Assessment of Patient Satisfaction With Telephone and Mail Interventions Provided by a Clinical Pharmacy Cardiac Risk Reduction Service

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ABSTRACT

OBJECTIVE: Kaiser Permanente of Colorado developed a population-based program, the Clinical Pharmacy Cardiac Risk Service (CPCRS), to help close the treatment gap for patients with coronary artery disease. CPCRS provides much of its care via telephone. The purpose of this study was to determine the level of satisfaction among patients in this unique service.

METHODS: This was a cross-sectional survey of patients enrolled in CPCRS for at least 6 months. A sample of patients who met the inclusion criteria were chosen at random to receive the satisfaction survey via mail. Questions pertained to overall satisfaction and satisfaction with individual components of CPCRS. A Likert-type, 5-point scale was used for the majority of the questions. Analyses of the results were primarily descriptive.

RESULTS: Of 1,000 surveys mailed, 491 (49.1%) were returned. The majority of respondents were male (68.5%). The average age of respondents was $71.7 \pm$ (SD) 9 years. Of those surveyed, 94.6% (95% confidence interval [CI], 92.6%-96.6%) reported being satisfied (agree or strongly agree) with the care they received for cholesterol management from their CPCRS clinical pharmacy specialist. Respondents reported that their CPCRS clinical pharmacy specialist was easy to contact (83.7%; 95% CI, 80.3%-87.1%), provided timely service (94.8%; 95% CI, 92.8%-96.8%), and addressed all questions or concerns in a way that was easy to understand (85.8%; 95% CI, 82.6%-89.0%). The majority of respondents reported that they were content receiving care over the telephone (86.7%; 95% CI, 83.5%-89.9%) and by mail (90.0%; 95% CI, 87.1%-92.9%).

CONCLUSION: Overall, survey respondents indicated a high level of satisfaction with the services provided by CPCRS. Based upon patient satisfaction, the results of this survey suggest that the use of telephone and mail systems to provide patient care can allow clinical pharmacy specialists to manage a large number of patients successfully. Health care systems may wish to explore similar methods to address the needs of patients with coronary artery disease.

KEYWORDS: Patient satisfaction, Coronary artery disease, Clinical pharmacy specialist, Lipids

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Cardiovascular disease, of which coronary artery disease (CAD) is the most common, is the leading cause of death in North America.¹ The costs associated with cardiovascular disease were estimated to be approximately \$368.4 billion in 2004.¹ Despite data supporting the use of numerous secondary prevention treatment strategies and published clinical practice guidelines to reduce mortality and morbidity, a significant treatment gap remains.^{2,3} Based upon published literature, approximately 64% of patients with CAD in the United States are screened for dyslipidemias, 39% receive treatment, and only 8% are treated to target cholesterol goals, as recommended by clinical practice guidelines.⁴ Similar outcomes are seen with hypertension and diabetes management, in which treatment to target goal occurs in a relatively small proportion of patients.^{5,6}

The National Cholesterol Education Program guidelines put forth a number of recommendations to help improve adherence with guidelines and close the so-called "treatment gap."⁷ The guidelines identified both the use of lipid clinics and telemedicine services as effective methods.⁷ The results have been published from multidisciplinary risk reduction clinics that provided traditional face-to-face care as well as care via telemedicine services, which facilitated the management of cardiovascular risk factors, increased the utilization of proven effective secondary prevention strategies, and focused on reducing overall cardiovascular risk.⁸⁻¹¹ Generally, these services have been associated with improved patient outcomes.¹¹

In 1998, Kaiser Permanente of Colorado (KPCO) developed the Clinical Pharmacy Cardiac Risk Service (CPCRS), staffed by clinical pharmacy specialists, to optimize the use of evidence-based secondary prevention treatment strategies for more than 10,000 patients with documented CAD (nearly all of KPCO's CAD population).⁸ As measured by the National Committee for Quality Assurance, 94.7% have had their cholesterol screened. Among those enrolled in CPCRS, 73% have achieved the low-density lipoprotein (LDL)-cholesterol goal of less than 100 mg/dL.¹² Telemedicine services are utilized for the vast majority of patient care activities within CPCRS. Telephonic encounters generally involve a review of laboratory results that are pertinent to cardiac risk factors, discussion of diet and exercise, and review and adjustment of cardiac medications. Particular attention is given to verifying adherence and tolerability to lipid-altering therapies, aspirin, beta-blockers, and angiotensin-converting enzyme inhibitors, when appropriate.

CPCRS clinical pharmacy specialists initiate and adjust these medications, when needed, with physician approval. Pertinent health information related to cardiac risk reduction strategies is tracked using a computerized database.

Patient satisfaction, the degree to which providers meet patients' needs, is an important component of quality health care delivery and can be used to assess performance of health care programs and personnel.¹³ While numerous studies have evaluated patient satisfaction with general pharmacy services, few studies have specifically investigated specialized pharmacy-practice settings such as CPCRS, where the primary mode of communication with patients is by telephone. This study was designed to evaluate the level of patient satisfaction with CPCRS.

■ Methods

Design

This study was a cross-sectional survey of ambulatory patients with CAD who were actively enrolled in CPCRS. Searches of the medical literature using MEDLINE (January 1966 through December 2002) and International Pharmaceutical Abstracts (January 1970 through March 2004) were conducted to identify suitable survey instruments for use in this study. However, no satisfactory surveys were found because the published patient satisfaction survey instruments were designed to evaluate pharmacy services pertaining to community-based pharmacists or anticoagulation clinics. Consequently, the CPCRS staff developed a 2-page, 21-item survey instrument to be used for this study.

Content experts in both cardiovascular risk reduction and survey development (13 clinical pharmacy specialists and a market research analyst with extensive experience in developing patient satisfaction surveys) reviewed an initial draft of the survey instrument and, based on their feedback, we made revisions to the instrument. Five patients from CPCRS, representative of the patient population to be surveyed, pilot-tested the instrument and provided input on survey content, clarity, and readability.

In addition to collecting sociodemographic data, the survey included items pertaining to patients' overall satisfaction with the service and with individual components of the service (i.e., timeliness of information provided, quality and quantity of information provided, method of communication, etc.; Appendix). A Likert-type scale (1 = strongly disagree, 5 = strongly agree) was used to quantify the responses. In addition, respondents were given the opportunity to provide feedback in free text about what they liked and disliked about CPCRS and to identify areas for improvement. Approval to conduct the survey was obtained from the Institutional Review Board of KPCO.

Subject Selection

Patients were eligible to receive the survey if they were aged 18 years or older, active KPCO members, and had a history of CAD. Eligible patients also had to be enrolled in CPCRS for at

least 6 months and have had at least one contact (either via telephone or letter) with a CPCRS clinical pharmacy specialist in the 6 months prior to receiving the survey. Patients listed on the KPCO's "no call" list, which indicates that they have requested not to be contacted for nonmedical purposes, were not eligible to receive the survey.

Between March 2003 and May 2003 a random sample of 1,000 patients who were actively enrolled in CPCRS were sent a letter that explained the purpose of the survey, the survey instrument, and a self-addressed, postage-paid envelope to return their completed survey. In order to protect patient confidentiality and to ensure that the CPCRS staff had no access to the responses, surveys were mailed, collected, and analyzed by an independent research firm. All patient identifiers were removed from the survey results. Responses were collated and entered into a database that identified respondents only by a unique number.

Statistical Analysis

The primary study outcome was the proportion of patients expressing overall satisfaction with the service. Secondary outcomes included the evaluation of satisfaction with various components of the services provided by CPCRS.

The survey sample size was estimated using the EPI Info computer program (version 2000, Centers for Disease Control, World Health Organization) for population surveys. Based on the fact that there were slightly more than 10,000 patients enrolled in CPCRS, and on the assumption that 75% of the randomly selected respondents would agree or strongly agree with the statement "I am satisfied with the care that I receive for my cholesterol from my clinical pharmacist at CPCRS," a sample size of 270 patients was required to provide a confidence level (CI) of 95%.

Statistical analyses were performed using Microsoft Excel (Redmond, Washington). Analyses of results were primarily descriptive. Relevant sample characteristics assessed for the primary objective are presented as proportions. Baseline characteristics are presented as means with standard deviations, where appropriate. Items related to satisfaction with the process and specific aspects of care provided by CPCRS were analyzed for reliability using Cronbach's alpha. A chi-squared test was used for comparing between group values, where appropriate. A *P* value < 0.05 was considered statistically significant.

■ Results

One thousand surveys were mailed to a randomly generated list of eligible CPCRS patients. A total of 491 (49.1%) patients responded to the first mailing. This exceeded the minimum number of desired responses, obviating the need for a second mailing. The mean age of the respondents was 71.7 ± 9.0 (standard deviation [SD]) years (range 45-93 years) and 68.5% were male (Table 1). This is comparable to the overall CPCRS

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population in which the average age is 69.6 ± 10.5 (SD) years and 69.4% are male. The majority of respondents had a college education or higher (52.8%), and 85.1% had been a KPCO member for at least 5 years. The responses to satisfaction with the process and specific aspects of care provided by CPCRS yielded an inter-item reliability score of 0.86.

Overall, 94.6% (95% CI, 92.6%-96.6%) of respondents reported that they strongly agreed or agreed that they were satisfied with the care they received for cholesterol management from their CPCRS clinical pharmacy specialist (Figure 1), while 83.7% (95% CI, 80.3%-87.1%) of respondents strongly agreed or agreed that they could easily contact their clinical pharmacy specialist whenever they had questions or concerns. When calling their CPCRS clinical pharmacy specialist, 86.0% (95% CI, 82.6%-89.4%) of respondents strongly agreed or agreed that the pharmacist adequately answered their questions, 71.0% (95% CI, 66.9%-75.1%) agreed or strongly agreed that the clinical pharmacy specialist explained the side effects of their cholesterol medications, and 63.3% (95% CI, 58.9%-67.7%) agreed or strongly agreed that the clinical pharmacy specialist explained what to do if side effects were to occur; 85.8% (95% CI, 82.6%-89.0%) of respondents agreed or strongly agreed that the CPCRS clinical pharmacy specialists explained things in a way that was easy to understand, and 94.8% (95% CI, 92.8%-96.8%) agreed or strongly agreed that cholesterol results were provided in a timely manner.

When queried about how CPCRS reflected on KPCO in general, 66.5% (95% CI, 62.2%-70.8%) of respondents agreed or strongly agreed that participation in CPCRS positively affected their decision to remain with the organization, while 51.8% (95% CI, 47.2%-56.4%) agreed or strongly agreed that their clinical pharmacy specialist provided a unique aspect of their care. Regarding telephone-based encounters, 86.7% (95% CI, 83.5%-89.9%) agreed or strongly agreed that they were content receiving care in this manner and 90.0% (95% CI, 87.1%-92.9%) with contact through the mail. Yet, 70.8% (95% CI, 65.7%-74.9%) agreed or strongly agreed that they would be willing to come into the medical office to meet with their clinical pharmacy specialist to learn more about their cholesterol and/or other diseases.

For other satisfaction measures, 83.8% (95% CI, 80.4%-87.2%) of respondents agreed or strongly agreed that CPCRS provided useful information on cholesterol reduction goals; 69.4% (95% CI, 65.0%-73.8%) for heart-healthy eating, and 65.3% (95% CI, 60.8%-69.8%) for exercise programs (Figure 2). While only 20.0% (95% CI, 16.2%-23.8%) of respondents agreed or strongly agreed that they received useful information about smoking cessation programs, only 11.3% of respondents were current smokers. For information regarding alternative lipid-lowering therapies, 46.2% (95% CI, 41.5%-50.9%) agreed or strongly agreed that useful information was given to them; 45.8% (95% CI, 41.1%-50.5%) for other medical conditions,

TABLE 1 Patient Demographics

Characteristic	Percent (n) Survey Respondents*	Total CPCRS Population†	P Value
Male	68.5% (305/445)	69.4% (7,109/10,243)	0.738
Age			
<65 years	17.6% (84/477)	29.9% (3,065/10,243)	0.001§
65-75 years	47.4% (226/477)	38.1% (3,898/10,243)	0.001§
76-84 years	28.5% (136/477)	26.1% (2,673/10,243)	0.263
85 years	6.5% (31/477)	5.9% (607/10,243)	0.676
Level of education			
High school	44.6% (210/471)	Unavailable‡	
College	36.7% (173/471)		
Graduate school	15.1% (71/471)		
None of the above	3.6% (17/471)		
Medical conditions			
Diabetes mellitus	26.1% (85/326)	31.2% (3,193/10,243)	0.058
Hypertension	81.6% (266/326)	70.8% (7,255/10,243)	0.001§
Tobacco smoking	11.3% (37/326)	13.7% (1,406/10,243)	0.251

* n based on number of respondents to each question.

† Clinical pharmacy cardiac risk service patient population as of November 30, 2004.

‡ This information cannot be queried from patients' medical records.

§ Chi-squared test, $P < 0.05$ statistically significant.

and 55.0% (95% CI, 50.3%-59.7%) for health resources within KPCO. Regarding the amount of information provided by CPCRS, 92.3% (95% CI, 89.8%-94.8%) agreed or strongly agreed that the amount was appropriate for one telephone call.

In response to open-ended questions, the CPCRS staff was described widely as knowledgeable, accessible, and caring. When asked about potential areas for improvement, the majority of respondents who wrote open-ended responses reported that no changes were needed. There were few open-ended responses in which improvements or changes were noted. The specific suggested areas for improvements included more visibility to patients in terms of what CPCRS was and better communication between CPCRS and patients and other health care providers. A few respondents also suggested utilizing electronic mail between the health care provider and patients as a means to communicate laboratory results and therapeutic recommendations. Some respondents requested either an extension of services to include exercise programs or additional information on dietary interventions to decrease lipids.

Discussion

Satisfaction is the extent to which individual wants and needs are met. The level of patient satisfaction is often used as a marker of performance for both health care organizations and personnel.¹³ Patients who report being satisfied with particular services are more likely to remain members of health care organizations and adhere to prescribed medical regimens.¹⁴ The results of our survey indicate a high level of patient satisfaction with the services and types of information provided by CPCRS clinical pharmacy specialists. While limitations of previously published

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FIGURE 1 Patient Responses to the Following Survey Items:

CPCRS=clinical pharmacy cardiac risk service; CPS=clinical pharmacy specialist; KPCO=Kaiser Permanente of Colorado; n=the number of respondents to each question (not all respondents answered all survey questions).

evaluations of patient satisfaction with telemedicine services have been identified, including small sample sizes, low response rates, or unspecified patient selection criteria, our study has attempted to address these limitations.¹⁵ Our study included a prespecified sample size that was exceeded (we required 270 surveys returned and received 491), had a nearly 50% response rate, and had clear patient selection criteria.

Few reports of patient satisfaction surveys in the literature specifically evaluate specialized outpatient clinical pharmacy services like CPCRS.¹⁶⁻²⁰ One study of 155 patients, available in abstract form only, reported that 87% of patients enrolled in a pharmacist-managed lipid clinic were satisfied with the service.²⁰ However, the method of care delivered to these patients was via in-person clinic visits, not via the telephone like CPCRS.

Telemedicine, which we define as the provision of medical

information and services over the telephone, is becoming an increasingly popular method of health care delivery. Approximately 90% of the care delivered to patients by CPCRS was provided via the telephone. Overall, respondents to our survey reported that they were highly satisfied with receiving information via the telephone. A previously published study evaluating satisfaction with a telephone-based anticoagulation service also reported patients within the service to be satisfied with various aspects of care provided compared with patients not enrolled in the service.²¹ Surveys were completed by 288 subjects, some of whom were participants in a telephone-based anti-coagulation service and the others received care from their physician. Similar to our survey, a 5-point Likert scale was used, ranging from "poor" to "excellent." Overall quality of care was ranked as "excellent" by 53% of anti-

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FIGURE 2 Patient Responses Regarding Usefulness of Information Provided by CPCRS on the Following Topics:

CPCRS=clinical pharmacy cardiac risk service; KPCO=Kaiser Permanente of Colorado; n=the number of respondents to each question (not all respondents answered all survey questions).

coagulation service enrollees compared with 39% receiving usual physician care [$P<0.05$].

There have been other studies published evaluating patient satisfaction with other types of telecommunication services in a variety of clinical settings. A systematic review of 93 papers that evaluated satisfaction with a variety of telemedicine approaches found that only 2% of the studies involved telephone-only interactions; the majority of studies involved satisfaction with real-time videoconferencing. A mean rating for overall satisfaction was $92\% \pm 11\%$, a finding similar to what we report in the current evaluation.²² However, the authors stated that further investigation into specific factors influencing patients' acceptance of telemedicine was warranted.²²

As noted by Mair and Whitten, satisfaction with particular telemedicine services cannot be generalized to all telemedicine services.¹⁵ In their systematic review of 32 studies of patient satisfaction with teleconsultations between health care providers and patients involving real-time interactive videos, the authors commented that while most studies reported that patients deemed telemedicine "acceptable," questions about what types of consultation services are suitable for telemedicine still need to be defined.¹⁵ It is our experience that telephone consultation can provide an efficient and effective means of delivering care to patients with CAD. Given that our patients agreed or strongly agreed with this method of health care delivery, telephone-mediated services could possibly be considered for other areas of patient care.

We note that the percentage of respondents indicating satisfaction with CPCRS exceeded the percentage indicating that CPCRS positively affected their KPCO membership decision. We suspect this discrepancy is because KPCO offers a broad-range of services to its members and many CPCRS enrollees only have contact with CPCRS once or twice a year. They likely have more frequent contact with other services, which may have a more influential effect on membership decisions. Our results suggest that CPCRS has some effect on patients' decisions to receive health care from KPCO. While we were unable to identify other studies that evaluated this particular aspect of satisfaction, this may be an important subject for further evaluation in other studies.

Survey responses identified improvement opportunities for CPCRS operation. For example, improving the visibility of the service may further improve patient satisfaction scores since some patients were not fully aware of CPCRS' existence. This shortfall in awareness may explain the relatively low percentage of patients responding that CPCRS provides a type of care unique from their other providers. Some patients may not have recognized that it was a clinical pharmacy specialist calling, as opposed to a nurse who typically calls to inform patients of the results of laboratory tests. Steps have been taken to improve patient awareness and understanding of CPCRS. Along with a letter that introduces the concept of CPCRS, a biography for the individual clinical pharmacy specialist assigned to each patient's care is mailed to each enrollee. We also have developed an

extensive list of patient education materials, including handouts on different cardiac medications, heart-healthy diets, exercise, and alternative therapies that further enhance enrollee understanding of topics discussed during telephone encounters. These materials have CPCRS contact information on them in the event that enrollees desire more information.

Limitations

We were unable to identify any prior patient satisfaction surveys that met our needs, and this study employed a unique survey instrument. The construct validity of this survey instrument was not determined. We did attempt to assess content and face validity.

We did not attempt to determine the extent of nonresponse bias, given that we did not collect survey respondents' names. While the response rate was reasonable (49.1%), we do not know the satisfaction scores for about one half of the 1,000 patients who had surveys mailed to them.

Our survey results may not be generalizable to CAD patients in other health plans because the patients who responded to our survey had a relatively high level of education and may have reported more value in the services CPCRS provided. However, the demographics of the group surveyed are representative of the total 10,243 patients with CAD managed by CPCRS (Table 1).

Our patients are members of a group-model health maintenance organization. Whether these results can be extrapolated to patients in the general population remains to be determined. Given that respondents completed the survey in an anonymous fashion, we were unable to correlate the level of satisfaction with patient outcomes. However, separately, we have determined that 73% of the entire CPCRS population achieved their LDL-cholesterol goals.¹²

Conclusion

This survey of patients actively enrolled in a clinical pharmacy specialist-managed cardiac risk reduction service reported a high level of satisfaction with the services and information provided. Using telephone and mail to provide the majority of patient care interventions permitted clinical pharmacy specialists to successfully manage a large number of CAD patients. Health care systems should explore similar health care delivery methods to address the needs of patients with existing CAD.

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Holsclaw served as principal author of the study. Study concept and design and analysis and interpretation of data were contributed by all authors. Drafting of the manuscript was the work of all authors, and its critical revision was the work of Holsclaw and Olson. Statistical expertise was contributed by Olson.

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APPENDIX CPCRS Patient Satisfaction Survey

To what extent do you agree or disagree with each of the following statements?	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Not Applicable
1. CPCRS has positively affected my decision to remain a member of Kaiser Permanente.	1	2	3	4	5	N/A
2. I am satisfied with the care that I receive for my cholesterol from my clinical pharmacist at CPCRS.	1	2	3	4	5	N/A
3. I can easily contact my clinical pharmacist at CPCRS whenever I have questions or concerns.	1	2	3	4	5	N/A
4. CPCRS provides the results of my cholesterol test in a timely manner.	1	2	3	4	5	N/A
5. My clinical pharmacist at CPCRS adequately answers my questions	1	2	3	4	5	N/A
6. My clinical pharmacist at CPCRS explains the side effects of my . cholesterol medication	1	2	3	4	5	N/A
7. My clinical pharmacist at CPCRS provides me with information about what to do if I experience side effects to my cholesterol medication.	1	2	3	4	5	N/A
8. My clinical pharmacist at CPCRS explains things in a way that I am able to understand.	1	2	3	4	5	N/A

To what extent do you agree or disagree with each of the following statements?	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Not Applicable
9. The care that I receive from my clinical pharmacist at CPCRS is unique from other health care providers who, in the past, have helped me with my heart condition	1	2	3	4	5	N/A
10. I am content receiving care for my cholesterol:						
• Over the phone.	1	2	3	4	5	N/A
• Through the mail.	1	2	3	4	5	N/A
11. I would be willing to come to my Kaiser Permanente clinic to see my clinical pharmacist from CPCRS in person to learn more about my cholesterol and/or other disease states I may have (such as diabetes or high blood pressure).	1	2	3	4	5	N/A
12. When needed, my clinical pharmacist at CPCRS provides helpful information on:						
• My cholesterol goals.	1	2	3	4	5	N/A
• Smoking cessation classes.	1	2	3	4	5	N/A
• Heart-healthy diet.	1	2	3	4	5	N/A
• Heart-healthy exercise programs.	1	2	3	4	5	N/A
• Alternative (non-prescription medication) ways of lowering my cholesterol (for example, flaxseed, fish oil, etc).	1	2	3	4	5	N/A
• Other medical conditions I may have such as diabetes or high blood pressure.	1	2	3	4	5	N/A
• Resources in Kaiser Permanente that may help me with other conditions that I may have such as diabetes or high blood pressure.	1	2	3	4	5	N/A

13. The amount of information CPCRS provides me is (please circle one):

The right amount for one phone call

Too much for one phone call

Not enough for one phone call

14. How many years have you been a Kaiser Permanente member? (please circle one):

Less than one year

1 - 2 years

3 - 4 years

5 or more years

15. How would you describe your level of education? (please circle one):

High School

College

Graduate School

None of the above

16. Please circle any of the following conditions that apply to you:

Diabetes

High Blood Pressure

Tobacco Smoking

17. Age: _____ years

18. Please circle: male female

19. What would you change or improve about this service? _____

20. What do you like best about this service? _____

21. Please provide any additional comments here: _____