 1.47 (0.76–2.82) | 12.5 | **2.14 (1.32–3.45)** |
| Chronic conditions = no | | | | | |
| Fair or poor health status (Percent, 95% CI) | 7.2 | 3.3[b] | 0.89 (0.31–2.51) | – | – |
| No. days with poor mental health in the past 30 days | 3.2 | 2.3 | 0.69 (0.45–1.07) | 6.7[b] | 2.04 (0.97–4.33) |
| No. days with poor physical health in the past 30 days | 1.9 | 0.9 | **0.47 (0.29–0.75)** | 2.1[b] | 1.15 (0.50–2.66) |
| No. days with limited activity in past 30 days | 2.9 | 1.9 | 0.66 (0.37–1.15) | 4.5[b] | 1.55 (0.70–3.42) |
| Diagnosed with depressive disorder = yes | | | | | |
| Fair or poor health status (Percent, 95% CI) | 27.5 | 42.5 | 1.55 (0.94–2.55) | 46.1 | **1.68 (1.05–2.68)** |
| No. days with poor mental health in the past 30 days | 10.8 | 10.5 | 0.98 (0.63–1.51) | 13.9 | 1.29 (0.91–1.81) |
| No. days with poor physical health in the past 30 days | 6.9 | 13.8 | **2.01 (1.33–3.03)** | 9.5 | 1.38 (0.83–2.29) |
| No. days with limited activity in past 30 days | 7.4 | 10.7 | 1.44 (0.89–2.31) | 12.9 | **1.72 (1.14–2.62)** |
| Diagnosed with depressive disorder = no | | | | | |
| Fair or poor health status (Percent, 95% CI) | 10.1 | 4.0[b] | **0.40 (0.18–0.90)** | 7.7[b] | 0.75 (0.30–1.92) |
| No. days with poor mental health in the past 30 days | 2.4 | 1.9 | 0.81 (0.51–1.29) | 4.7[b] | 1.98 (0.93–4.21) |
| No. days with poor physical health in the past 30 days | 1.9 | 1.4[b] | 0.73 (0.34–1.57) | 2.8[b] | 1.44 (0.72–2.89) |
| No. days with limited activity in past 30 days | 2.3 | 1.3 | 0.58 (0.32–1.03) | 3.8 | 1.66 (0.98–2.80) |

Inverse probability of treatment weighting applied to all estimates

Bold indicates *P*-value <0.05

–Relative standard error (RSE) > 50%; data not shown

[a] Neither infertility nor difficulty staying pregnant is referent

[b] Relative standard error (RSE) for the estimate is between 30–50%