

Gender Differences across Race/Ethnicity in Use of Health Care among Medicare-Aged Americans

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ABSTRACT

Background: Despite Medicare, medical services are not equally used by elderly women and men in the United States. Our purpose is to examine gender differences in healthcare utilization among older Americans, the persistence of gender differences across race/ethnicity, and the roles of sociodemographic, health, and economic factors to explain differences.

Methods: Data from the 1998–2000 Health and Retirement Study are used to investigate gender differences in use of hospital, outpatient surgery, home health, and physician services. Analyses are controlled for sociodemographic, health (medical conditions, functional health), and economic (income, wealth, education, health insurance) factors.

Results: Women are significantly less likely to use hospital service (odds ratio [OR]=0.83) and outpatient surgery (OR=0.85) but are more likely to use home health care (OR=1.27) and physician services (OR=1.45), controlling for sociodemographics. Differences in health needs and economic resources partially mediate the gender differences in physician and home healthcare utilization but do not explain the gender differences in hospital service and outpatient surgery. Notably, African American, Hispanic, and white women compared with men show significantly less use of hospital services.

Conclusions: Gender differences in medical use vary according to the type of services used and are largely consistent across racial/ethnic groups. As the size of the Medicare population increases, promoting equitable use of healthcare resources by both women and men is an important issue in developing healthcare policy and designing public health strategies.

INTRODUCTION

MEDICAL SERVICE CONSUMPTION by older adults is an important public policy issue. In 2000, people aged ≥ 65 years comprised 12% of the to-

tal resident population of the United States. By 2050, this figure is projected to rise to 20%.¹ Older people are heavy users of medical services because of a disproportionately high prevalence of chronic and acute health conditions, which leads

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to higher health expenses.¹ Universal health insurance for Americans aged ≥ 65 years is part of U.S. public policy via Medicare. Evidence suggests, however, that medical services are not equally used across different demographic cohorts.²⁻⁴

Women constitute the majority of Medicare beneficiaries aged ≥ 65 .⁵ Although women are more likely to live longer and have more disabilities compared with men, they tend to have fewer financial resources, which limits their ability to pay for medical services.^{1,5} It is well documented that women are less likely than men to receive elective inpatient and high-technology procedures.⁶⁻⁹ There is also evidence that women are more likely to use primary care¹ and home health care¹⁰ than men, although little is known about whether gender disparities persist across different racial/ethnic groups.

This study uses national data to investigate gender differences in the use of medical services. We add to the literature by investigating three questions. First, to what extent are gender differences in healthcare use observed across racial/ethnic groups in the Medicare-aged population? Second, are gender differences consistent across different types of medical services? Third, to what extent are these gender differences explained by sociodemographic, health, and economic differences?

MATERIALS AND METHODS

This study analyzes the 1998 and 2000 longitudinal data from the Health and Retirement Study (HRS).¹¹ HRS interviews a national probability sample biennially. The 1998 HRS cohort includes 8510 whites, 1314 African Americans, and 710 Hispanics aged ≥ 65 years. This study focuses on 9088 persons who were reinterviewed in 2000 and provided self-reported healthcare utilization information over the intervening 2 years. People excluded are 906 deceased (47% women, 85% whites, 11% African Americans, and 4% Hispanics), 485 non-respondents in the 2000 interview (58% women, 10% African Americans, and 7% Hispanics), and 55 persons with insufficient baseline data.

Outcome variables

Two-year healthcare use solicited in the 2000 interview includes physician contact (emergency

room or clinic visits), hospitalization, outpatient surgery (not counting overnight hospital stays), and home medical visits (among people not residing in a nursing home). HRS provides self-reported use data, which is a common practice for large national studies of older adults' health. Comparisons of self-reported data with administrative data found that measures of any medical use were more accurate than measures of quantity, which were subject to underreporting.¹²⁻¹⁴ We, therefore, model whether any use occurred, rather than the amount of use, for each of the medical care use variables.

Baseline explanatory variables

Sociodemographic variables include gender, race/ethnicity, age, and living arrangements. Racial/ethnic groups are defined as Hispanic vs. non-Hispanic self-reports; non-Hispanics are further divided into African Americans, whites, and other. For analytical purposes, other race/ethnicity is excluded because of the small numbers ($n = 184$). Living arrangement, which captures the social support network surrounding the respondents, is classified into four categories: live with spouse, live with children, live with other persons, or live alone.

Health needs include chronic conditions and function. Chronic conditions are ascertained from an affirmative response to a physician report of conditions that include arthritis/rheumatism, cancer, diabetes, heart disease (heart attack, coronary artery disease, congestive heart failure, angina, other), hypertension, pulmonary disease (chronic bronchitis, emphysema), psychiatric problems, or stroke. Among functional limitations, physical limitation is determined by reported difficulty, inability, or avoidance of walking several blocks, climbing one flight of stairs without resting, pulling or pushing large objects, or lifting or carrying weights over 10 pounds. Activities of daily living (ADL) and instrumental ADL (IADL) limitations are ascertained from reported inability, avoidance, or receiving help/using devices to perform a task and are expected to last for 3 months or more. ADL tasks include dressing, walking across a room, bathing, eating, getting in and out of bed, and toileting. IADL tasks include preparing a hot meal, grocery shopping, making phone calls, taking medications, and managing money.

Economic access refers to a respondent's human capital, measured by education, and ability

to pay for medical care. Financial access is measured by income, wealth, and health insurance. For analytical purposes, income and wealth are dichotomized using the lowest population-weighted quartiles of \$16,800 and \$44,800, respectively. Dichotomization is based on imputed estimates of income and wealth developed by HRS only when partial information was provided.¹⁵ Health insurance is categorized into six groups: health maintenance organization (HMO) enrollment, Medicare Part A only, Medicare Part

A and B only, Medicaid, private or other government insurance, and no coverage or missing.

Statistical analysis

The HRS is a national probability sample. All analyses use person-weights, strata, and sampling error codes developed at the University of Michigan to provide valid inference to the U.S. population.^{16,17} We adjusted for potential bias due to nonresponse in 2000 by treating respon-

TABLE 1. BASELINE CHARACTERISTICS OF 1998–2000 HRS SAMPLE (N = 9088)

| | Overall | | White | | African American | | Hispanic | |
|--|-----------------------|-------------------------|-----------------------|-------------------------|----------------------|------------------------|----------------------|------------------------|
| | Male n = 3814 % | Female n = 5274 % | Male n = 3157 % | Female n = 4227 % | Male n = 403 % | Female n = 688 % | Male n = 254 % | Female n = 359 % |
| <i>Baseline (1998) characteristics</i> | | | | | | | | |
| Sociodemographics | | | | | | | | |
| Age | | | | | | | | |
| 65–74 | 59.74 | 52.94 | 59.09 | 51.82 | 63.39 | 59.88 | 66.01 | 59.76 |
| 75–84 | 33.82 | 37.06 | 34.53 | 38.17 | 27.89 | 30.65 | 29.86 | 29.45 |
| ≥85 | 6.44 | 10.00 | 6.39 | 10.01 | 8.72 | 9.47 | 4.13 | 10.78 |
| Living status | | | | | | | | |
| Live with spouse | 75.95 | 42.81 | 77.94 | 44.77 | 56.56 | 25.91 | 68.88 | 38.87 |
| Live with child | 3.97 | 11.74 | 3.39 | 9.69 | 7.92 | 24.83 | 8.37 | 23.80 |
| Live with other person | 2.38 | 4.80 | 2.07 | 3.89 | 4.26 | 12.84 | 5.05 | 6.35 |
| Live alone | 17.70 | 40.64 | 16.60 | 41.65 | 31.26 | 36.42 | 17.70 | 30.99 |
| Health needs | | | | | | | | |
| Chronic conditions: | | | | | | | | |
| None | 13.66 | 12.68 | 13.47 | 12.98 | 11.98 | 7.42 | 19.49 | 16.65 |
| Arthritis | 52.22 | 63.95 | 52.22 | 63.17 | 53.74 | 72.54 | 50.09 | 62.32 |
| Cancer | 14.27 | 12.84 | 14.81 | 13.61 | 13.11 | 8.05 | 6.56 | 8.12 |
| Diabetes | 15.65 | 13.53 | 14.95 | 11.86 | 19.08 | 24.67 | 23.11 | 22.44 |
| Heart disease | 28.28 | 21.99 | 29.08 | 22.01 | 24.88 | 25.17 | 19.00 | 16.35 |
| Hypertension | 48.52 | 54.18 | 47.37 | 52.64 | 61.41 | 69.48 | 50.35 | 53.83 |
| Pulmonary disease | 10.65 | 9.64 | 11.18 | 10.24 | 7.37 | 7.09 | 6.11 | 3.96 |
| Psychiatric | 8.29 | 15.20 | 8.11 | 15.61 | 9.24 | 12.39 | 10.10 | 18.16 |
| Stroke | 8.87 | 8.69 | 8.64 | 8.61 | 12.05 | 9.56 | 8.29 | 8.48 |
| Functional limitations: | | | | | | | | |
| Physical limitation | 36.05 | 60.83 | 34.71 | 59.05 | 46.36 | 71.69 | 44.92 | 72.16 |
| IADL (no ADL) | 5.95 | 6.40 | 5.41 | 5.95 | 7.99 | 9.42 | 12.36 | 8.70 |
| 1–2 ADL | 5.27 | 8.46 | 4.57 | 7.79 | 10.84 | 12.33 | 9.51 | 12.98 |
| 3 ADL or more | 1.58 | 2.85 | 1.42 | 2.34 | 2.09 | 6.16 | 3.76 | 5.84 |
| Economic access | | | | | | | | |
| Education <12 years | 33.74 | 31.52 | 29.02 | 26.28 | 66.93 | 57.56 | 69.17 | 74.80 |
| Household income <25th percentile | 18.54 | 39.73 | 14.00 | 34.55 | 44.34 | 70.15 | 61.47 | 74.53 |
| Family wealth <25th percentile | 17.98 | 26.04 | 12.87 | 20.75 | 51.41 | 58.42 | 59.87 | 59.37 |
| Health insurance | | | | | | | | |
| HMO | 25.91 | 22.80 | 25.48 | 22.29 | 26.54 | 22.84 | 32.68 | 31.18 |
| Medicare A only | 2.36 | 2.88 | 1.96 | 2.53 | 3.74 | 5.05 | 7.44 | 5.07 |
| Medicare A+B only | 33.20 | 38.58 | 33.98 | 40.42 | 32.90 | 31.61 | 20.01 | 19.56 |
| Any Medicaid | 3.86 | 7.62 | 2.05 | 4.78 | 10.44 | 20.52 | 26.40 | 33.23 |
| Private government | 33.64 | 27.23 | 35.85 | 29.33 | 21.85 | 18.04 | 11.55 | 7.78 |
| No/missing health insurance | 1.02 | 0.89 | 0.69 | 0.64 | 4.53 | 1.95 | 1.92 | 3.19 |

dents as another stage of sampling, using standard sampling methodology.¹⁸

Gender odds ratios (OR) and corresponding 95% confidence intervals (CI) from logistic regression are used to estimate gender effect on the probability of healthcare use. Regression models are estimated by applying Taylor series methods with between-cluster robust estimation,¹⁹ using SUDAAN software.²⁰ A series of adjusted logistic models that follow the widely used behavior model of health use²¹ first controls for sociodemographics and then further controls for health needs and economic factors. For each outcome investigated, the same cohort is employed for the hierarchical logistic models to give a stable sample size for all modeling on the same outcome. Race/ethnicity-specific ORs comparing women with men are obtained by adding interaction terms between gender and race/ethnicity.

RESULTS

The 9088 respondents in the study cohort represent a population of community-dwelling, el-

derly Americans, which is primarily female (58.9%), with an average age of 74.3 years and includes 8.1% African Americans and 5.1% Hispanics. Almost all respondents have health insurance, largely through Medicare (93.6%).

Table 1 presents baseline (1998) characteristics of this cohort by gender. Women compared with men are older and less likely to live with a spouse. Women have almost twice the rate of physical limitations but lower income and lower net wealth than men. Similar proportions of men and women have HMO enrollment. Medicaid coverage is more frequent among women, and men are more likely to hold supplemental private insurance. Most of these gender differences in the overall sample hold across racial/ethnic groups.

Figure 1 shows race/ethnicity-specific, age-adjusted use rates of health services by gender. Depending on the type of medical service, the direction of the gender difference varies. Hospital admissions were less frequent among older white, African American, and Hispanic women (25.2%, 28.0%, 28.5%) compared with men (27.2%, 29.6%, 30.0%), as were outpatient services (women 19.0%, 12.8%, 13.0% vs. men 22.5%, 13.5%, 16.6%, respec-

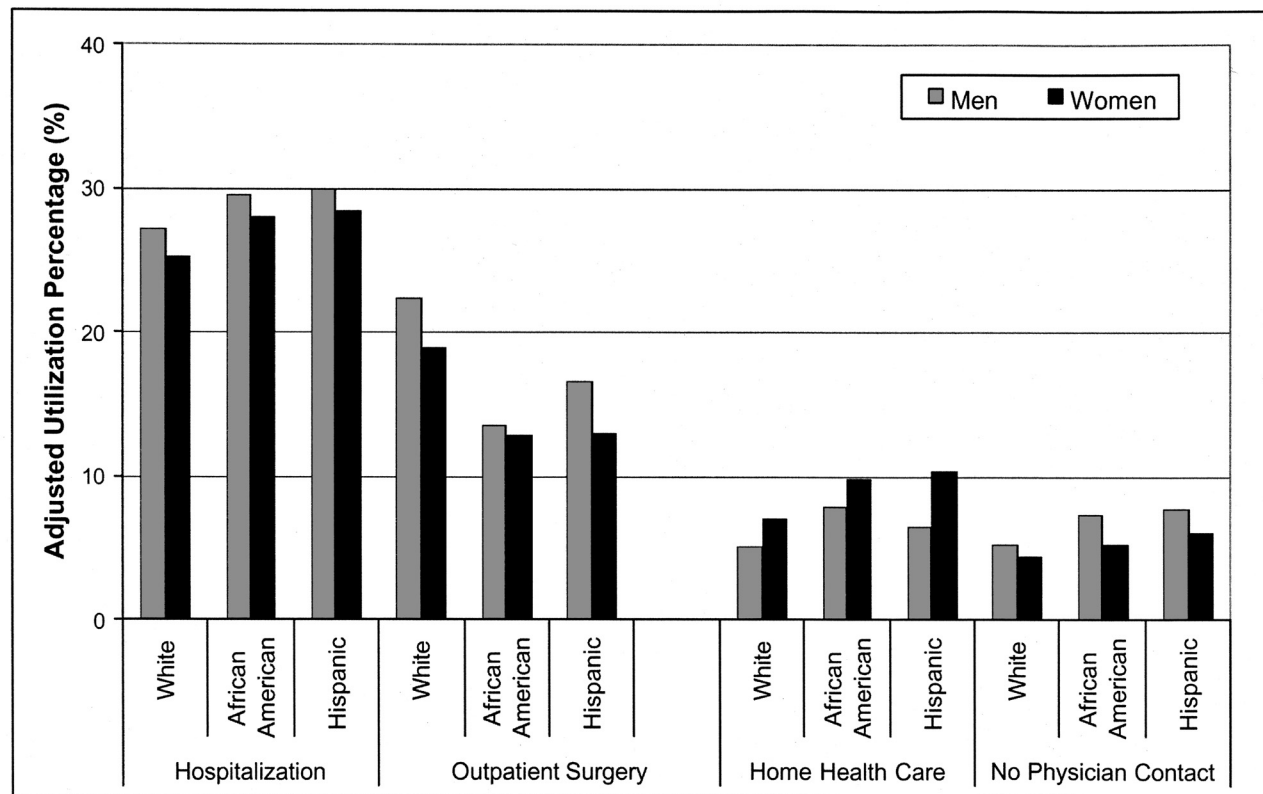


FIG. 1. Race/ethnicity-specific, age-adjusted 2-year medical use by gender (HRS, 1998–2000).

tively). However, women were more likely to use home health care (7.0%, 9.8%, 10.4%) than white, African American, and Hispanic men (5.2%, 7.9%, 6.6%), respectively. Physician care was used by all but 4.4% white, 5.3% African American, and 6.0% Hispanic women; older men were more likely not to see a physician (5.2%, 7.3%, and 7.7%, respectively). Although the gender differences represented in Figure 1 are relatively small, the direction is consistent, and the magnitude is similar across racial/ethnic groups.

Table 2 illustrates how overall and race/ethnicity-specific gender ORs change by sequentially adjusting for sociodemographics, health needs, and economic access. Overall, the significantly lower use by women compared with men of hospital services adjusted for sociodemographics (OR = 0.83) becomes more pronounced by accounting for health needs (OR = 0.72) and economic access factors (OR = 0.71). The significantly lower use by women compared with men of any outpatient services, accounting for sociodemographic differences (OR = 0.85), is not attenuated by health needs (OR = 0.84) and economic access factors (OR = 0.83).

In contrast, the significantly greater use of any home health care by women compared with men after accounting for sociodemographic differences (OR = 1.27) is mediated by health needs (OR = 1.05) and economic factors (OR = 1.03). The significantly higher use of any physician visits by women compared with men (sociodemographic adjusted OR = 1.45) persists after controlling for health needs (OR = 1.40) and economic access factors (OR = 1.33).

Gender differences observed in the overall population are largely consistent across racial/ethnic groups. The patterns of gender differences among whites are similar to those of the overall population for different types of health-care use. Among African Americans and Hispanics, there is a consistent and significantly lower use of hospital services among women than men. Gender differences in healthcare use among minority subgroups are largely consistent with the overall population. Most minority gender differences, although of similar magnitude to overall gender differences, are not statistically significant, probably because of insufficient power.

TABLE 2. ADJUSTED GENDER ODDS RATIOS OF 2-YEAR HEALTHCARE USE BY ETHNIC/RACIAL GROUPS, HRS, 1998–2000^a

| <i>Gender odds ratio women vs. men</i> | <i>Model 1^b Sociodemographics</i> | <i>Model 2^c + health needs</i> | <i>Model 3^d + economic access</i> |
|--|--|---|--|
| Hospital admission (<i>n</i> = 9073) | | | |
| Overall | 0.83 (0.75, 0.91) | 0.72 (0.66, 0.79) | 0.71 (0.65, 0.78) |
| White | 0.83 (0.74, 0.92) | 0.72 (0.65, 0.80) | 0.72 (0.65, 0.80) |
| African American | 0.83 (0.62, 1.11) | 0.69 (0.53, 0.91) | 0.67 (0.51, 0.88) |
| Hispanic | 0.85 (0.65, 1.12) | 0.74 (0.55, 0.98) | 0.74 (0.55, 0.99) |
| Outpatient surgery (<i>n</i> = 9073) | | | |
| Overall | 0.85 (0.75, 0.96) | 0.84 (0.74, 0.95) | 0.83 (0.72, 0.94) |
| White | 0.84 (0.73, 0.96) | 0.83 (0.72, 0.96) | 0.82 (0.71, 0.95) |
| African American | 1.00 (0.71, 1.42) | 0.97 (0.69, 1.37) | 0.93 (0.65, 1.33) |
| Hispanic | 0.79 (0.49, 1.26) | 0.76 (0.48, 1.23) | 0.75 (0.47, 1.22) |
| Home health care (<i>n</i> = 8814) | | | |
| Overall | 1.27 (1.06, 1.53) | 1.05 (0.86, 1.28) | 1.03 (0.84, 1.25) |
| White | 1.27 (1.04, 1.55) | 1.04 (0.85, 1.28) | 1.02 (0.83, 1.26) |
| African American | 1.15 (0.72, 1.85) | 0.95 (0.56, 1.61) | 0.90 (0.52, 1.56) |
| Hispanic | 1.52 (0.83, 2.78) | 1.36 (0.72, 2.55) | 1.36 (0.70, 2.62) |
| Physician contact (<i>n</i> = 9088) | | | |
| Overall | 1.45 (1.13, 1.85) | 1.40 (1.08, 1.81) | 1.33 (1.01, 1.73) |
| White | 1.40 (1.06, 1.85) | 1.37 (1.04, 1.82) | 1.33 (1.00, 1.77) |
| African American | 1.75 (0.99, 3.11) | 1.54 (0.85, 2.77) | 1.32 (0.72, 2.41) |
| Hispanic | 1.59 (0.69, 3.70) | 1.49 (0.61, 3.65) | 1.27 (0.51, 3.16) |

^aOdds ratio statistically different from 1 are bold.

^bModel 1 use adjusted for sociodemographics (race/ethnicity, age, living arrangement).

^cModel 2 use adjusted for sociodemographics + health needs (arthritis, cancer, diabetes, heart condition, hypertension, psychiatric disease, pulmonary disease, stroke, physical limitations, IADL limitations, ADL limitations).

^dModel 3 use adjusted for sociodemographics + health needs + economic access (education, income, assets, health insurance).

DISCUSSION

This study examines gender differences in healthcare use, using a national probability sample of Medicare-aged adults. Our findings show that gender differences vary with the type of medical service: women are less likely to use hospitalization and outpatient surgery but are more likely to use physician and home health services than men. Moreover, for services that are more often used by men than women (hospitalization and outpatient surgery), gender differences are not explained by sociodemographic, health need, and economic factors. In contrast, for services that are used more often by women (physician and home health), gender differences are partially or completely explained by sociodemographic, health need, and economic factors. Gender differences in the use of health services are largely evident within racial/ethnic groups. Notably, African American, Hispanic, and white women show significantly less use of hospital services compared with men; these differences are not attenuated by differences in health and economic factors.

Racial/ethnic differences in healthcare use have been the focus of other national studies, but gender differences within racial/ethnic groups have not been addressed. Older African Americans and Hispanics may delay primary or preventive health care, resulting in greater use of hospital services.^{10,22–24} Compared with white elderly Medicare beneficiaries, more African Americans had Medicare-covered home health care.²⁵ Our findings are consistent with greater use of hospital services by minorities but also show that within racial/ethnic groups, women are less likely to use hospital services than men, which persists after controlling for sociodemographic, health need, and economic access factors.

In the general population, it is well documented that gender differences exist in medical care use, especially when elective procedures are involved. Women compared with men are less likely to undergo invasive cardiac procedures, renal transplantation, hip replacement, and other high-technology procedures, such as defibrillator implants or pacemaker implants.^{4,6–9,26,27} Gender differences in these studies are not explained by differences in demographic and clinical factors, although the effects of economic factors were not systematically explored. In addition, most of

these studies used clinical or regional data and did not focus on the elderly population.

Our findings on hospital services use are consistent with other studies using national probability samples, which find that women are less likely to use hospital services, and among those who have been hospitalized, women have shorter hospital stays.^{2,28–30} Findings from the 1993–1995 Asset and Health Dynamics Among the Oldest Old (AHEAD) study show that women, regardless of ethnicity, are less likely to be hospitalized compared with white men.¹⁰ However, these studies evaluated medical use before the Balanced Budget Act of 1997 (repealing the Boren Amendment) and the 1999 Balanced Budget Refinement, which affected Medicaid payment formulas. The present study extends our knowledge by examining gender differences in healthcare use that are in harmony with current reimbursement policies. It also shows that within different racial/ethnic groups, older women use hospital services about 30% less often than men after controlling for differences in sociodemographics, health needs, and economic access factors.

The present study suggests that gender differences in hospital services (hospitalization and outpatient surgery) among older adults are not well explained by differences in sociodemographics, health needs, and economic access. There are several possible explanations. A patient's communication style can influence the physician's clinical decision to recommend more aggressive care. In a study conducted by Birdwell et al.,³¹ an actress portrayed a chest pain patient in scripted physician interviews using dramatic vs. businesslike presentations. Physicians are more likely to suspect a cardiac cause in the businesslike presentations (50%) than in the dramatic counterparts (13%).³¹ It has also been demonstrated that female patients express more emotions when interviewed by physicians, whereas male patients focus more on facts.³² A physician, therefore, may mistakenly attribute disease symptoms of female patients to being overly emotional. Elderkin-Thompson and Waitzkin³³ suggest that such bias happens more frequently in the early stages of treatment than in later stages, as a physician becomes more familiar with the patient.

Differential adverse outcomes after certain medical treatments may also influence gender differences in hospital services use. For example, women are reported to have higher operative mortality rates following coronary artery bypass

surgery.⁷ If physicians are concerned with greater risks of morbidity or mortality for women during treatments, they may choose less aggressive approaches for them.⁶

A third explanation is that women and men may have different levels of risk tolerance toward invasive medical treatments. A survey on the use of coronary procedures shows that men are more likely to describe themselves as risk takers.³⁴ Among patients with moderately severe osteoarthritis, women tend to worry more about adverse outcomes from total joint replacement surgery.³⁵ Aaronson et al.³⁶ suggest that patient's preference may partially explain the underrepresentation of women among cardiac transplant recipients.

Our finding that women have more physician contact than men is not consistent with studies using the 1984 baseline Longitudinal Study of Aging,^{28,29} which found no gender differences in having physician contact over 12 months. The differences in results might reflect the assessment of data from a 1980s healthcare system and an older age cohort (≥ 70 years) in those earlier studies. Our results show that older men are about 30% less likely than women to have any physician contact, with similar demographics, health needs, and financial resources.

The higher use of primary care services by women, but their lower use of high-technology services, is more consistent with the type of medical care delivery practiced in other highly developed countries^{27,37} and is often suggested as an appropriate change in medical practice in the United States. Thus, the observed gender differences may indicate more optimal medical care behavior by females rather than suboptimal allocation of services. If the greater use of hospital services among men is partially due to delayed pursuit of primary health care, this evidence should be of particular concern to health policymakers.

The present study finds no gender differences in use of in-home medical services within 2 years after controlling for potential risk factors. This result is consistent with findings from a study by Katz et al.³⁸ using national data from an older disabled population surveyed through the 1993 AHEAD study. They found among ADL/IADL disabled adults aged ≥ 70 that although there were gender differences in the use of informal home care, the gender difference in the use of formal home care was small (2.8 hours for women vs. 2.1 hours for men per week).³⁸

A few caveats remain. These analyses are adjusted for potential nonresponse bias but are limited to those alive at 2-year follow-up. Thus, findings here cannot be extended to make inferences about use of decedents, as those who died may be expected to have higher use rates, on average, but a shorter exposure period. As HRS does not provide measures for disease severity, we can only use functional limitation as a surrogate. However, functional limitation is a global measure rather than a specific measure of disease severity. Another limitation of this study is the lack of information about the reason a person used a medical service. However, in our analyses we control for the general health needs using health conditions. Those variables are systematically assessed by HRS to provide a rounded picture of a person's health profile. Finally, whether men or women receive appropriate treatment could not be determined from this study.

Despite these limitations, this study is among the first to systematically document gender differences in the general Medicare-aged population and similar gender differences within racial/ethnic groups in the use of medical services based on national data. Less frequent use of hospital services by African American, Hispanic, and white women compared with men is not attenuated by differences in health and economic factors. Health and economic factors, however, partially mediate more frequent use of physician and home health services in the general population by women compared with men. As the size of the Medicare population increases, further studies explaining existing gender differences in use and promoting equitable use of healthcare resources by both women and men are needed to help develop future healthcare policy for the elderly.

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