

remains uncertain whether there has been an increase over a longer time period. All of this contrasts to the clear steady rise of testicular cancer incidence in US White men, both during 1973–84 and earlier.

The explanation of this discrepancy in trends lies either in a difference in susceptibility to the agent(s) responsible for the increase seen in Whites and/or to a lower level of exposure to these agents. The similarity of the White:Black incidence ratio for testicular cancer in different populations supports the hypothesis that there are at least some racial differences in susceptibility. In South Africa's Cape district, the rate ratio was 3.3 (Whites compared to "coloured")¹⁰ while the ratio in the US is around 4.5⁴⁻⁶. Further, the incidence of testicular cancer in Blacks is very similar in different areas of the world.¹¹⁻¹⁵ However, the presence of such a difference in susceptibility between the races does not preclude the possibility that Whites have been increasingly exposed to a greater extent than Blacks in recent decades to some, as yet unidentified, exposure that predisposes to testicular cancer.

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Self-Report and Medical Record Report Agreement of Selected Medical Conditions in the Elderly

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Abstract: This study assessed agreement between self- and medical record report of medical conditions in an elderly population. Medical charts of 120 participants in a screening program were abstracted, and the questionnaire report of eight major conditions was compared with the medical record. There was substantial or moderate agreement between self-report and medical record report for each condition, although strength of agreement varied by condition. Self-report by elderly individuals compares favorably with medical record report of medical conditions. (*Am J Public Health* 1989; 79:1554–1556.)

Introduction

Information on medical conditions is frequently gathered by questionnaire because a standardized medical examina-

tion would be impractical and expensive, but the accuracy of self-reported information is seldom assessed. This is of particular concern in elderly persons, who may be more likely to misreport information than younger individuals. The purpose of this study is to evaluate the agreement between self-report and medical record report of selected medical conditions in elderly individuals.

Methods

Population

Individuals in this study have participated for at least three years in the Florida Geriatric Research Program, a health-screening program located in Dunedin, Florida. This free program is open to all ambulatory residents of Dunedin over 65 years of age; over 45 percent of the age-eligible residents have been enrolled. The program began in July 1975 and screens 2,200 persons each year.

Participants are seen annually for a clinic visit, where they are given a brief medical examination and complete a detailed questionnaire ascertaining previous and present illnesses. Detailed descriptions of this population have been published.¹

For this analysis, a 10 percent random sample of participants who had their annual clinic visit between July 1, 1985 and December 31, 1985 was selected. These individuals

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were sent a letter requesting permission to review their medical records.

Medical Record Review

Mease Health Care, Inc. (MHC), a private hospital with a large outpatient clinic, serves the Dunedin community. All medical records (both inpatient and outpatient) of MHC were requested for sampled individuals. One of us (TLB) then reviewed each medical record and noted the occurrence and date of first diagnosis of the following conditions: angina pectoris, cancer, cataract, diabetes, fracture, hypertension, myocardial infarction, and stroke. Any non-definitive diagnosis (i.e., possible stroke) was also noted.

Questionnaire Responses

The wording of the questions used is presented in Table 1. Except for cataracts, possible responses to each question are: Yes, No, or Unknown. Possible responses to the question on cataracts are: One Eye, Both Eyes, or None.

Analysis

The medical record diagnosis for each condition (yes or no) was compared to the self-report (yes or no) obtained by questionnaires administered at all previous program visits. Medical record diagnoses after the date of completion of the questionnaires were ignored. We did not assume the medical record was more correct than the self-report. The percent agreement between the two reports, the kappa statistic, and z-scores for kappa were calculated.²

Results

In this study, 120 of the 122 randomly selected individuals consented to a medical chart review. The two participants not providing consent had died between their clinic visit and the request for permission to review. Of these 120 persons, 115 had received care at MHC and theoretically had charts available for evaluation; charts were located and reviewed for 68 women and 39 men (total = 107). At their first visit, participants ranged in age from 65 to 90 years (\bar{x} = 71 years). Of the 170 medical diagnoses noted in the medical records, 62 percent were diagnosed after 1975 and 38 percent prior to 1975.

The proportion with a positive response on medical record or self-report, the percent agreement between self-report and medical record report, and kappa are presented (Table 2). Angina pectoris, cataract, fracture, hypertension, and myocardial infarction were somewhat more likely to be

TABLE 2—Percent Positive Responses by Self-Report and Medical Record Report, Percent Agreement Between Self-Report Medical Record Report and Kappa: Selected Conditions

Condition	N	Positive Report by			Kappa
		% Self	% Medical Record	% Agreement	
Angina	103*	26.2	15.5	85	.57
Cancer (Any)	107	24.3	31.8	89	.72
Cataracts	105*	50.5	34.3	76	.53
Diabetes	107	16.8	16.8	98	.93
Fracture	103*	22.3	13.6	91	.71
Hypertension	107	46.7	32.7	86	.71
Myocardial infarction	107	12.1	8.4	94	.70
Stroke	107	5.6	7.5	98	.85

*Four persons were excluded from these analyses either because a non-definitive diagnosis was listed in the medical chart or unknown was checked on the questionnaire.

noted in the self-report, whereas cancer and stroke were slightly more often noted in the medical record.

The percent agreement between self-report and medical record report ranged from 76 percent for cataract to 98 percent for stroke and diabetes. The overall agreement was 89 percent. There were no differences in agreement by sex or recency of condition. All kappa values had p-values <.001.

Discussion

Public health researchers are concerned about the validity of self-reported information.^{3,4} In this study, agreement is high between the self-report and medical record report of common medical conditions. Kappa scores for six of the eight conditions are >0.6, indicating substantial agreement.⁵ Kappa values between .40 to .60, seen for the remaining two conditions, are evidence of moderate agreement.⁵

There are several limitations to this study. First, participants were not a representative sample, but volunteers who came to a screening program and may be different from non-participants in their interest and knowledge of health-related matters. Over 45 percent of the age-eligible residents of Dunedin were enrolled, however, and the self-reported prevalence of these conditions is very similar to the prevalence reported in three other community studies of elderly persons.⁶

A second limitation is that the respondents had all participated in this screening program, and participation may have affected their knowledge about their health status. However, elderly individuals in general are more knowledgeable about their health than are younger persons⁷; 80 percent of older Americans visit physicians at least once a year, with the average physician visits = 4.8/year.⁸ Whether and to what degree participation in this program would enhance participants' knowledge over and above what they ascertain from physician visits is unknown.

An additional limitation is that the medical records were from the one major hospital/clinic in Dunedin. Participants may have had conditions diagnosed in other medical locations and this information may not be in the reviewed chart. The effect of this type of error would be to lower the agreement between the two sources.

Although overall agreement between self-report and medical record report is good to excellent, there is variability in the percent agreement among the medical conditions. This variability in prevalence by ascertainment source has been reported previously in younger persons,^{4,9-13} and probably

TABLE 1—Questionnaire Items Used in Self-Report of Selected Medical Conditions in the Elderly

Condition	Wording of Question
Angina	Have you ever been told by a doctor that you have angina?
Cancer	Have you ever been told that you had cancer and this was confirmed?
Cataract	Have you been told of cataracts in the following?
Diabetes	Do you have diabetes mellitus?
Fracture	Have you had any broken bones within the last five years?
Hypertension	Have you ever been told that you have hypertension or high blood pressure?
Myocardial infarction	Have you had a heart attack, thrombosis, coronary, or myocardial infarction?
Stroke	Have you ever had a stroke?

results from errors at each source. Self-reported information can be wrong for numerous reasons including a misunderstanding of the diagnosis presented, or the forgetfulness of the individual reporting. Likewise, medical records are not necessarily an accurate source of information.¹⁴⁻²¹ Serious non-reporting or misreporting of diagnoses in medical charts has been found in several studies.^{16-18,20}

Given the potential sources of error with both methods of ascertaining information, it is impossible to know which assessment comes closest to truth. For most important conditions this is probably not an issue, since self-report is significantly correlated with medical record report.

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Geographic Variation in the Occurrence of Hip Fractures among the Elderly White US Population

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Abstract: Geographic variations in hip fracture rates across the nine US Census Divisions were examined using data for elderly Whites from the 1979-85 National Hospital Discharge Survey. Rates varied considerably and were highest in the West North Central Division where rates for females were 50 percent higher than the US rate. Reasons for the geographic variations in hip fracture rates are unknown but do not appear to be closely related to latitude or fall-related deaths. (*Am J Public Health* 1989; 79:1556-1558.)

Introduction

Fractures of the hip result in over 250,000 hospital admissions each year and, in the elderly, represent 25 percent of all injury admissions.¹ A number of risk factors have been identified for osteoporotic hip fractures including increasing age, White race, and female sex.²⁻⁵ Incidence rates for hip

fracture also vary considerably from one country to another and a high rate has been reported for the United States in comparison with other countries.^{2,3,6} This study explores geographic variations in hip fractures within the US using data from the National Hospital Discharge Survey (NHDS).

Methods

The NHDS collects data annually on a representative sample of discharges from nonfederal short-stay hospitals in the US.¹ The data set for this study consisted of all sample discharges from 1979 to 1985 among Whites, age 65 years or older in whom hip fracture (ICD-9-CM codes 820.0 to 820.9) was one of the discharge diagnoses. Blacks and other races were excluded from the analysis because of the small number of sample cases. Cases for which race was not stated were considered White based on previous demographic analysis.⁴ All discharges whose hospitalization involved late effects of hip fracture (ICD-9-CM code 905.3) or complications of a previous fracture (ICD-9-CM code 733.8) or who were transferred to another short-stay hospital were excluded to minimize multiple counting of the same fracture. The final sample contained 6,701 discharges.

Geographic comparisons were limited to the nine US Census Divisions⁷ because of the design characteristics of the

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