

## Selected research studies on health care utilization and preventive services by obese patients

The following list of references and abstracts provides a selection of peer-reviewed articles that address health care utilization by obese patients. These studies show that an increase in BMI is associated with more frequent delay/avoidance of health care services. If you would like to view more research on this topic, please visit the website of the Yale Rudd Center, at <http://www.yaleruddcenter.org/default.aspx?id=196>.

Amy NK, Aalborg A, Lyons P, Keranen L. Barriers to routine gynecological cancer screening for White and African-American obese women. *International Journal of Obesity*. 2006; 30(1):147-55.

**BACKGROUND:** Obese women are reported to be at higher risk from gynecological cancers than nonobese women, yet these women are less likely to get cancer-screening tests. The specific factors that contribute to obese women not obtaining timely cancer screening have not been identified. **OBJECTIVE:** To investigate the factors that contribute to lower rates of gynecological cancer screening as related to women's body size. **DESIGN:** A purposeful sample of 498 White and African-American women with body mass index (BMI) from 25 to 122 kg/m<sup>2</sup>, including 60 women with BMI > 55 kg/m<sup>2</sup>, was surveyed concerning access to gynecological cancer screening and potential barriers that could cause delay. Health care providers (N = 129) were surveyed concerning their education, practices, and attitudes about providing care and gynecological cancer-screening tests for obese women. **RESULTS:** Obese women reported that they delay cancer-screening tests and perceive that their weight is a barrier to obtaining appropriate health care. The percent of women reporting these statements increased significantly as the women's BMI increased. Women with BMI > 55 kg/m<sup>2</sup> had a significantly lower rate (68%) of Papanicolaou (Pap) tests compared to others (86%). The lower screening rate was not a result of lack of available health care since more than 90% of the women had health insurance. Women report that barriers related to their weight contribute to delay of health care. These barriers include disrespectful treatment, embarrassment at being weighed, negative attitudes of providers, unsolicited advice to lose weight, and medical equipment that was too small to be functional. The percentage of women who reported these barriers increased as the women's BMI increased. Women who delay were significantly less likely to have timely pelvic examinations, Pap tests, and mammograms than the comparison group, even though they reported that they were 'moderately' or 'very concerned' about cancer symptoms. The women who delay care were also more likely to have been on weight-loss programs five or more times. Many health care providers reported that they had little specific education concerning care of obese women, found that examining and providing care for large patients was more difficult than for other patients, and were not satisfied with the resources and referrals available to provide care for them. **CONCLUSION:** Since the goal of preventive cancer screening is to improve health outcomes for all women and since obese women are at greater risk, strategies must be designed to reduce the weight barriers to these tests and improve the quality of the health care experience. Providers should receive specific training related to care of large women.



Adams CH, Smith NJ, Wilbur DC, Grady KE. The relationship of obesity to the frequency of pelvic examinations: Do physician and patient attitudes make a difference? *Wom Health*. 1993; 20: 45-57.

Obese women are at higher risk for the development of both endometrial and ovarian carcinoma. Biochemical mechanisms represent documented causal factors but the role of psychosocial attitudes has received limited attention. This study examined the difference in the frequency of pelvic screening examinations between obese and non-obese women and the effect of physician and patient attitudes toward obesity on examination frequency. A total of 291 women subjects and 1316 physician subjects participated in this study. Data reported in this paper suggest that attitudes and behaviors are negatively influenced by weight. As subjects' weight went up, negative opinions about their appearance and reluctance to obtain pelvic examinations also increased while the likelihood of having annual pelvic examinations decreased. A substantial minority (17%) and an overwhelming majority (83%) of physicians indicated they were reluctant to perform pelvic examinations on obese and reluctant patients respectively. If physicians are more reluctant to perform pelvic examinations on obese and reluctant women and obese women are more reluctant to be examined, there may be a critical delay in detecting adenocarcinomas of the female genital tract.

Drury CA, Louis M. Exploring the association between body weight, stigma of obesity, and health care avoidance. *J Amer Acad Nurse Practit*. 2002; 14: 554-61.

PURPOSE: To explore the stigma of obesity and its effect on health care utilization, associations between self-esteem, attribution for weight, body mass index (BMI), satisfaction with medical care and the behavior of delaying/avoiding health care were examined. DATA SOURCES: A convenience sample of 216 women recruited from church sites in Las Vegas completed self-administered questionnaires. CONCLUSIONS: The findings show an increase in BMI is associated with an increase in the delay/avoidance of health care. Weight-related reasons for delaying/avoiding health care included having "gained weight since last health care visit," not wanting to "get weighted on the provider's scale," and knowing they would be told to "lose weight." IMPLICATIONS FOR PRACTICE: The obese are a stigmatized and vulnerable population. Nurse practitioners are challenged to be aware of attitudes towards obesity and to identify ways to promote continuity of care and regular health maintenance. The goals of Healthy People 2010 to reduce obesity-related morbidity cannot be met if health care is delayed/avoided.

Fontaine KR, Faith MS, Allison DB, Cheskin LJ. Body weight and health care among women in the general population. *Arch Fam Med*. 1998; 7: 381-384.

OBJECTIVE: To examine the relation between body mass index ([BMI] calculated as weight in kilograms divided by the square of height in meters) and the use of medical care services among a nationally representative sample of women. DESIGN AND SETTING: Multistage cluster-area probability sampling survey. Data are from the Cancer Control and Health Insurance supplements of the 1992 National Health Interview Survey conducted by the National Center for Health Statistics. Respondents were 6981 women aged 18 years or older residing in the United States who self-reported sociodemographic information and the use of health care services. MAIN OUTCOME MEASURES: Interval (< or = 3 years vs > 3 years) since most recent mammography, clinical breast examination, gynecologic examination, and Papanicolaou



smear and the number of physician visits in the year before the survey. **RESULTS:** When age, race, income, education, smoking, and health insurance status were adjusted for, the BMI was directly related to delaying clinical breast examinations, gynecologic examinations, and Papanicolaou smears. Obese women (BMI of 35) were more likely than nonobese women (BMI of 25) to delay clinical breast examinations (odds ratio, 1.26; 95% confidence interval, 1.00-1.58), gynecologic examinations (odds ratio, 1.39; 95% confidence interval, 1.15-1.69), and Papanicolaou smears (odds ratio, 1.29; 95% confidence interval, 1.04-1.58). The BMI was not significantly related to delays in mammography. It was also related to increased physician visits ( $P = .001$ ). **CONCLUSION:** Among women, an increased BMI is associated with decreased preventive health care services, which may exacerbate or even account for some of the increased health risks of obesity.

**Jones BA, Patterson EA, Calvocoressi L. Mammography screening in African American women: evaluating the research. *Cancer*. 2003; 97(1 Suppl):258-72.**

**BACKGROUND:** Notwithstanding some controversy regarding the benefits of screening mammography, it is generally assumed that the effects are the same for women of all race/ethnic groups. Yet evidence for its efficacy from clinical trial studies comes primarily from the study of white women. It is likely that mammography is equally efficacious in white and African American women when applied under relatively optimal clinical trial conditions, but in actual practice African Americans may not be receiving equal benefit, as reflected in their later stage at diagnosis and greater mortality. **METHODS:** Initial searches of Medline using search terms related to screening mammography, race, and other selected topics were supplemented with national data that are routinely published for cancer surveillance. Factors that potentially compromise the benefits of mammography as it is delivered in the current health care system to African American women were examined. **RESULTS:** While there have been significant improvements in mammography screening utilization, observational data suggest that African American women may still not be receiving the full benefit. Potential explanatory factors include low use of repeat screening, inadequate followup for abnormal exams, higher prevalence of obesity and, possibly, breast density, and other biologic factors that contribute to younger age at diagnosis. **CONCLUSIONS:** Further study of biologic factors that may contribute to limited mammography efficacy and poorer breast cancer outcomes in African American women is needed. In addition, strategies to increase repeat mammography screening and to ensure that women obtain needed followup of abnormal mammograms may increase early detection and improve survival among African Americans. Notwithstanding earlier age at diagnosis for African American women, mammography screening before age 40 years is not recommended, but screening of women aged 40-49 years is particularly critical.

**Meisinger C, Heier M, Loewel H. The relationship between body weight and health care among German women. *Obesity Research*. 2004; 12(9):1473-80.**

**OBJECTIVE:** To investigate the relationship between body weight and the use of health care services among women from southern Germany. **RESEARCH METHODS AND PROCEDURES:** Data were drawn from the 1994 to 1995 Monitoring of Trends and Determinants in Cardiovascular Disease Augsburg survey, covering a population-representative sample of women 25 to 74 years old ( $n = 2301$ ). Logistic regression models were used to calculate odds ratios (ORs) for the use of medical services by women with overweight (BMI 25.0 to 29.9 kg/m<sup>2</sup>) or obesity (BMI  $\geq 30$  kg/m<sup>2</sup>) in comparison with normal-weight women (BMI <



25.0 kg/m<sup>2</sup>). RESULTS: In multivariable analysis, obese women 50 to 74 years old were more likely than normal-weight women to delay cancer screening procedures, such as manual breast examination and Papanicolaou smear (OR 0.52, 95% confidence interval 0.37 to 0.74) in the previous 12 months. However, the relationship between obesity and cancer screening was not found to be significant in 25- to 49-year-old women (OR 0.92, 95% confidence interval 0.62 to 1.36). Neither in the 25- to 49-year-old age group nor in the 50- to 74-year-old age group were independent relationships between higher body weight and total physician visits, hospitalizations, or medication use observed. DISCUSSION: Obese women tended to use medical services with greater frequency due to obesity-related diseases. However, postmenopausal women with a BMI  $\geq$  30 kg/m<sup>2</sup> were more likely to delay routine cancer screening, putting them at a greater risk for death from breast, cervical, and endometrial cancer. Thus, obese postmenopausal women should be targeted for increased screening.

**Olson CL, Schumaker HD, Yawn BP. Overweight women delay medical care. *Arch Fam Med.* 1994; 3: 888-892.**

OBJECTIVE: To determine whether women delay or avoid necessary health care because they are overweight. DESIGN: Observational study using a self-administered survey. SETTING: A 250-bed community hospital in La Crosse, Wis. PARTICIPANTS: All female nurses, nursing assistants, health unit coordinators, and general psychiatric assistants who were employed full- or part-time at the community hospital in July 1992. We received 310 (76%) responses from 409 potential respondents. MEASUREMENTS/MAIN RESULTS: Overall, 12.7% of respondents reported delaying or canceling a physician appointment because of weight concerns. Another 2.6% kept their appointments but refused to be weighed. Only body mass index was significantly associated with appointment cancellation. The odds ratio of an obese woman (body mass index in excess of 27) delaying medical care was 3.885 (95% confidence interval, 1.509 to 10.274). CONCLUSION: Obese women commonly delay health care because of weight concerns.

**Ostbye T, Taylor DH, Yancy WS, Krause KM. Associations between obesity and receipt of screening mammography, Papanicolaou tests, and influenza vaccination: results from the Health and Retirement Study (HRS) and the Asset and Health Dynamics Among the Oldest Old (AHEAD) Study. *Am J Pub Health.* 2005; 95:1623-30.**

OBJECTIVES: Obese Americans, who receive more care for chronic diseases, may receive fewer preventive services. We evaluated the association between body mass index (BMI) and receipt of screening mammography and Papanicolaou tests among middle-aged women and the association between BMI and receipt of influenza vaccination among the elderly. METHODS: We analyzed 2 datasets: the Health and Retirement Study (4439 women aged 50-61 years) and the Asset and Health Dynamics Among the Oldest Old (AHEAD) Study (4045 women and 2154 men aged 70 years or more). RESULTS: When BMI was greater than 18.5 kg/m<sup>2</sup>, we found an inverse dose-response relationship between BMI and receipt of screening mammography and Pap tests among White, but not Black, middle-aged women. We found a similar association between BMI and influenza vaccination among the elderly. CONCLUSIONS: Higher BMI was associated with less frequent receipt of preventive services among middle-aged White women and elderly White women and men. The Healthy People 2010 clinical preventive service goals remain elusive, especially for overweight and obese White persons.



Wee CC, Phillips RS, McCarthy EP. BMI and cervical cancer screening among white, African-American, and Hispanic women in the United States. *Obesity Research*. 2005; 13(7):1275-80.

**OBJECTIVES:** We examined cervical cancer screening by BMI in white, African-American, and Hispanic women and explored women's reasons for not undergoing screening. **RESEARCH METHODS AND PROCEDURES:** We used logistic regression to examine Pap testing in the preceding 3 years across BMI groups for white (n = 6419), African-American (n = 1715), and Hispanic women (n = 1859) age 18 to 75 years who responded to the 2000 National Health Interview Survey. We used bivariable analyses to describe women's reasons for not undergoing testing and examined whether unscreened women received physician recommendations for screening. **RESULTS:** Of 12,170 women, 50% were normal weight, 26% were overweight, and 21% were obese. The proportion who reported Pap testing in the last 3 years was 86% in whites, 88% in African Americans, and 78% in Hispanics. After adjustment for sociodemographics, health care access, and illness burden, severely obese white women (BMI = 40+ kg/m<sup>2</sup>) were significantly less likely to undergo Pap testing (relative risk, 0.92; 95% CI, 0.83 to 0.99) compared with normal weight women. BMI was not associated with screening in African Americans or Hispanics. A higher proportion of obese white women than normal weight women cited putting off the test or embarrassment or discomfort as the primary reason for not undergoing screening. Among the unscreened, obese women were as likely as normal weight women to receive a physician recommendation to undergo screening. **DISCUSSION:** Disparities in cervical cancer screening by body weight persist for white women with severe obesity. Disparities were not explained by differences in the rate of physician recommendations for screening, but obese white women may be more likely to delay screening or to find screening painful, uncomfortable, or embarrassing than normal weight white women. Efforts to increase screening among obese women should address women's reservations about screening.

Wee CC, McCarthy EP, Davis RB, Phillips RS. Obesity and breast cancer screening. *Journal of General Internal Medicine*. 2004; 19(4):324-31.

**BACKGROUND:** Compared to normal weight women, women with obesity have higher mortality from breast cancer but are less often screened. **OBJECTIVES:** To examine the relation between mammography use and weight category and to examine the influence of race, illness burden, and other factors on this relationship. **DESIGN AND SETTING:** The 1998 National Health Interview Survey, a U.S. civilian population-based survey. **PARTICIPANTS:** Five thousand, two hundred, and seventy-seven women ages 50 to 75 years who responded to the Sample Adult and Prevention questionnaires. **MEASUREMENTS:** Mammogram use in the preceding 2 years. **RESULTS:** Among 5277 eligible women, 72% reported mammography use. The rate was 74% among white women and 70% among black women. Among white women, mammogram use was lowest in women with a body mass index (BMI) greater than 35 kg/m<sup>2</sup> (64% to 67%). After adjusting for sociodemographic factors, health care access, medical conditions, hospitalizations, and mobility status, higher BMI was associated with lower screening among white women, P = .02 for trend; the relative risk (RR) for screening in moderately obese white women (BMI, 35 to 40 kg/m<sup>2</sup>) was 0.83 (95% confidence interval [CI], 0.68 to 0.96) compared to normal weight white women. Compared to normal weight black women, mammography use was similar or higher in overweight (BMI, 25 to 30 kg/m<sup>2</sup>; RR, 1.19; 95% CI, 1.01 to 1.32), mildly obese (BMI, 30 to 35 kg/m<sup>2</sup>; RR, 1.22; 95% CI, 0.98 to 1.39), and moderately obese



black women (RR, 1.37; 95% CI, 1.37 to 1.50) after adjustment. The P value for the race-BMI interaction was .001. Results for white and black women were unchanged after additional adjustment for psychological functioning and health habits. **CONCLUSION:** Among white women, those with higher BMI were less likely to undergo breast cancer screening than normal weight women. This relationship was not seen in black women. Our findings were not explained by differences in sociodemographic factors, health care access, illness burden, or health habits. More research is needed to determine the reasons for these disparities so that appropriate efforts can be made to improve screening.

Wee CC, McCarthy EP, Davis RB, Phillips RS. Screening for cervical and breast cancer: is obesity an unrecognized barrier to preventive care? *Annals of Internal Medicine*. 2000; 132(9):697-704.

**BACKGROUND:** Compared with thinner women, obese women have higher mortality rates for breast and cervical cancer. In addition, obesity leads to adverse social and psychological consequences. Whether obesity limits access to screening for breast and cervical cancer is unclear. **OBJECTIVE:** To examine the relation between obesity and screening with Papanicolaou (Pap) smears and mammography. **DESIGN:** Population-based survey. **SETTING:** United States. **PARTICIPANTS:** 11 435 women who responded to the “Year 2000 Supplement” of the 1994 National Health Interview Survey. **MEASUREMENTS:** Screening with Pap smears and mammography was assessed by questionnaire. **RESULTS:** In women 18 to 75 years of age who had not previously undergone hysterectomy (n = 8394), fewer overweight women (78%) and obese women (78%) than normal-weight women (84%) had had Pap smears in the previous 3 years (P < 0.001). After adjustment for sociodemographic information, insurance and access to care, illness burden, and provider specialty, rate differences for screening with Pap smears were still seen among overweight (-3.5% [95% CI, -5.9% to -1.1%]) and obese women (-5.3% [CI, -8.0% to -2.6%]). In women 50 to 75 years of age (n = 3502), fewer overweight women (64%) and obese women (62%) than normal-weight women (68%) had had mammography in the previous 2 years (P < 0.002). After adjustment, rate differences were -2.8% (CI, -6.7% to 0.9%) for overweight women and -5.4% (CI, -10.8% to -0.1%) for obese women. **CONCLUSIONS:** Overweight and obese women were less likely to be screened for cervical and breast cancer with Pap smears and mammography, even after adjustment for other known barriers to care. Because overweight and obese women have higher mortality rates for cervical and breast cancer, they should be targeted for increased screening.

