# Is Lower Income Associated with Greater Biopsychosocial Morbidity?

## Implications for Physicians Working with Underserved Patients

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**BACKGROUND.** Previous studies have established a powerful relationship between socioeconomic position and health. However, there has been little attention given to the association between income, biopsychosocial morbidity, and decline in health over time among primary care patients.

**METHODS.** Data were collected using a survey mailed to patients receiving care at a family medicine center and through a follow-up survey mailed 2 years later. The independent association between various biopsychosocial measures and family income was assessed through stepwise linear regression. After controlling for baseline health status, the effect of family income on health status at follow-up was assessed.

**RESULTS.** Data were available from 922 active family medicine patients who responded to the initial survey and from 655 who responded to the follow-up survey. In bivariate analyses, lower family income was significantly associated with poorer health status, greater psychological distress, more family dysfunction, less social support, more behavioral risk factors, higher rates of obesity and uncontrolled blood pressure, poorer physical and mental health status, and more medical diagnoses. In a multivariate analysis, age, sex, marital status, race, social network, family criticism, smoking, fat consumption, and health status were independently associated with family income. After controlling for covariates, including baseline health status, family income was a significant predictor of health status at follow-up.

**CONCLUSIONS.** Family income is associated with biopsychosocial morbidity and health decline. Physicians who care for poorer patients will likely be confronted by challenging and complex biopsychosocial problems.

**KEY WORDS.** Social class; health status; risk factors; primary health care. *(J Fam Pract 1999; 48:372-377)*

The relationship between health and socioeconomic position, whether measured by income, education, or occupational status, is well established.[1-4] Lower socioeconomic position is associated with greater psychological distress, including depression,[5] hopelessness,[5] hostility,[6] greater family conflict,[7] less social support,[8,9] more stressful life events,[8,9] more behavioral risk factors, including smoking, sedentary activity and poor diet,[8,10] and more biomedical risk factors, including obesity, hypertension, cholesterol, and diabetes.[8,11] However, relatively few studies have examined the independent association of biopsychosocial risk factors with socioeconomic position. One study was conducted with middle-aged women,[12] and another with healthy older adults.[13] Both noted independent relationships between years of education and various biopsychosocial measures of health. There has been little attention given to the association of income and biopsychosocial health among primary care patients.

In this study of patients receiving care at a family medicine center, we examined the association of family income with multiple biopsychosocial risk factors, including depression, anxiety, hostility, social support, stressful life events, family function, diet, smoking, alcohol intake, exercise habits, serum cholesterol levels, blood pressure, obesity, physical and mental health status, and number of medical diagnoses. We then examined the impact of family income on change in general health over time.

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## METHODS

### SAMPLE

The population base was composed of patients receiving primary medical care at a family medicine hospital-affiliated residency training practice. The sample was derived from a database designed to examine the impact of family function on health. Patients were eligible for inclusion in the study if they had a cholesterol value in the database, had made at least 2 visits in the 18 months before March 1991, and were at least 33 years of age at the time of the study. These selection criteria were developed to identify patients who were receiving ongoing care at the Family Medicine Center, had complete baseline cardiovascular data, and were in an age group at risk for cardiovascular disease. In households where 2 or more eligible patients lived, one household member was randomly

selected. Patients who lived in group homes or who could not read or write in English were excluded. To make the results as generalizable as possible, the sample did not exclude unmarried patients or those living alone.

These criteria identified 1480 patients. Of the original sample, 495 surveys were not returned (33%). Five patients died. Twenty questionnaires were undeliverable. Seventeen respondents reported themselves too ill to complete the questionnaire. Sixteen returned the questionnaire blank, and 5 said they were no longer patients at the Family Medicine Center.

## PROCEDURES

We used a modified version of the total design method by Dillman[14] to conduct the survey. The questionnaire with a cover letter was mailed to patients in March 1991; 2 weeks later a postcard reminder was sent to nonresponders; and at 4 weeks a follow-up letter and a replacement copy of the questionnaire were mailed to nonresponders. The study design was based on the results of a previously reported pilot study.[15] A follow-up survey was mailed in June 1993 to those who responded to the original survey.

## MEASURES

***Socioeconomic measures.*** These included annual family income (8 categories of $5,000 each, ranging from <$10,000 to ≥$40,000) and education (years of schooling completed).

***Demographic characteristics.*** Data were collected for age, sex, race (white/nonwhite), health insurance (private/Medicaid/none), marital status (married or stable partner/no partner), and family size.

***Stressful life events.*** Stressful events that occurred in the last 3 months were assessed using Holmes and Rahe's Undesirable Life Events Scale.[16] These include job loss, financial problems, unemployment/disability, trouble with in-laws or parents, separation, divorce, and death.

***Psychological distress.*** Depression and anxiety were measured with subscales from the SCL-90,[17] and hostility with the Ho subscale of the Cook-Medley Hostility Scale.[6]

***Family function.*** We administered the Family Emotional Involvement and Perceived Criticism Scale,[18,19] and the Family Adaptability and Cohesion Evaluation Scale III.[20]

***Social support.*** The Interpersonal Support Evaluation List was administered.[21] The subscales included tangible/instrumental support and the presence of close relationships. In addition, social network size was assessed by asking: "How many family members and friends can you count on if you need help?"

***Behavioral risk factors.*** Detailed questions were asked about smoking, diet (consumption of high-fat foods), alcohol intake, and exercise habits. Similar self-report questions have been objectively validated.[22,23]

***Biomedical risk factors.*** The most recent values listed in the medical record were obtained. Uncontrolled hypertension was defined as a diastolic blood pressure ≥90 mm Hg or a systolic blood pressure ≥140 mm Hg. Hypercholesterolemia was defined as ≥240 mg/dL. Obesity was defined as body mass index ≥27kg/m$^2$.

***Health status.*** The general, physical, and mental health function subscales of the 36-Item Short-Form Health Survey (SF-36) were administered.[24] These subscales have good internal reliability and have been well validated.[24-26]

***Medical diagnoses.*** Both the presence and total number of medical diagnoses coded by the physician in the year preceding the survey were obtained from electronic billing data.

## STATISTICAL ANALYSIS

The data were analyzed using SAS software.[27] Family income was dichotomized at the median value for the purposes of bivariate analysis only. Comparisons were done using chi squares for dichotomous measures and Student *t* tests for ordinal or continuous measures. A series of linear regressions were used to assess differences in sociodemographic characteristics between responders and nonresponders. Given the large numbers of independent variables, each independent association with income was evaluated through stepwise regression. In this procedure, the variables are added to the regression equation in the order of variance explained. Variables no longer statistically significant are omitted at each step. The final regression analysis includes only statistically significant variables. The independent effect of family income on future health was also examined, using a stepwise linear regression.

# RESULTS

Response data were available for 922 persons after the initial survey. The mean age in the sample was 48.5 years. Sixty-three percent of the respondents were women, 82% were white, and 51% were married. The mean annual family income was $20,000 to $24,999, and the mean education level was 13 years. The 558 persons not responding to the questionnaire were similar to those providing complete responses: mean age 48.5 years compared with 48.4 years, 72% white compared with 85% nonwhite, and 19% having Medicaid compared with 13% with private or no insurance. Data on other variables were not available for nonresponders.

Compared with those with missing responses, persons who completed questionnaires were younger (mean age 48.8 years vs 55.5), had more education (mean years of schooling 13.0 vs 12.1), were less likely to have Medicaid insurance (16 % vs 26 %), reported better physical function levels (mean 72.7 vs 63.2), and more likely to be married (54% vs 32%). No statistically significant differences were found on any of the other measures described below.

Six hundred fifty-five (71%) of the original responders completed the follow-up survey. There were no differences in age or sex between responders and nonresponders. However, responders were significantly more likely to be white, married, and have more income, higher education, and better physical and mental health.

Table 1 summarizes differences in risk factors according to family income. Poorer patients were significantly older, more likely to be female, disproportionately nonwhite, less educated, and have smaller family sizes (including partner). Poorer persons showed greater risk factors whether assessed by health behavior, family function, social support, psychological distress, or biomedical measures.

In a multivariate analysis, each of the associations between income and morbidity measures remained statistically significant after controlling for age, sex, race, marital status, and education. For example, each decrement of $5,000 in annual income was associated with an adjusted 3-point decrement in health status. Thus, the adjusted physical health status of a person with an income of less than $10,000 per year is roughly comparable with the published national norm[28] for a person older than 65 years, whereas the physical health status of a person with an income of greater than $40,000 per year is comparable with that of a person younger than 35 years. This association between income and health status is even more dramatic than that observed in the Whitehall II study of British civil servants, all of whom were fully employed.[3]

Next, multivariate analysis was used to determine which risk factors were independently associated with income. Older age, female gender, nonwhite race, greater family criticism, poorer mental health, smaller social network, smoking, and more fat consumption were independently associated with family income (Table 2). After adjustment for education level, the associations of race, smoking, and diet with income were no

**TABLE 1**

**Comparison of Biopsychosocial Measures, by Income**

| Variable | Yearly Income <$20,000 | Yearly Income ≥$20,000 | P |
|---|---|---|---|
| **Demographic characteristics** | | | |
| Age, years | 51.7 | 46.8 | <.001 |
| Sex, % male | 30 | 45 | <.001 |
| Race, % white | 77 | 89 | <.001 |
| Married, % | 27 | 79 | <.001 |
| Education, years | 11 | 15 | <.001 |
| Family size | 2.0 | 2.5 | <.001 |
| **Behavioral risk factors** | | | |
| Smoking, % | 25 | 19 | <.001 |
| ≥15 alcohol drinks per week, % | 3 | 4 | >.1 |
| High-fat diet, % | 68 | 55 | <.0001 |
| No regular exercise, % | 73 | 47 | <.001 |
| **Family and social risk factors*** | | | |
| Perceived family criticism score | 13 | 10 | <.001 |
| Family cohesion score | 38 | 32 | <.001 |
| Family adaptability score | 27 | 31 | <.001 |
| Tangible support score | 19 | 21 | <.001 |
| Close social relationships score | 19 | 20 | <.05 |
| Social network size (number of persons available) | 7 | 9 | <.001 |
| Stressful life events in last 3 months | 1.4 | 0.7 | <.001 |
| **Psychological distress** | | | |
| Depressive symptoms† | 30 | 24 | <.001 |
| Anxiety symptoms† | 18 | 15 | <.001 |
| Hostility‡ | 2.7 | 2.5 | <.001 |
| **Biomedical risk factors** | | | |
| Obesity, % | 55 | 46 | <.001 |
| Diastolic blood pressure ≥90 mm Hg | 76 | 76 | >.1 |
| Systolic blood pressure ≥140 mm Hg | 126 | 122 | <.005 |
| Cholesterol level ≥240 | 214 | 209 | >.1 |
| **Health status§** | | | |
| General health | 53 | 74 | <.001 |
| Physical health | 60 | 85 | <.001 |
| Mental health | 61 | 73 | <.001 |
| Any medical diagnosis, % | 54 | 47 | <.05 |
| Number of medical diagnoses | 1.4 | 1.1 | <.001 |

*Measured using Holmes and Rahe's Undesirable Life Events Scale.
†Measured with subscales from the SCL-90.
‡Measured using the Ho subscale of the Cook-Medley Hostility Scale.
§Measured using the MOS 36-Item Short-Form Health Survey.

**TABLE 2**

**Variables Independently Associated with Income**

| Risk Factor | Parameter Estimate | 95% CI | *P* |
|---|---|---|---|
| Age | -0.03 | -0.04 to -0.01 | <.001 |
| Male gender | 0.44 | 0.14 to 0.74 | <.005 |
| Married | 2.2 | 0.60 to 0.22 | <.001 |
| Social network size | 0.08 | 0.04 to 0.11 | <.001 |
| Perceived criticism | -0.03 | -0.05 to -0.01 | <.005 |
| Smoking | -0.47 | -0.79 to -0.15 | <.005 |
| High-fat diet | -0.14 | -0.28 to -0.01 | <.05 |
| Mental health function | 0.01 | 0.01 to 0.02 | <.005 |
| Physical health function | 0.02 | 0.02 to 0.03 | <.001 |

CI denotes confidence interval.
Note: Analysis based on stepwise linear regression. The variables account for 49% of the variance for income.

**TABLE 3**

**Predictors of Health Status at Follow-Up**

| Risk Factor | Parameter Estimate | 95% CI | *P* |
|---|---|---|---|
| Income | 0.80 | 0.21 to 1.39 | <.01 |
| Education | 0.64 | 0.05 to 1.23 | <.05 |
| Anxiety | -0.46 | -0.71 to -0.21 | <.005 |
| Obesity | -6.62 | -9.43 to -3.81 | <.001 |
| Baseline health | 0.66 | 0.59 to -0.74 | <.001 |

CI denotes confidence interval.
Note: Analysis based on stepwise linear regression. The variables account for 60% of the variance for health status at follow-up.

longer statistically significant.

Finally, predictors of health status at follow-up were examined. Consistent with data from Whitehall II,[29] lower income and education predicted greater decline in health status at follow-up (Table 3). In contrast to the cross-sectional findings described earlier, each $5,000 decrement in annual income was associated with a 0.8 point decrease in global health status. Each 1-year decrement in education was associated with an additional 0.6 decrement in global health status. Other predictors included baseline health status, level of anxiety symptoms, and obesity.

## DISCUSSION

Our findings are consistent with those of previous studies[1-3,8,9] and with the experiences of many family physicians who care for poor patients. Poorer patients not only experience more biomedical morbidity, but also do so within the context of greater psychosocial morbidity, including worse mental health, more family conflict, social isolation, and unhealthy behavior such as smoking, consumption of high-fat foods, and inactivity. Consistent with previous work, these associations are not confined to persons with family incomes below the poverty line. Rather, these associations extend across the spectrum of income. Decreasing income is associated with successively greater biopsychosocial morbidity and decline in health status.

What are the implications for family physicians of the association between lower income and biopsychosocial morbidity? First, physicians who care for poorer patients must be prepared to address psychosocial as well as biomedical morbidity. Often, physicians must first address disabling social and psychological problems before biomedical problems. For example, a physician may first need to address the anger and depression of a seemingly noncompliant patient with diabetes who was recently abused by her partner, before addressing home glucose monitoring.

Second, poorer patients are likely to require more attention. Although this study did not assess time requirements, it is likely that more time will be needed to address the complex biopsychosocial morbidity of poor patients. For example, is fatigue related to an underlying biomedical disorder such as thyroid disease or HIV infection, or is it related to underlying depression or working a second job? These problems take time to sort out and manage. Similarly, poorer patients have more behavioral risk factors and thus will require more time spent on risk modification counseling. Unlike the affluent smoker who comes into the office asking for assistance in quitting, the impoverished smoker, beset by multiple psychosocial problems, may not have ever considered quitting.

Third, physicians in the United States are likely to be compensated less for caring for poorer patients than for more affluent patients, despite the relationship between lower income and biopsychosocial morbidity. For example, US physicians receive substantially *lower* reimbursements from Medicaid than from private insurance. Moreover, many of the 43 million uninsured Americans are working poor who cannot afford to pay for medical care. Even when the patient has private insurance, physicians are likely to be under-reimbursed. Poorer patients are likely to require longer and more complex visits that may not be easily captured using standard coding procedures.

Psychosocial morbidity is often subsyndromal and is not easily categorized. Psychosocial stress is associated with longer visits.[30] Biomedically focused visits involving poorer patients are likely to be longer, not only because the disease is often more severe, but also because management including education may take more time. In contrast, physicians in Great Britain receive *higher* payments from the National Health Service for caring for indigent patients.[31]

Fourth, rates of missed appointments among poorer patients tend to be higher.[32,33] This probably reflects higher rates of psychological distress and social stress among poorer persons, both of which have been associated with failure to keep scheduled appointments.[34,35] High rates of missed appointments can significantly affect practice revenue and pose a challenge to efficient patient scheduling.

Fifth, physicians who care for poorer patients may receive worse ratings when profiled by managed care organizations. The greater morbidity among poorer patients is likely to be reflected in higher health care costs and avoidable hospitalizations.[36,37] Rates of compliance with preventive health care are also likely to be worse.[38,39] Thus, until managed care organizations begin adjusting physicians' profiles for patients' socioeconomic position, physicians who care for poorer patients will be disadvantaged.

Last, the finding that poorer primary care patients experience greater decline in health status over time underscores the limits of medicine's ability to address socioeconomic differences in health.[40,41] In our study, both lower income and education predicted decline in health status among active primary care patients, independent of various psychological, social, and behavioral risk factors. This finding is consistent with the suggestion that social class is a fundamental cause of disease.[42] Mounting evidence shows that countries and states with greater income disparity have poorer overall health outcomes.[43-45] Physicians who are troubled by these disparities may expand their work outside the office to include advocacy for social change and health care reform. Physicians may be uniquely positioned to do so.[46]

The challenges enumerated above can, over time, exact a financial and emotional toll on physicians caring for underserved patients. Many physicians experience "burnout" and abandon work with indigent patients.[47] Physicians may reduce their risks for burnout by seeking support from family, close friends, and colleagues and by engaging in appropriate self-care.[48]

## LIMITATIONS

The study limitations should be noted. The sample is highly selective and not representative of all primary care patients. Patients were selected from an existing database designed to assess the impact of family and social relationships on cardiovascular health. Responding subjects tended to have higher incomes, more education, and better physical and mental health than nonresponding subjects. Furthermore, the practice may have attracted disproportionately sicker patients who are poor and disproportionately healthier patients who are wealthier. Such a selection bias would tend to overstate the association between income and health. Thus, the findings from this sample of patients may not necessarily apply to other primary care patients.

Most measures of biopsychosocial morbidity were based on self-report. Could a systematic reporting bias among poorer persons account for these findings? Given the well-documented relationship between social class and health, this seems unlikely. Moreover, self-report data were consistent with diagnoses derived from the medical record and billing data.

## CONCLUSIONS

Our study—conducted among middle-aged, predominantly white, family medicine patients—showed that lower family income was strongly associated with biomedical, psychological, and social measures of morbidity. These findings suggest that physicians who care for poorer patients should be prepared to manage complex biopsychosocial problems.

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### REFERENCES

1. Lantz, PM, House JS, Lepowski JM, Williams DR, Mero RP, Chen J. Socioeconomic factors, health behaviors, and mortality: results from a nationally representative prospective study of U.S. adults. JAMA 1998; 279:1703-18.
2. Sorlie PD, Backlund E, Keller JB. US mortality by economic, demographic, and social characteristics: the national longitudinal mortality study. Am J Public Health 1995; 85:949-56.
3. Hemingway H, Nicholson A, Stafford M, Roberts R, Marmot M. The impact of socioeconomic status on health functioning as assessed by the SF-36 questionnaire: the Whitehall II study. Am J Public Health 1997; 87:1484-90.
4. Lynch JW, Kaplan GA, Shema SJ. Cumulative impact of sustained economic hardship on physical, cognitive, psychological, and social functioning. N Engl J Med 1997; 337:1889-95.
5. Fiscella K, Franks P. Does psychological distress contribute to racial and socioeconomic disparities in mortality? Soc Sci Med 1997; 45:1805-9.
6. Scherwitz L, Perkins L, Chesney M, Hughes G. Cook-Medley Hostility scale and subsets: relationship to demographic and psychosocial characteristics in young adults in the CARDIA study. Psychosom Med 1991; 53:36-49.
7. Conger RD, Conger KJ, Elder GH Jr, Lorenz FO, Simons RL, Whitbeck LB. A family process model of economic hardship and adjustment of early adolescent boys. Child Dev 1992; 63:526-41.
8. Marmot MG, Smith GD, Stansfeld S, et al. Health inequalities among British civil servants: the Whitehall II study. Lancet 1991; 337:1387-93.
9. Rosengren A, Orth-Gomer K, Wedel H, Wilhelmsen L. Stressful life events, social support, and mortality in men born in 1933. BMJ 1993; 307:1102-5.

10. Lynch JW, Kaplan GA, Salonen JT. Why do poor people behave poorly? Variation in adult health behaviours and psychosocial characteristics by stages of the socioeconomic lifecourse. Soc Sci Med 1997; 44:809-19.
11. Lynch JW, Kaplan GA, Cohen RD, Tuomilehto J, Salonen JT. Do cardiovascular risk factors explain the relation between socioeconomic status, risk of all-cause mortality, cardiovascular mortality, and acute myocardial infarction? Am J Epidemiol 1996; 144:934-42.
12. Matthews KA, Kelsey SF, Meilahn EN, Kuller LH, Wing RR. Educational attainment and biologic risk factors for coronary heart disease in middle-aged women. Am J Epidemiol 1989; 129:1132-44.
13. Dubzansky LD, Berkaman LF, Glass TA, Seeman TE. Is educational attainment associated with shared determinants of health in the elderly? Findings from the MacArthur Studies of Successful Aging. Pschosom Med 1998; 60:578-85.
14. Dillman DA. Mail and telephone surveys: the total design method. New York, NY: John Wiley & Sons, 1978.
15. Franks P, Campbell TL, Shields CG. Social relationships and health: the relative roles of family functioning and social support. Soc Sci Med 1992; 34:779-88.
16. Holmes TH, Rahe RH. The social readjustment rating scale. J Psychosom Res 1967; 11:213-8.
17. Derogatis LR, Rickels K, Rock AF. The SCL-90 and the MMPI: a step in the validation of a new self-report scale. Br J Psychiatry 1976; 128:280.
18. Shields CG, Franks P, Harp J, McDaniel SH, Campbell TL. Development of the family emotional involvement and criticism scale (FEICS): a self-report scale to measure expressed emotion. J Marital Family Therapy 1992; 18:395-407.
19. Shields CG, Franks P, Harp J, Campbell T, McDaniel S. Family emotional involvement and criticism scale (FEICS): reliability and validity studies II. Fam Syst Med 1995; 12:361-77.
20. Olson DH, Portner J, Lavee Y. FACES III. St. Paul, Minn: Department of Family Social Science, University of Minnesota, 1985.
21. Cohen S, Mermelstein R, Kamarck T, Hoberman H. Measuring the functional components of social support. In: Sarason IG, Sarason BR, eds. Social support: theory, research and application. The Hague, Holland: Martinus Nijhoff, 1985.
22. Wagenknecht LE, Burke GL, Perkins LL, Haley NJ, Friedman GD. Misclassification of smoking status in the CARDIA study: a comparison of self-report with serum creatinine levels. Am J Public Health 1992; 82:33-6.
23. Gionet NJ, Godin G. Self-reported exercise behavior of employees: a validity study. J Occup Med 1989; 31:969-73.
24. Ware JE Jr, Sherbourne CD. The MOS 36-Item Short-Form Health Survey (SF-36). I. Conceptual framework and item selection. Med Care 1992; 30:473-83.
25. McHorney CA, Ware JE Jr, Raczek AE. The MOS 36-Item Short-Form Health Survey (SF-36): II. Psychometric and clinical tests of validity in measuring physical and mental health constructs. Med Care 1993; 31:247-63.
26. McHorney CA, Ware JE Jr, Lu JF, Sherbourne CD. The MOS 36-Item Short-Form Health Survey (SF-36): III. Tests of data quality, scaling assumptions, and reliability across diverse patient groups. Med Care 1994; 32:40-66.
27. SAS Institute Inc. SAS procedures guide, release 6.03 edition. Cary, NC: SAS Institute, Inc, 1988.
28. McHorney CA, Kosinski M, Ware JE Jr. Comparisons of the costs and quality of norms for the SF-36 health survey collected by mail versus telephone interview: results from a national survey. Med Care 1994; 32:551-67.
29. Hemingway H, Stafford M, Stansfeld S, Shipley M, Marmot M. Is the SF-36 a valid measure of change in population health? Results from the Whitehall II study. BMJ 1997; 315:1273-9.
30. Callahan EJ, Jaen CR, Crabtree BF, et al. The impact of recent emotional distress and diagnosis of depression or anxiety on the physician-patient encounter in family practice. J Fam Pract 1998; 46:410-8.
31. Carlisle R, Johnstone S. The relationship between census-derived socio-economic variables and general practice consultation rates in three town centre practices. Br J Gen Pract 1998; 48:1675-8.
32. Weingarten N, Meyer DL, Schneid JA. Failed appointments in residency practices: who misses them and what providers are most affected? J Am Board Fam Pract 1997; 10:407-11.
33. Majeroni BA, Cowan T, Osborne J, Graham RP. Missed appointments and Medicaid managed care. Arch Fam Med 1996; 5:507-11.
34. Hoppe SK, Leon RL, Realini JP. Depression and anxiety among Mexican Americans in a family health center. Soc Psychiatry Psychiatr Epidemiol 1989; 24:63-8.
35. Little B, Cannon C, Whitson B, Jarolim DR. The failed appointment. J Okla State Med Assoc 1991; 84:455-8.
36. Weissman JS, Stern RS, Epstein AM. The impact of patient socioeconomic status and other social factors on readmission: a prospective study in four Massachusetts hospitals. Inquiry 1994; 31:163-72.
37. Weissman JS, Gatsonis C, Epstein AM. Rates of avoidable hospitalization by insurance status in Massachusetts and Maryland. JAMA 1992; 268:2388-94.
38. Calle EE, Flanders WD, Thun MJ, Martin LM. Demographic predictors of mammography and Pap smear screening in US women. Am J Public Health 1993; 83:53-60.
39. Solberg LI, Brekke ML, Kottke TE. Are physicians less likely to recommend preventive services to low-SES patients? Prev Med 1997; 26:350-7.
40. Adler NE, Boyce WT, Chesney MA, Folkman S, Syme SL. Socioeconomic inequalities in health. No easy solution. JAMA 1993; 269:3140-5.
41. Pincus T, Esther R, DeWalt DA, Callahan LF. Social conditions and self-management are more powerful determinants of health than access to care. Ann Intern Med 1998; 129:406-11.
42. Link BG, Phelan J. Social conditions as fundamental causes of disease. J Health Soc Behav 1995; Extra Issue:80-94.
43. Kennedy BP, Kawachi I, Glass R, Prothrow-Stith D. Income distribution, socioeconomic status, and self-rated health in the United States: multilevel analysis. BMJ 1998; 317:917-21.
44. Kaplan GA, Pamuk ER, Lynch JW, Cohen RD, Balfour JL. Inequality in income and mortality in the United States: analysis of mortality and potential pathways. BMJ 1996; 312:999-1003.
45. Wilkinson RG. Income distribution and life expectancy. BMJ 1992; 304:165-8.
46. McCally M, Haines A, Fein O, Addington W, Lawrence RS, Cassel CK. Poverty and ill health: physicians can, and should, make a difference. Ann Intern Med 1998; 129:726-33.
47. Singer JD, Davidson SM, Graham S, Davidson HS. Physician retention in community and migrant health centers: who stays and for how long? Med Care 1998: 36:1198-213.
48. Quill TE. Williamson PR. Healthy approaches to physician stress. Arch Intern Med 1990;150: 1857-61.