J Eval Clin Pract. Author manuscript; available in PMC 2010 November 03.

Published in final edited form as:
J Eval Clin Pract. 2009 August ; 15(4): 634–640. doi:10.1111/j.1365-2753.2008.01064.x.

Degree and correlates of patient trust in their cardiologist

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Abstract

Objective—To investigate the level and correlates of patient trust in their cardiologist. Data collection: All 386 urban cardiologists in Southern Ontario (95 participating, response rate=30%) were approached to recruit a sample of their Coronary Artery Disease (CAD) out-patients. 1111 recent and consecutive patients consented to participate (approximately 13 patients per cardiologist, 317 female (26.7%); 60% response rate), and clinical data were extracted from their medical charts. Participants completed a mailed survey including the Trust in Physicians scale (TIP; Thom et al., 1999), in addition to an assessment of sociodemographic, clinical and psychosocial correlates.

Principal Findings—The mean trust score was equivalent to that reported in studies of primary care patients. Results of the significant multivariate model ($F=7.631$, $p<.001$) revealed that less education ($p<.001$), higher systolic blood pressure ($p=.022$), less perceived cyclical/unpredictable illness timeline ($p=.007$) and greater perceived personal control over their heart condition ($p=.004$) were significant correlates of greater trust in cardiologist care.

Conclusions—The significance of education is corroborated by findings of lower satisfaction with cardiac care among those of higher socioeconomic status, despite having generally greater access to care in Ontario. Moreover, the relationship between hypertension and greater trust may

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suggest that such perceptions are not based on physician competence. Future studies should further investigate the correlates of trust, as well as the impact of trust on cardiac health outcomes.

Keywords

patient trust; cardiologist; health care; heart disease

Introduction

Trust in one's physician is related to increased treatment adherence, patient satisfaction, and improved health status. (1–4) Patients report that they most commonly base their trust on physician characteristics such as competence, compassion, privacy and confidentiality, reliability and dependability, and communication skills.(1, 5, 6) Perceptions of competence may be based on clinical parameters such as health status and control of risk factors.

Patient characteristics, such as sex, education and ethnocultural background have been shown to relate to degree of physician trust,(7–9) as do physician characteristics such as sex and sex concordance with patients.(1, 7, 10) However, while some studies have demonstrated ethnocultural differences in trust,(11) with lower levels of trust in physicians among African American patients for example,(8, 12) other studies have failed to corroborate these differences. Overall, consistent correlates of trust have not been established,(5) nor have non-sociodemographic correlates been explored.

Most physician trust studies have been conducted in primary care settings(1) where there is an established or long-term relationship between patient and physician.(7) The nature of the relationship with a specialist is different however, in that care is generally received in the context of a life-threatening and chronic condition, there is less choice in provider, and visits are brief and less frequent. In particular, because of universal healthcare, Canadian patients generally do not have the luxury of 'shopping around' for care and therefore trust factors may be less (or conversely more) important in Canada than elsewhere. In the only other study of trust in specialist physicians (including cardiologists)(13) to our knowledge, results revealed that 79% of patients reported complete trust in their specialist after an initial visit, but that African American patients were less trusting. The objective of this study was to investigate patient trust in cardiologists, as willingness to visit the cardiologist and adherence to treatment are imperative to cardiac health outcomes.(1, 3, 14) The sociodemographic, clinical, and novel psychosocial correlates of patient trust in their cardiologist were investigated.

Methods

Procedure and Design

This study represents a cross-sectional component of a larger longitudinal, observational study. Upon receiving ethics approval from participating institutions, a sample of non-pediatric cardiologists from major centres in the Windsor to Ottawa corridor of Ontario was generated through a national physician registry, CMD Online (www.mdselect.com), and basic sociodemographic data were extracted. All three-hundred and eight-six cardiologists

were mailed an invitation to participate. Consenting cardiologists completed a brief survey and were visited by a research assistant to extract a retrospective, consecutive sample of 20 each of their coronary artery disease (CAD) patients. With informed consent by the patients, basic clinical data was recorded from their charts, and they were mailed a self-report survey.

Participants

Ninety-five cardiologists consented to participate (response rate = 30%). Table 1 displays the characteristics of participating, ineligible and declining cardiologists. Cardiologists ineligible for participation in this study were more likely to be female than participating and declining cardiologists. The mean self-reported patient volume (i.e., number of patients per week) for participating cardiologists was 53.14 ± 35.23.

One thousand, one hundred and eleven recent and consecutive patients consented to participate (317 female (26.7%); 60% response rate) and 202 were ineligible. This represents a mean of approximately 13 patients per cardiologist. 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), and/or troponin levels above the 99th percentile of normal. Patients who had undergone percutaneous coronary interventions (PCIs), acute coronary bypass (ACB), or concurrent valve repair were also eligible. Reasons for ineligibility were based on exclusion criteria for the larger study as follows: lack of English language proficiency (n =46; 22.7%), non-recent index event or treatment (n =18; 8.9%), orthopedic, neuromuscular, cognitive or vision impairment (n=14; 6.9%), ineligibility for cardiac rehabilitation (CR) based on Canadian guidelines(15) (n =6; 3.0%), and previous attendance at CR (n =4; 2.0%). The characteristics of participating, ineligible and declining patients are shown in Table 2. There were no significant differences in participant status based on age. However, more females declined or were ineligible for the study than participated.

Measures

Dependent Variable—The Trust in Physician (TIP) Scale(14) is an 11-item self-report questionnaire used to assess patients trust in their physician with regards to their dependability, confidence in their ability, and their confidentiality of information. All items were scored using a five-point Likert scale, ranging from “totally disagree” to “totally agree.” Scores ranged from 11–55, with higher scores denoting greater trust. The scale has strong psychometric properties.(2, 5) The Cronbach’s alpha in this sample was .87, indicating high internal consistency. The TIP scale has been shown to have predictive power measured at six months for three outcomes: continuity of care, self-reported adherence, and satisfaction.(14) Participants in this study were instructed to rate their trust in their cardiologist.

Sociodemographic Correlates—The patient self-report survey assessed sociodemographic characteristics such as sex, age, ethnocultural background, marital status (married vs. not), gross family income ($49,999 CAD or less vs. $50,000 CAD or more), work status, and education (completed high school or less vs. greater than high school) through forced-choice responses. The list of ethnocultural backgrounds was that used by

Statistics Canada, and a dichotomous variable was also created (European/Caucasian vs. other).

To examine physician correlates, cardiologist sex and graduation year were extracted from CMD online, and patient volume (number of patients per week) was obtained through self-report from the cardiologist survey. This data was also used to determine patient-cardiologist sex concordance.

Clinical Correlates—Body mass index (BMI) was computed based on self-reported height and weight (kg/m^2). Clinical data, which was extracted from patients' medical charts where available, included date of first cardiac diagnosis, event or procedure, blood pressure, lipids, and New York Heart Association class (NYHA; (16)). Psychometrically-validated scales were incorporated in the mailed patient survey, and are outlined below.

The Duke Activity Status Index (DASI; (17)) is a brief 12-item, self-administered survey to determine functional capacity. This measure was incorporated in the model as an indicator of disease severity and as a potential correlate of trust. Participants were asked about their ability to perform common activities of daily living, such as personal care, ambulation, household tasks, sexual function, and recreational activities, which are each associated with specific metabolic equivalents (METs). This valid and common tool correlates highly with peak oxygen uptake.(18)

Psychosocial Correlates—The Illness Perception Questionnaire (IPQ-R; (19)) was administered to assess cognitive representations of cardiovascular disease (CVD) as a potential correlate of trust. All items were scored on a five-point Likert-type scale, which ranged from "strongly disagree" to "strongly agree". The questionnaire incorporated the following five 4- to 6-item subscales: time course (acute/chronic), cyclical or episodic course, disease consequences, personal control, and treatment cure/controllability. A mean subscale score was computed, with higher scores indicating greater endorsement of the given construct.

The Perceived Stress Scale (PSS)(20) is designed to measure the degree to which situations in one's life are appraised as stressful. The 10-item version of this self-report scale shows adequate internal and test-retest reliability. In terms of its validity, the PSS correlates with depressive, anxious, and physical symptomatology.(20)

Statistical Analysis

SPSS 12.0 was used for all analyses, and data were thoroughly cleaned and screened. An examination of age and sex differences between participating, ineligible and declining patients was tested using analyses of variance and Pearson's chi square respectively. The mean and standard deviation of the TIP scale was computed, and compared to previous studies using an equivalency test.(21) A bivariate analysis was then conducted to assess which sociodemographic, clinical and psychosocial correlates were related to trust in one's cardiologist via t-tests and correlational analyses as appropriate. An analysis of variance was also conducted to determine if there was a difference in trust scores by ethnocultural background. To test for a patient and cardiologist sex-concordance effect, physician sex was

matched with patient sex marking each pair as concordant or not. A t-test was first conducted on sex-concordant and non-concordant pairs. The file was then split by patient sex, and then a t-test was conducted to determine if there was a difference between male-concordant and female-concordant pairs. Lastly, a multivariate general linear model (GLM) was used to assess the association between the significant correlates and trust in one's cardiologist.

Results

Participating patient characteristics are shown in Table 3. Their age ranged from 28 to 104 years old. Other self-reported ethnocultural backgrounds by descending frequency included 45 (4.5%) South Asians, 16 (1.6%) African Americans, and 10 (1.0%) Chinese. The mean number of days between last outpatient visit/index event and the date the survey was completed was 197.03 ± 133.88 (approximately 6.5 months), and this did not significantly correlate with trust in cardiologists (p=.306).

The mean TIP score was 43.54 ± 6.32, ranging from 13 to 55. Using the equivalency test, this mean was found to be equivalent ($z<1.96$) to the mean TIP scores in two studies (48.13 ± 9.86; 51.32 ± 7.42).(11) These studies examined the degree of trust in primary care physicians in a sample of noninsulin-dependent diabetes mellitus patients.

Correlates of Trust in Cardiologists

Bivariate analyses of sociodemographic, clinical and psychosocial correlates of trust are shown in Table 4. Older age and lower patient education were the only significant sociodemographic correlates of trust in cardiologists. An analysis of variance was also conducted by ethnocultural subgroup, and again shown to be unrelated to trust scores (p=.57).

There was also no significant difference in trust scores between sex- concordant pairs and non-concordant pairs and no difference between male concordant pairs and female concordant pairs. None of the cardiologist characteristics were related to trust scores.

With regard to clinical correlates, higher systolic blood pressure was the only significant clinical correlate of greater trust. With regard to psychosocial correlates, the bivariate analyses revealed a significant correlation between perceived cyclical/unpredictable illness timeline, perceived greater illness consequences, less perceived treatment control, less perceived personal control over one's heart condition, greater stress, and lower trust.

Results of the significant multivariate model ($F=7.631$, $p<.001$) incorporating the significant sociodemographic, clinical and psychosocial correlates identified through the bivariate screening outlined above are shown in Table 5. Low educational status, higher systolic blood pressure, less perceived cyclical/unpredictable illness timeline and greater perceived personal control over their heart condition were significant correlates of greater trust in cardiologist care. There was also a trend between those with greater stress reporting lower trust.

Discussion

Trust in one's healthcare provider is essential as it may foster compassion, confidentiality of patient medical information, continuity of care, greater support, and quality care.(5, 6, 14, 22) Research has shown that greater patient trust is associated with increased patient satisfaction, treatment adherence, and ultimately improved health status.(1–3) However, there is mixed evidence in the literature with regard to correlates of patient trust, and there are a lack of studies examining patient trust in cardiologists in particular.(13) This presents the first study investigating trust in cardiologists solely, which examines not only patient and physician sociodemographic correlates, but clinical and psychosocial correlates as well.

Overall, patients reported a relatively high degree of trust in their cardiologists. The results from the equivalency test suggest that the CAD patients in our sample reported similar levels of trust in cardiologists as diabetic patients have in their primary care physicians.(11) Studies have shown that there is greater patient trust when patients can choose their physician,(2, 23, 24) yet cardiac patients in Canada often have less choice in their cardiologist in the case of a cardiac emergency in comparison to a primary care physician. Previous studies also suggest there is increased trust with a greater duration of the patient-provider relationship,(9, 14, 22) and it is likely the relationship with a specialist is shorter than that with a primary care physician. However, the shortage of primary care providers in the region translates to greater patient volume and therefore, less time spent with each patient. This lack of time spent can hinder patient trust in their physician, potentially creating a relationship of short duration similar to that between patients and their cardiologist.

Education was the only sociodemographic correlate of trust in one's cardiologist, where those who completed less schooling reported significantly greater trust. This differs from previous findings of no educational effect(2, 23) or that of increased trust among those with higher education.(7) It is not surprising that work status and finances were not significantly related to trust, as these variables will be limited by disability in acute myocardial infarction convalescence due to reverse causation. Education, on the other hand, is more suitable as a primary sociodemographic characteristic, since one's educational experiences are remote exposures and are not confounded by disease factors. Education can also be considered an indicator of socioeconomic status (SES). Indeed lower satisfaction with cardiac care is reported among patients with higher SES, despite their generally greater access to care in Ontario.(25) Similarly, another study also found that patients of low SES had significantly higher levels of trust compared to high SES patients.(7) These findings suggest that less educated patients who have greater trust in their cardiologist may be unaware of what constitutes good care. This possibility must be further explored to assess why those with lower education, and likely lower SES, have greater trust in their cardiologist, and how we can improve health literacy in this population.

The present study revealed no sex differences in cardiologist trust, which have been previously reported in non-specialist studies.(2, 23, 26) However, one study did find greater trust among female patients.(7) It is surprising that females do not have less trust in cardiologists than males considering reports of their experiences with CVD,(27) including

the perception even among physicians that it is a man's disease, of delayed diagnoses and lower rates of referral for diagnostic testing or treatments when compared to males with cardiovascular disease.(28)

Contrary to previous findings of lower trust among African American, (8, 9, 29, 30)or among Asian patients,(31) this study found no significant difference in trust by ethnocultural background, although it is possible that this is somewhat explained through the education finding. Similarly, one study on patients with ischemic heart disease failed to find lower trust among the ethnocultural minority patients.(32) Several other studies also found no association of trust with ethnocultural background.(7, 23, 26, 33, 34) Our study is of note given its 10.4% representation of diverse ethnocultural groups, most notably patients of South Asian background who have a greater burden of cardiovascular disease.(35–38) The lack of an ethnocultural relationship to trust is encouraging as it suggests that patients in Canada are similarly satisfied with care from cardiologists.

We also failed to find a relationship between physician sociodemographic characteristics and trust. Patient satisfaction, which is often highly correlated with trust, has been found to be significantly positively associated with sex concordance between physician and patient(7, 10, 39) and there have also been studies reporting that patients are more satisfied with visits with female physicians.(10, 22) One reason for this increased satisfaction with female physicians has been that they may engage in more socio-emotional talk and participatory decision-making.(40–42) One study, however, did find that patient trust was associated with male physician sex, and with sex concordance between physician and patient.(7) This present study failed to find similar findings of a sex concordance effect between patients and their cardiologists, or a significant difference in trust levels by cardiologist sex, which may be due to the low number of female cardiologists in the sample (approximately 15.1%). Finally, we did not have information on other cardiologist sociodemographic characteristics such as ethnocultural background, and it would be interesting for future studies to assess their potential relationship to patient trust.

One can speculate that our finding that greater systolic blood pressure is significantly related to greater trust contradicts patient reports that they base their trust on physician competence. (1, 5, 6) Many patients may be unaware of what constitutes evidence-based cardiac care, and therefore cannot judge physician competence. At the same time, given that we have not examined other care quality indicators such as the provision of evidence-based therapies and patient adherence, cardiologist performance cannot truly be evaluated. Further, blood pressure control may actually be a better performance measure for primary care than for specialty service providers. Alternative explanations include that degree of blood pressure control is a proxy for the length of the patient-physician relationship. Another possibility may be that those who are hypertensive have a higher frequency of visits with their cardiologist and, as a result, have greater trust. Although we did not measure patient frequency of visitation, it would be interesting to see examine its impact on trust. Lastly, our blood pressure measure in itself may not truly reflect blood pressure control because it is difficult to ensure that a standardized method was used among the cardiologists to determine blood pressure (i.e. upon admission or pre-discharge). Given the association between lower education and greater trust however, future research is warranted to investigate the

relationship between perceptions of physician competence and knowledge of evidence-based care.

Patients' representations of their illness have aided our understanding of the psychological impact of illness, and patients' willingness to seek care and their adherence to treatment recommendations.(43) This study found that patients who perceive a cyclical/unpredictable illness timeline reported less trust and that those who perceived greater personal control over their cardiac condition had more trust in their cardiologist. It is possible that having a cyclical illness perception translates into less trust because of the unpredictable nature of their cardiac symptoms such as angina onset, which may cause patients to question the competency of their cardiologist and their disease control. A trend towards greater stress among those who reported less trust in their cardiologist was also found. However, since functional capacity as assessed by the DASI did not significantly relate to trust it is likely that the stress reported by patients is, therefore, not related to their illness severity but to other factors.

Interestingly, although empowerment (personal control) and SES (as measured by one's education level) should theoretically be correlated, this study found incongruent associations with physician trust. It is possible that those with more trust have developed a sense of greater personal control over their disease whereas trust levels cannot necessarily impact one's SES. Hence, this discordance may in part be explained by the fact that empowerment, and not education, can be confounded by disease factors.

Caution is warranted when interpreting these results. First, the self-report nature of the study may introduce social desirability bias, and participants may have been reluctant to admit their attitudes towards their cardiologist for fear that this would affect their care (although all participants were fully informed that providers would not see their data). Second, the cross-sectional design of this study precludes any causal attributions. Also, physician trust factors may perhaps be an epiphenomenon of other characteristics and behaviours; future research should further investigate this possibility. Lastly, there could be both patient and provider response bias. The responses of the patient participants in this sample may not generalize to the broader population of CAD patients in other jurisdictions. With regard to physicians, there was a low response among cardiologists, and fewer females participated than males, limiting the generalizability of our findings. Thus, it is possible that the participating cardiologists have different relationships with their patients than those who chose not to participate, and they may in fact be more attentive cardiologists. However, physicians as a group are more homogeneous with regard to knowledge, training, attitudes, and behaviour than the general population, suggesting that nonresponse bias may not be as crucial in physician samples as in surveys of the general population.(44) Moreover, our response rate is similar to that shown in other physician studies.(45) Furthermore, in a review of physician response to surveys, demographic characteristics of late respondents (considered to be a proxy for non-respondents) were similar to the characteristics of respondents to the first mailing.(44) Finally, this was a cross-sectional substudy embedded within a larger study examining cardiovascular secondary prevention, and therefore cardiologists did not choose not to participate based on the topic at hand. To optimize the physician response rate we

incorporated components of Dillman's Total Design Approach,(46) including multiple contacts, personalized mailings, and a short questionnaire.

This study suggests that patient trust in primary and specialist care providers is equivalently high. Some experts would suggest that too much trust equates with paternalistic medicine, and could hold negative effects for patients. However, trust may result in greater treatment adherence, and such adherence is crucial for the cardiac patient who often has multiple evidence-based recommendations for risk reduction including medications, physical activity, diet and smoking cessation. Further examination into the greater trust among patients with lower education and less blood pressure control is needed, to explore patient's basis for judgments of cardiologist competence and cardiac health literacy. Future studies should more closely examine these correlates of trust, and their effect on patient adherence and cardiac health outcomes.

Acknowledgments

This research is funded by the Canadian Institutes of Health Research, grant # MOP-74431. Dr. Grace is supported by the Ontario Ministry of Health and Long-Term Care and Ms. Kayaniyil is supported by the Heart and Stroke Foundation of Ontario.

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Table 1

Characteristics of participating, ineligible and declining cardiologists

Characteristic	Participants (N=95)	Ineligible (n=65)	Declined (n=225)
Sex (%female)	14 (15.1%)	17 (26.2%) *	26 (11.6%)
Graduation year – medical degree (mean ± SD)	1982 ± 8	1982 ± 10	1984 ± 9
Location of Medical School (%Ontario)	53 (57.0%)	36 (55.4%)	142 (63.1%)
University appointment (%yes)	41 (47.1%)	30 (47.6%)	90 (45.7%)

Note: Percentages take into account missing data for some variables.

* $p<.05$

Table 2

Characteristics of participating, ineligible and declining patients

Characteristic	Participants (N=1111)	Ineligible (n=202)	Declined (n=446)
Sex (%female)	317 (26.7%) *	82 (40.1%)	159 (35.2%)
Age (mean ± SD)	66.32 ± 11.38	66.99 ± 14.54	66.14 ± 13.02

* p<.05

Table 3

Descriptive characteristics of study sample (N=1111)

Characteristic	
Body Mass Index (BMI; mean ± SD)	27.43 ± 5.36
Marital status (%married)	711 (70.5%)
Ethnocultural background (%minority)	104 (10.4%)
Education (% greater than high school)	530 (52.9%)
Family income (%$50,000 or more)	447 (48.5%)
Work status (% retired)	543 (53.9%)
Systolic BP (mean ± SD)	131.25 ± 20.30
Diastolic BP (mean ± SD)	74.30 ± 10.68
Total Cholesterol/HDL Ratio (mean ± SD)	3.71 ± 1.49
New York Heart Association Class (%greater than class 1)	77 (44.8%)
Duke Activity Status Index (mean ± SD)	36.39 ± 16.14

Note: Percentages take into account missing data for some variables.

BP, blood pressure; HDL, high-density lipoprotein; LDL, low-density lipoprotein

Table 4

Association between trust in physician mean score and potential correlates

Type of Correlate	Variable	Test Statistic (significance)
Sociodemographic	Sex	1.27 (.204)
	Age	..09 (.009)
	Marital Status	1.18 (.239)
	Family income	.86 (.391)
	Education	2.62 (.009)
	Ethnocultural background	.77 (.440)
	Sex concordance	.54 (.592)
	Physician sex	.64 (.522)
	Physician years of practice	.00 (.944)
	Physician patient volume	−.02 (.523)
Clinical	Body Mass Index	−.07 (.238)
	Systolic blood pressure	.08 (.022)
	Diastolic blood pressure	.04 (.309)
	Total Cholesterol/HDL Ratio	−.03 (.571)
	DASI	.02 (.670)
Psychosocial	IPQR timeline (acute/chronic)	−.02 (.556)
	IPQR cyclical timeline	−.19 (.000)
	IPQR CV consequences	−.09 (.022)
	IPQR personal control	.20 (.000)
	IPQR treatment control	.15 (.000)
	Perceived Stress	−.13 (.002)

IPQR, Illness Perceptions Questionnaire; DASI, Duke Activity Status Index; CV, cardiovascular

Table 5

Model of correlates of trust in cardiologist

Variable	F	p
Education	11.73	.000
Age	.01	.940
Systolic blood pressure	5.25	.022
Cyclical illness timeline	7.41	.007
Personal control	8.32	.004
Illness consequences	.10	.755
Treatment control	2.58	.109
Stress	2.98	.085