

# Self-Rated Health and Health Care Use Among Women With Histories of Gestational Diabetes Mellitus

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**OBJECTIVE** — To examine self-rated health and health care utilization among women with a history of gestational diabetes mellitus (hGDM).

**RESEARCH DESIGN AND METHODS** — This study was a cross-sectional analysis of the 2006 National Health Interview Survey of parous women with ( $n = 370$ ) and without ( $n = 6,695$ ) hGDM.

**RESULTS** — Women with hGDM reported fair or poor health status and  $\geq 10$  office visits in the past year more frequently than women without hGDM. The higher prevalence of obesity in hGDM women accounted for their poorer self-rated health after adjustment for other demographic factors. Whereas the association between hGDM and more frequent office visits was reduced after adjustment for demographic factors including health insurance, hGDM was still associated with a lower odds of contact with a mental health professional.

**CONCLUSIONS** — Because of obesity, women with hGDM have poorer self-rated health than women without hGDM. Contact with mental health providers was reduced compared with women without hGDM.

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Self-rated health can act as a global summary measure of health and has been found to correlate with mortality (1) and health care use (2) independent of chronic disease. Studies that examine self-rated health among women with a history of gestational diabetes mellitus (hGDM) conflict (3–6), and health care use among hGDM women has not been reported. Women with hGDM may have poorer self-rated health than women without hGDM because of their poorer socioeconomic status (7), greater prevalence of obesity (7), and/or greater prevalence of postpartum depression (5). Therefore, we sought to determine whether women with hGDM had poorer self-rated health than parous women without hGDM, whether any differences persisted after adjustment for demographic factors and consideration of BMI and mental health distress, and whether hGDM women had

different patterns of health care use than women without hGDM.

## RESEARCH DESIGN AND METHODS

Eligible participants were parous female respondents 18–50 years of age with self-reported information on hGDM, self-rated health, and health care use who participated in the 2006 National Health Interview Survey (NHIS), a cross-sectional household interview survey (8). Women with current diabetes ( $n = 273$ ) were excluded. The study sample consisted of 6,695 parous women without diabetes or GDM and 370 women with hGDM.

Women were asked to rate their current health as excellent, very good, good, fair, or poor and were asked about the number of visits to an emergency room or other types of outpatient visit. BMI was assessed using self-reported weight and height. Health in-

surance was classified as private, Medicaid, other, and no coverage. Mental health distress was ascertained using the NHIS six-item Non-Specific Distress Battery, and respondents were classified as experiencing high or high-moderate, moderate, or low-moderate distress (9).

The SURVEYLOGISTIC procedure in SAS was used to assess the association between hGDM and the presence of fair/poor health and the several measures of health care use, with the addition of health insurance in demographic variables. For all analyses, the data were weighted to adjust for the survey design, sampling, coverage, and response rates.

**RESULTS** — Compared with women without hGDM, women with hGDM were older and more likely to be Hispanic or Latina, less likely to be African American, and more likely to be married and to have an annual household income of less than \$20,000 per year. Women with hGDM were more likely to have Medicaid than women without hGDM (16 vs. 9%). Women with hGDM were more likely to be obese than women without hGDM (41 vs. 23%). Women with and without hGDM reported similarly low distress levels (3 vs. 5%).

A total of 12% of hGDM women and 7% of non-GDM women reported fair or poor self-rated health, 21% of hGDM women versus 14% of non-GDM women reported  $\geq 10$  office visits in the past year, and 5% of hGDM women versus 8% of non-GDM women reported any contact with a mental health professional in the past year.

In adjusted analyses (Table 1), the association between hGDM and fair/poor self-rated health persisted after adjustment for demographic variables, but was no longer significant after consideration of BMI. The association between hGDM and  $\geq 10$  office visits in the past year was no longer significant after consideration of demographic variables, including health insurance. Although women with hGDM were less likely to report any contact with a mental health professional, this was not because of demographic factors, BMI, or mental health symptoms.

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Table 1—Associations between a history of GDM, self-rated health, and health care use

	Fair or poor health*	>10 office visits in the past year†	>2 emergency department visits in the past year†	Any contact with mental health providers†	Any contact with general practitioner†	Any contact with women's health providers†
Unadjusted	1.8 (1.2–2.8)	1.7 (1.2–2.4)	1.3 (0.87–1.9)	0.56 (0.32–0.98)	1.2 (0.91–1.6)	1.1 (0.85–1.5)
Adjusted for demographic factors	1.6 (1.01–2.6)	1.4 (1.0–2.1)	1.2 (0.81–1.8)	0.46 (0.26–0.82)	1.1 (0.80–1.5)	1.1 (0.78–1.5)
Adjusted for above and BMI‡	1.4 (0.82–2.3)	1.3 (0.96–2.0)	1.1 (0.73–1.7)	0.45 (0.24–0.81)	0.99 (0.73–1.3)	1.1 (0.78–1.5)
Adjusted for above and mental health distress	1.3 (0.72–2.2)	1.3 (0.84–1.9)	1.0 (0.67–1.6)	0.36 (0.19–0.70)	0.97 (0.71–1.3)	1.1 (0.77–1.5)

Data are odds ratios (95% CI). \*Demographic factors include age (years, continuous), race/ethnicity (non-Hispanic white, Hispanic, African American, Asian, other), marital status (married, widowed/divorced/separated, never married, living with partner), education (less than high school, high school, some college, college, or more), and income (<\$20,000, \$20,000–\$44,999, \$45,000–\$74,999, ≥\$75,000). †Demographic factors include above and health insurance (no insurance, private insurance, Medicaid, other). ‡BMI adjusted for as <25, 25–29.9, and ≥30 kg/m<sup>2</sup>.

**CONCLUSIONS**— While best known for its association with future adverse metabolic effects, GDM is also associated with adverse self-rated health (5,6), an independent indicator of future health (1). We found that even in the absence of diabetes, women with hGDM have poorer self-rated health than women without hGDM, and this was explained by hGDM women's greater BMI. We also found that women with hGDM tend to be greater health care users, reporting more frequent outpatient visits than women without hGDM, due to their demographic profile. Despite their poorer self-rated health and more frequent outpatient visits, women with hGDM were less likely to have any contact with a mental health professional in the past year.

Our results are in accord with other reports that have found that obesity adversely affects self-rated health, even after consideration of other demographic factors, and even in the absence of other chronic disease conditions (10). To our knowledge, no previous reports have examined health care use in women with hGDM, who reported a greater number of office visits in the past year but less frequently reported contact with a mental health provider. The explanations for reduced contact with mental health professionals among GDM women, despite their poor self-rated health, and after considerations of insurance and other demographic factors, are speculative.

The strengths of this study include its use of a national, population-based dataset and thus its ability to assess utilization even among adults without insurance. However, this limits its utilization measures, which consequently rely on self-reported use. We did not have information on other aspects of the GDM pregnancy that

might have helped us determine which GDM women were at greatest risk for poorer self-rated health, including time since pregnancy, Cesarean section, use of insulin during the pregnancy, and subsequent illness in the children, although the inclusion of this information would be expected to bias our report to the null. Finally, the cross-sectional design limits our ability to determine the impact of GDM women's poorer self-rated health upon future disease outcomes, most notably diabetes and mortality.

We conclude that even in the absence of diabetes, women with hGDM have poorer self-rated health compared with women without hGDM, due to their greater prevalence of obesity. While women with hGDM frequently use outpatient health care, they are less likely to use mental health services, even after consideration of obesity, insurance, and mental health distress symptoms. Future studies should examine the associations between self-rated health and future morbidity and mortality. Additional studies should also explore use of and access to mental health services among women with hGDM, particularly those with mental health impairment that might be amenable to intervention.

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