

Prevalence of Community-oriented Primary Care Knowledge, Training, and Practice

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Background and Objectives: *Recent recommendations requiring resident training in community-oriented primary care (COPC) indicate a continued interest among family medicine educators. This study examines COPC-related aspects of training and practice and whether or not respondents report COPC knowledge. The study also compares residency program and physician responses. Methods:* A total of 400 randomly selected practicing physicians and 470 residency directors were asked about COPC curricular and practice experiences. Physicians were asked if they practice COPC. Programs were asked if they taught COPC. Both were asked if they were knowledgeable about COPC. **Results:** Response rates for practicing physicians and programs were 58.4% and 71.8%, respectively; 38.8% of programs teach COPC, and 6.7% of physicians reported that they practice COPC. Sixty-seven percent of programs and 19% of physicians reported COPC knowledge. Programs with knowledge of COPC conducted more COPC-related activities than those without such knowledge. This relationship was not seen among practicing physicians. **Conclusions:** Aspects of COPC exist in training and in practice environments. Knowledge about COPC is associated with differences in programs' COPC activities but not in the COPC activities of practicing physicians. Programs and physicians differ in COPC implementation in training and practice.

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Community-oriented primary care (COPC)¹ projects sponsored by the US government during the 1970s demonstrated COPC to be an effective method for delivering health care to underserved populations.^{2,3} In 1984, the Institute of Medicine called for emphasizing COPC in primary care⁴ and described three essential characteristics of COPC practices: (1) an established primary care practice, (2) a defined community for whose health the practice is responsible, and (3) a specific, sequential four-component implementation process. The four components are to (1) define and characterize the community, (2) identify community health problems, (3) modify the health care program to address needs, and (4) monitor outcomes.⁵ This model was presented in a monograph published by the American Academy of Family Physicians (AAFP) in 1989.⁶

A 1994 survey of family physicians and residency directors found that only 7% of physicians and 34% of directors reported knowledge of COPC.⁷ Further, only 16% of physicians reported practicing COPC, and 37%

of directors reported providing COPC training. Among other things, the authors concluded that aspects of COPC may be present in many practices but are not recognized as such.⁷ Other reports indicate that community health training received during residency relates directly to community health activities that are eventually incorporated into medical practice,^{8,9} suggesting that COPC training modeled during residency will more likely be implemented in practice.

The pros and cons of implementing COPC in practice and training have been debated among family medicine educators for 3 decades. Proponents view it as essential for assisting all Americans to achieve a healthy life; critics point to its lack of practical, affordable ways to assess needs and monitor outcomes in the private practice context.¹⁰⁻¹² Despite the ongoing debate, the Academic Family Medicine Organizations (AFMO) Residency Education Subcommittee and the Association of Family Practice Residency Directors (AFPRD) recently recommended that training in COPC and population-based medicine become required curriculum in family practice residency.¹³

Defining COPC as “. . . a systematic process for identifying and addressing the health problems of a defined population . . . [in which] a team of health profes-

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sionals and community members work in partnership . . . diagnosing and treating a community in much the same way as does a primary care physician with an individual patient . . . ,” the American Public Health Association (APHA) recently added a fifth component: “involve community members.”¹⁴ The APHA definition of COPC and its five-component implementation process constitute the conceptual basis for this study.

Our aim was to demonstrate that aspects of COPC exist in family practice residency training and medical practice, whether or not those studied report knowledge of its concepts. To this end, we measured (1) the frequency with which programs require a COPC-related curriculum relative to the frequency with which physicians recall the same curriculum during training, (2) the frequency with which programs report COPC-related experiences relative to the frequency with which physicians report the same experiences as characteristic of their practice, and (3) differences between those reporting knowledge and those who do not.

Methods

Sample

A random sample of 400 practicing family physicians (physicians) and all 470 family practice residency programs (programs) were surveyed during 2000. The sample of physicians was selected from the AAFP’s active membership list after excluding those who graduated from medical school prior to 1987 and/or completed residency prior to 1990. Program directors were identified from the AAFP *1999 Directory of Family Practice Residency Programs*.¹⁵

Survey Methods

We mailed the survey packets to all selected subjects. Nonrespondents to the first mailing received two additional mailings at 3-week intervals. A fourth (certified) mailing was sent to the remaining nonrespondents. Each packet contained a cover letter, questionnaire, and postage-paid return envelope. Respondents were removed from the master list via a handwritten identification number on the return envelope. Subjects were informed that the return envelope would be discarded, and a different number would be assigned to their questionnaire to maintain confidentiality.

Residency directors were requested to ask the faculty member most familiar with their community medicine curriculum to complete the survey. Physicians were asked to respond themselves.

Questionnaire

Both groups were asked to respond yes or no to 21 COPC-related items (Table 1). Items were selected based on curricular recommendations taken from the APHA publication¹⁴ and the authors’ knowledge of family practice training that supports COPC practice.

Fifteen of the items measure aspects of the five components described by APHA; the remaining six items measure skills that may expedite COPC implementation. Due to a possible recall bias in physician responses to the eight curriculum items (curriculum), these are analyzed separately from the remaining items that measure experiences and competencies among programs (experiences) and practice characteristics among physicians (characteristics).

Program directors were asked three questions about these items: (1) Which of the following are part of your residency’s required curriculum? (eight items), (2) Does your program provide experiences in which residents . . . ? (five items), and (3) Which of the following competencies does your program require of graduating residents? Are graduating residents required to demonstrate the ability to . . . ? (eight items).

Physicians were asked two questions: (1) Which of the following topics or experiences were required by your residency program curriculum? (eight items) and (2) Do you or does someone in your practice . . . ? (13 items).

Both groups were given the APHA definition of COPC and asked to answer yes or no to: Are you knowledgeable of COPC concepts and processes? Physicians who responded yes were asked: Do you practice COPC? Programs that responded yes were asked: Is COPC taught in your residency?

Data Analysis

Data analysis consisted of constructing 2 by 2 tables and using a Pearson chi-square test to detect differences in proportion. We also calculated odds ratios (ORs) to determine differences between COPC activities conducted by residency programs versus physicians.

Items were analyzed as (1) comparing programs with physicians, (2) among physicians, comparing those knowledgeable of COPC with those who are not, and (3) among programs, comparing those knowledgeable of COPC with those who are not. The tables compare proportions of positive (yes) responses given to items by programs and physicians and, within each group, by those knowledgeable about COPC and those who are not.

The physician sample was analyzed for geographic response bias in two ways: (1) a 9-point census regional analysis¹⁶ and (2) a 9-point, rural-urban continuum county code.¹⁷

Results

Response Rate

Two physicians who were no longer in practice and 13 undeliverable questionnaires were deleted from the sample. Of the remaining 385 physicians, 225 (58.4%) responded. Twelve undeliverable residency questionnaires were deleted, and of the remaining 458 programs,

Table 1
COPC and Ancillary Items (21) by Item Type as Described in the Questionnaire

<i>Training and Practice Characteristics by APHA Component</i>	<i>TYPE OF ITEM</i>	
	<i>Programs</i>	<i>Physicians</i>
<ul style="list-style-type: none"> Define/characterize the community Maintain a database for use in describing their practice populations? Access regional, state, and national morbidity databases? 	Competency Competency	Practice characteristic Practice characteristic
<ul style="list-style-type: none"> Involve community members Work with community members to address health care needs? Participate in community health action groups? 	Experience Competency	Practice characteristic Practice characteristic
<ul style="list-style-type: none"> Identify community health problems Epidemiology Community health needs assessment Population-based medicine Use databases that describe a community's health issues? Access the Internet for medical and health-related information? 	Curriculum Curriculum Curriculum Competency Competency	Curriculum* Curriculum* Curriculum* Practice characteristic Practice characteristic
<ul style="list-style-type: none"> Modify health care program to address health needs Community health promotion or disease prevention strategies Design community health outreach programs? Design interventions to manage community health problems? Identify resources for managing community health problems? 	Curriculum Competency Competency Competency	Curriculum* Practice characteristic Practice characteristic Practice characteristic
<ul style="list-style-type: none"> Monitor outcomes Design/evaluation of clinical outcome studies Use medical records for quality assurance purposes? 	Curriculum Experience	Curriculum* Practice characteristic
<ul style="list-style-type: none"> Ancillary skills and knowledge Cost-effectiveness issues in medical practice Clinical research skills development Medical informatics Use computers for clinical purposes? Use electronic medical records? Train in government-designated clinics for underserved populations? 	Curriculum Curriculum Curriculum Experience Experience Experience	Curriculum* Curriculum* Curriculum* Practice characteristic Practice characteristic Practice characteristic

APHA—American Public Health Association

* Subject to possible recall bias among the physician sample.

329 (71.8%) responded. Analysis of responses revealed no significant differences in response rates from physicians in different regions or between physicians in urban or rural areas.

COPC Training and Practice

Of 221 program directors/faculty reporting knowledge of COPC, 126 responded that COPC is taught in their program (38.3% of responding programs). Of 43 practicing physicians reporting knowledge of COPC, 15 responded that they practice COPC (6.7% of responding physicians).

More than 60% of each group, regardless of knowledge of COPC, responded positively to the same 7 of 21 COPC-related items: three curriculum items including one ancillary and four experience items including one ancillary. Less than 40% of each group, regardless of knowledge of COPC, responded positively to the same 3 of 21 COPC-related items. More than 60% of

programs responded positively to an additional six items and physicians to yet another (Table 2).

Curriculum

Significantly greater proportions of programs, compared with physicians, responded positively to seven of eight curriculum items. ORs associated with these items are shown in Table 3.

Though lower relative to programs, physicians recalled these items as required curriculum during their residency training in noticeable proportions: 60% or more responded positively to three items, more than 40% responded positively to four items, and almost 31% responded positively to the remaining items. More than half the programs responded positively to each item (Table 3).

Programs that reported knowledge of COPC gave significantly greater proportions of positive responses to four of the curriculum items. Programs with knowl-

Table 2
Responses to COPC and Ancillary Items, by Knowledge of COPC

<i>Training and Practice Characteristics</i>	<i>APHA Guideline</i>	<i>PROPORTION RESPONDING YES BY ITEM</i>			
		<i>Does Know of COPC</i>		<i>Does Not Know of COPC</i>	
		<i>Programs</i>	<i>Physicians</i>	<i>Programs</i>	<i>Physicians</i>
• 60% or more yes responses regardless of knowledge or group					
Use computers for clinical purposes?	Ancillary	96.4%	90.7%	94.4%	88.3%
Community health promotion or disease prevention strategies*	4	93.2%	79.1%	80.6%	83.0%
Work with community members to address health care needs?	2	90.9%	76.7%	75.7%	65.9%
Cost-effectiveness issues in medical practice*	Ancillary	88.5%	60.5%	83.3%	61.4%
Access the Internet for medical and health-related information?	3	87.7%	97.7%	84.3%	90.5%
Use medical records for quality assurance purposes?	5	84.5%	81.4%	79.6%	80.0%
Community health needs assessment*	3	70.6%	67.4%	48.1%	58.3%
• 40% or fewer yes responses regardless of knowledge or group					
Use electronic medical records?	Ancillary	39.6%	23.3%	37.0%	27.9%
Access regional, state, and national morbidity databases?	1	36.9%	39.5%	22.2%	33.7%
Use databases that describe a community's health issues?	3	24.2%	20.9%	6.5%	20.1%
• Mixed response patterns					
Medical informatics*	Ancillary	79.9%	33.3%	65.4%	29.0%
Identify resources for managing community health problems?	4	78.5%	53.5%	53.7%	48.0%
Epidemiology*	3	76.4%	45.2%	65.7%	40.0%
Population-based medicine*	3	71.6%	51.2%	45.3%	41.6%
Clinical research skills development*	Ancillary	68.2%	48.8%	66.7%	38.6%
Train in government-designated clinics for underserved populations?	Ancillary	61.6%	44.2%	49.1%	30.0%
Design/evaluation of clinical outcome studies*	5	58.4%	46.5%	53.3%	42.4%
Participate in community health action groups?	2	52.3%	32.6%	43.0%	44.6%
Design interventions to manage community health problems?	4	39.2%	46.5%	11.2%	38.5%
Design community health outreach programs?	4	36.7%	81.4%	12.0%	78.3%
Maintain a database for use in describing their practice populations?	1	24.4%	55.8%	25.0%	48.0%

COPC—community-oriented primary care
APHA—American Public Health Association

* Responses to curriculum items may be subject to recall bias among physicians.

edge of COPC are more likely to teach community health needs assessments, population-based medicine, community health promotion/disease prevention, and medical informatics (Table 4). Physicians with knowledge of COPC did not differ significantly in the proportion of positive responses, compared with those without knowledge on any of the eight curriculum items.

Experiences and Practice Characteristics

Relative to what programs require of residents during training, significantly more practicing physicians responded positively to 3 of 13 experience/practice characteristic items. ORs associated with two of these items are shown in Table 3. Practicing physicians are more likely than residents to: “design interventions to manage community health problems,” “maintain databases for use in describing practice populations,” and “design community health outreach programs.”

Relative to what physicians include in their medical practices, residency programs reported being more

likely to “use electronic medical records,” “identify resources for managing community health problems,” “use computers for clinical purposes,” “work with community members to address health care needs,” and “train in government-designated clinics for underserved populations” (Table 3).

Significantly greater proportions of programs reporting COPC knowledge responded positively to 7 of 13 items. Five of these differences produced large ORs: “work with community members to address health care needs,” “identify resources for managing community health problems,” “design community health outreach programs,” “use databases that describe a community's health issues,” and “design interventions to manage community health problems” (Table 4). Physicians with knowledge of COPC did not differ significantly in proportion of positive responses, compared with those without COPC knowledge on any of 13 experience items.

Table 3
Curriculum, Experiences, Competencies, and Practice Characteristics,
by APHA Component by Respondent Group—Proportion of Yes Responses by Item

<i>COPC-related Items by Type</i>	<i>APHA Guideline</i>	<i># and % RESPONDING "YES"</i>		<i>OR and 95% CI</i>	<i>P Value</i>
		<i>Programs</i>	<i>Physicians</i>		
• Curriculum (current for programs¹/in training for physicians²)					
Epidemiology	3	233 (72.8%)	90 (41.1%)	3.8 (2.6–5.5)	<.001*
Community health needs assessment	3	206 (63.2%)	132 (60.0%)	1.1 (.8–1.6)	.507
Population-based medicine	3	202 (62.9%)	95 (43.6%)	2.2 (1.5–3.1)	<.001*
Community health promotion or disease prevention strategies	4	291 (89.0%)	181 (81.9%)	1.8 (1.1–2.9)	.026*
Design/evaluation of clinical outcome studies	5	182 (56.7%)	95 (42.8%)	1.8 (1.2–2.5)	.001*
Cost-effectiveness issues in medical practice	Ancillary	282 (86.8%)	135 (61.1%)	4.2 (2.7–6.4)	<.001*
Clinical research skills development	Ancillary	220 (67.7%)	89 (40.3%)	3.1 (2.2–4.4)	<.001*
Medical informatics	Ancillary	245 (75.2%)	67 (30.7%)	6.8 (4.7–10.0)	<.001*
• Experiences,³competencies⁴/practice characteristics⁵					
Maintain a database for use in describing their practice populations?	1	80 (24.6%)	111 (49.6%)	.3 (.2–0.5)	<.001*
Access regional, state, and national morbidity databases?	1	104 (32.0%)	78 (35.5%)	.9 (.6–1.2)	.455
Work with community members to address health care needs?	2	281 (85.9%)	153 (68.3%)	2.8 (1.9–4.3)	<.001*
Participate in community health action groups?	2	160 (49.2%)	95 (42.8%)	1.3 (.9–1.8)	.163
Use databases that describe a community's health issues?	3	59 (18.3%)	46 (20.5%)	.9 (.6–1.3)	.581
Access the Internet for medical and health-related information?	3	284 (86.6%)	206 (92.0%)	.6 (.3–1.0)	.068
Design community health outreach programs?	4	93 (28.5%)	178 (79.1%)	.1 (.1–.2)	<.001*
Design interventions to manage community health problems?	4	97 (29.9%)	90 (40.2%)	.6 (.4–.9)	.017*
Identify resources for managing community health problems?	4	230 (70.3%)	110 (49.1%)	2.5 (1.7–3.5)	<.001*
Use medical records for quality assurance purposes?	5	271 (82.9%)	181 (80.4%)	1.2 (.8–1.8)	.538
Use computers for clinical purposes?	Ancillary	314 (95.7%)	200 (88.9%)	2.8 (1.4–5.5)	.004*
Use electronic medical records?	Ancillary	126 (38.8%)	60 (26.8%)	1.7 (1.2–2.5)	.005*
Train in government-designated clinics for underserved populations?	Ancillary	188 (57.5%)	74 (32.9%)	2.8 (1.9–3.9)	<.001*

AHPA—American Public Health Association

COPC—community-oriented primary care

OR—odds ratio

CI—confidence interval

* Significant difference in proportion; Pearson chi-square test, corrected for continuity; two-sided test of significance

APHA Guideline #:

1—Programs were asked, "Which of the following are part of your residency's required curriculum?"

2—Physicians were asked, "Which of the following topics or experiences were required by your residency program curriculum?"

3—Programs were asked, "Does your program provide experiences in which residents . . .?"

4—Programs were asked, "Which of the following competencies does your program require of graduating residents? Are residents required to demonstrate the ability to . . .?"

5—Physicians were asked, "Do you or does someone in your practice. . .?"

Discussion

This study identified curricula and experiences that provide basic knowledge of and skills in COPC already in place in residency training. Though slightly more than one third of the programs teach COPC, more than 60% responded positively to 12 of those items, suggesting that a noticeably higher proportion of programs training for COPC and physicians practicing COPC can be achieved. Although the 6.7% of physicians reporting COPC practice in this survey does not compare favorably with the 16.0% so reporting in a 1994 survey, more than 60% of physicians responded positively to 8 of 21 COPC and ancillary items.

The seven items to which more than 60% of both groups responded positively represent four of the five COPC components described by APHA, suggesting

that, with the exception of "defining and characterizing the community," family practice programs and practicing physicians teach and practice, respectively, a wide variety of COPC-related skills.

Likewise, ancillary curricula and required competencies now present in training provide physicians with mechanisms capable of decreasing the difficulty with implementing the labor-intensive aspects of COPC that have previously restricted its application. Increased use of computers, access to Internet databases, and knowledge of epidemiology and medical informatics provide graduates with the ability to conduct community assessments, design interventions, and monitor their impact more efficiently than was possible before.

The lack of difference between physicians reporting knowledge of COPC and those who do not indicates

Table 4

Programs: Curriculum, Experiences, Competencies, and Practice Characteristics, by APHA Component by Responses to "Are You Knowledgeable of COPC Concepts and Processes?"

COPC-related Items by Type	APHA Guideline	# and % RESPONDING "YES"		OR and 95% CI	P Value
		Does Know COPC	Does Not Know COPC		
• Curriculum (current for programs¹/in training for physicians²)					
Epidemiology	3	162 (76.4%)	71 (65.7%)	1.7 (1.0–2.8)	.058
Community health needs assessment	3	154 (70.6%)	52 (48.1%)	2.6 (1.6–4.2)	<.001*
Population-based medicine	3	154 (71.6%)	48 (45.3%)	3.1 (1.8–4.9)	<.001*
Community health promotion or disease prevention strategies	4	204 (93.2%)	87 (80.6%)	3.3 (1.6–6.7)	.001*
Design/evaluation of clinical outcome studies	5	125 (58.4%)	57 (53.3%)	1.2 (.8–2.0)	.449
Cost-effectiveness issues in medical practice	Ancillary	192 (88.5%)	90 (83.3%)	1.5 (.8–3.0)	.264
Clinical research skills development	Ancillary	148 (68.2%)	72 (66.7%)	1.1 (.7–1.8)	.878
Medical informatics	Ancillary	175 (79.9%)	70 (65.4%)	2.1 (1.3–3.5)	.007*
• Experiences,³ competencies,⁴/practice characteristics⁵					
Maintain a database for use in describing their practice populations?	1	53 (24.4%)	27 (25.0%)	1.0 (.6–1.7)	1.000
Access regional, state, and national morbidity databases?	1	80 (36.9%)	24 (22.2%)	2.0 (1.2–3.5)	.011*
Work with community members to address health care needs?	2	200 (90.9%)	81 (75.7%)	3.2 (1.7–6.1)	<.001*
Participate in community health action groups?	2	114 (52.3%)	46 (43.0%)	1.5 (.9–2.3)	.145
Use databases that describe a community's health issues?	3	52 (24.2%)	7 (6.5%)	4.6 (2.0–10.5)	<.001*
Access the Internet for medical and health-related information?	3	193 (87.7%)	91 (84.3%)	1.3 (.7–2.6)	.488
Design community health outreach programs?	4	80 (36.7%)	13 (12.0%)	4.2 (2.2–8.0)	<.001*
Design interventions to manage community health problems?	4	85 (39.2%)	12 (11.2%)	5.1 (2.6–9.9)	<.001*
Identify resources for managing community health problems?	4	172 (78.5%)	58 (53.7%)	3.2 (1.9–5.2)	<.001*
Use medical records for quality assurance purposes?	5	185 (84.5%)	86 (79.6%)	1.4 (.8–2.5)	.348
Use computers for clinical purposes?	Ancillary	212 (96.4%)	102 (94.4%)	1.6 (.5–4.6)	.605
Use electronic medical records?	Ancillary	86 (39.6%)	40 (37.0%)	1.1 (.7–1.8)	.740
Train in government-designated clinics for underserved populations?	Ancillary	135 (61.6%)	53 (49.1%)	1.7 (1.0–2.7)	.041*

AHPA—American Public Health Association

COPC—community-oriented primary care

OR—odds ratio

CI—confidence interval

* Significant difference in proportion; Pearson chi-square test, corrected for continuity; two-sided test of significance

APHA Guideline #:

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3—Programs were asked, "Does your program provide experiences in which residents . . .?"

4—Programs were asked, "Which of the following competencies does your program require of graduating residents? Are residents required to demonstrate the ability to . . .?"

5—Physicians were asked, "Do you or does someone in your practice. . .?"

that knowledge does not reliably predict physician community involvement or recollections of COPC-related training curriculum. However, a majority of physicians reported working with community members and designing community health outreach programs. Additionally, more than 80% use the Internet to access medical information, computers for clinical purposes, and medical records for quality assurance. The ability to practice COPC is greatly enhanced in the presence of these skills.

Among programs, knowledge of COPC is related to significantly greater proportions of positive responses

to 11 of the 21 items. The significant differences between programs with knowledge about COPC and those who do not indicate that COPC knowledge increases the likelihood that these items will be included in training programs.

Limitations

Three aspects of the survey preclude a definite assessment of COPC training and practice: (1) The general nature of some items may have resulted in variable interpretations, (2) The yes/no item format used in the survey may have caused some positive response bias,

and (3) The eight items designated as curriculum required physicians to recall training experiences that may have occurred as far back as 10 years.

Caution in interpreting curriculum results is also needed. Seven observed differences between physicians and programs favoring programs were curriculum items. There are three possible interpretations for these results: (1) The results are real—curriculum items are now taught more frequently than in the past, (2) The results are confounded by time—physicians do not accurately recall their training, or (3) The results indicate substrata of physicians—physicians are a composite of varying training levels in these areas over the past 10 years.

Conclusions

Implementation of COPC in family medicine practice and training has been hampered by an incomplete understanding of its components and processes and by the belief that training programs would be required to greatly expand curricular activities to teach COPC. This study found evidence that, regardless of COPC knowledge, relatively large proportions of programs and physicians already engage in training and activities that provide the foundation for COPC practice. Widespread implementation will not happen, however, until programs and physicians become aware of COPC as a valuable and effective health care delivery method using existing family practice knowledge and skills and other ancillary skills now becoming commonplace in training programs.

To achieve this outcome, family medicine faculty must first be encouraged to learn about and engage in COPC activities. Previous research has shown that faculty role models serve as a strong predictor of physician community involvement. Second, COPC must be introduced to learners as a desirable, attainable, and appropriate system of health care for family physicians. Third, residents must receive experience working with community health action groups during training that will require them to incorporate existing curricula (epidemiology, health promotion and disease prevention, research skills, and others) within a COPC framework.

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