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Cardiologists' charting varied by risk factor, and was often discordant with patient report

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Abstract

Objective: To assess the completeness of cardiac risk factor documentation by cardiologists, and agreement with patient report.

Study Design and Setting: A total of 68 Ontario cardiologists and 789 of their ambulatory cardiology patients were randomly selected. Cardiac risk factor data were systematically extracted from medical charts, and a survey was mailed to participants to assess risk factor concordance.

Results: With regard to completeness of risk factor documentation, 90.4% of charts contained a report of hypertension, 87.2% of diabetes, 80.5% of dyslipidemia, 78.6% of smoking behavior, 73.0% of other comorbidities, 48.7% of family history of heart disease, and 45.9% of body mass index or obesity. Using Cohen's κ, there was a concordance of 87.7% between physician charts and patient self-report of diabetes, 69.5% for obesity, 56.8% for smoking status, 49% for hypertension, and 48.4% for family history.

Conclusion: Two of four major cardiac risk factors (hypertension and diabetes) were recorded in 90% of patient records; however, arguably the most important reversible risk factors for cardiac disease (dyslipidemia and smoking) were only reported 80% of the time. The results suggest that physician chart report may not be the criterion standard for quality assessment in cardiac risk factor reporting.

Keywords: Medical charts; Risk factors; Cardiologist; Concordance; Completeness; Patient self-report

1. Introduction

Medical records are customarily used as the criterion standard to assess quality of care in the health care setting. Accurate and complete medical record documentation by physicians is essential to ensure appropriate treatment and optimal continuity of care. Missing information in medical charts can lead to medication errors, poorer quality patient management, and may have a negative effect on patient outcomes [1]. The poor quality of patient health records has been repeatedly documented in hospital settings [1−4]. An alternative to medical records as a quality assessment tool, patient self-report surveys are increasingly being used, and shown to be valid and accurate [5−9]. It is important in both clinical practice and research to identify patient treatment plans and clinical history; however, it is often difficult to obtain a complete and accurate patient profile using one data source alone as the standard.

To our knowledge, there is no multisite study that has examined the quality of physician charting and patient self-report of cardiac risk factors in a large sample of ambulatory cardiac outpatients. Given that cardiovascular disease is the leading cause of death in the developed world, and there are major reversible risk factors that are directly related to atherosclerotic disease progression, total risk

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What is new?

Key findings:

1 Less than 20% of the outpatient charts completely denoted all major cardiac risk factors. Most frequently, charts were missing one risk factor.

2 Modifiable risk factors for cardiac disease such as dyslipidemia and smoking were reported 80% of the time.

3 Agreement between chart and patient report of cardiac risk factors ranged from substantial to moderate, whereas concordance for comorbid conditions was poor.

What this paper adds: Neither the medical record nor patient report were necessarily the ''gold standard'' for risk factor documentation, and each source has distinct advantages and disadvantages for specific risk factors.

Implications: Initiatives such as electronic patient records and standardized reports should be explored as avenues to improve chart reporting and potentially patient risk-factor management.

assessment is essential to ensure better patient care, improve disease prognosis and outcomes, and to aid in the informed decision-making process. The current study aimed to assess the completeness of reporting of cardiac risk factors within cardiologists' outpatient charts, and concordance with patient report of diabetes, hypertension, smoking history, family history, and obesity. Patient and physician characteristics related to degree of chart completeness were also examined.

2. Methods

2.1. Design and procedure

This study represents a cross-sectional component of a larger longitudinal observational study on access to cardiac rehabilitation. Upon receiving ethics approval from participating institutions, a sample of Ontario-based cardiologists was generated through a national physician registry, CMD Online, and basic sociodemographic data were extracted. Consent to participate was solicited via mail, and included a brief survey. Subsequently, the research assistant performed on-site screening on a retrospective, sample of 20 of the cardiologists' most recent patients with coronary artery disease (CAD).

With informed patient consent, clinical and risk factor data were recorded from charts, and patients were mailed a self-report survey assessing cardiac risk factors. Patient and chart report data were entered by different research assistants to minimize bias.

2.2. Chart extraction

Charts of patients that had been seen by the cardiologist in the outpatient clinic between 2004 and 2006 were eligible for review. After patient consent, demographic data, cardiac risk factors (e.g., diabetes, hypertension, smoking status, family history, obesity, and dyslipidemia), cardiac medications, and disease severity indicators were extracted from charts using a standardized form. Following training, the charts were systematically reviewed by the first author prior to patient report of risk factors (i.e., blind). The complete medical record of every patient was reviewed to obtain a comprehensive overview of the medical history and current status. Chart extraction was completed between May 2005 and September 2006.

2.3. Participants

Sixty-eight nonpediatric Ontario cardiologists consented to participate, and their characteristics are shown in Table 1. A retrospective sample of 1,376 CAD outpatients were mailed to ask for their consent to participate in this study. CAD diagnosis was confirmed based on indication in patient chart of detailed history, focused physical examination, diagnostic ECG changes (i.e., Q waves, and/or ST-T segment changes), troponin levels above the 99th percentile of normal, and/or receiving revascularization such as a percutaneous coronary intervention or acute coronary bypass. Patients who had concurrent valve repair/replacement or arrhythmia or had received a diagnosis of heart failure were also eligible. Reasons for ineligibility were based on exclusion criteria for the larger study as follows: lack of English language proficiency ($n = 87$; 33.5%), inaccurate/outdated contact information ($n = 62$; 23.8%), orthopedic, neuromuscular, cognitive or vision impairment, which would preclude cardiac rehabilitation participation ($n = 31$; 11.9%), unconfirmed CAD diagnosis ($n = 26$; 10.0%), index event or treatment prior to 2004 ($n = 17$; 6.5%), death ($n = 14$, 5.4%), residence outside the province of Ontario ($n = 8$, 3.1%), ineligibility for cardiac rehabilitation based on Canadian guidelines [10] ($n = 7$; 2.7%), previous

Table 1
Characteristics of participating cardiologists

Characteristics	Participants ($N = 68$)
Sex (% female)	11 (16.2%)
Graduation year—medical degree (mean ± SD)	1,982 ± 8.3
Location of medical school (% Ontario)	40 (58.8%)
University appointment (% yes)	28 (42.4.0%)
Subspecialty (% internists/no subspecialty)	44 (64.7%)
Self-reported volume of patients/week (mean ± SD)	51.4 ± 33.02