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Healthcare provider perceptions of the role of interprofessional care in access to and outcomes of primary care in an underserved area

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Abstract

To meet the needs of an aging population who often have multiple chronic conditions, interprofessional care is increasingly adopted by patient-centred medical homes and Accountable Care Organisations to improve patient care coordination and decrease costs in the United States, especially in underserved areas with primary care workforce shortages. In this cross-sectional survey across multiple clinical settings in an underserved area, healthcare providers perceived overall outcomes associated with interprofessional care teams as positive. This included healthcare providers' beliefs that interprofessional care teams improved patient outcomes, increased clinic efficiency, and enhanced care coordination and patient follow-up. Teams with primary care physician available each day were perceived as better able to coordinate care and follow up with patients ($p = .031$), while teams that included clinical pharmacists were perceived as preventing medication-associated problems ($p < .0001$). Healthcare providers perceived the interprofessional care model as a useful strategy to improve various outcomes across different clinical settings in the context of a shortage of primary care physicians.

Keywords

Interprofessional care; primary care physicians; pharmacists; access to care; effectiveness of interprofessional care; rural health

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Declaration of interest

The authors report no conflicts of interests. The authors alone are responsible for the content and writing of this article.

Introduction

Recently implemented patient care delivery models such as patient-centred medical homes and Accountable Care Organisations (ACOs) aim to strengthen primary care practice while improving coordination and quality of care for patients with chronic diseases. These initiatives are designed to foster more integrated care, but their penetration into rural areas may be restricted by lack of available personnel.

Fully leveraging interprofessional care team models may be pivotal to ensuring patient access to and quality of primary care in rural communities. Because interprofessional care teams incorporate at least two different healthcare providers (HCPs) on the teams, the distinguished expertise from each health profession complements responsibilities of one another, particularly when other team members are unavailable (Silvaggi, Nabhani-Gebara, & Reeves, 2017). Furthermore, rural and underserved areas are characterised by high healthcare needs due to higher proportions of elderly, increased prevalence of multiple chronic conditions, and oftentimes a heightened demand for primary care providers in the context of insufficient funding, long geographic distances, and shortages in healthcare workforce supply. Though efforts have been made to improve care access by placing interprofessional team members, such as advanced practice registered nurses, pharmacists, and physician assistants in rural communities, few studies examined how different HCPs perceive the quality and outcomes of primary care delivered by the interprofessional care teams in rural areas.

West Virginia (WV) is a predominantly rural state, over 60% of its population living in communities of fewer than 2,500. We surveyed WV primary HCPs to assess the perceived effectiveness of interprofessional care on access to and outcomes of primary care in various clinical settings in rural and underserved communities, and to examine how daily primary care physician (PCP) availability may shape the perceived outcomes of primary care delivered by interprofessional care teams. We also examined the relationship between HCP perceptions regarding medication outcomes and pharmacist availability.

Methods

Survey development

This was a cross-sectional survey study. The survey included 15 questions. Four questions assessed perceived outcomes of interprofessional care using a 5-point Likert scale (1- Strongly Agree, 5- Strongly Disagree). The remainder 11 questions collected information about types of practice facility, types and numbers of healthcare professionals (two questions with multiple items), PCP on-site availability, travel distance for a PCP to reach the facility if not available, and demographic characteristics of the respondents (i.e., age, gender, race, specialty, years of practice, and patient volume).

Data collection

The target population for the interprofessional care survey was PCPs and other HCPs at various clinical settings. Members of the WV Primary Care Association (WVPCA), WV Rural Health Association (WVRHA), and a primary care-based ACO in Charleston, WV

completed surveys between February and March, 2016. Only one survey was sought from each site. Surveys were delivered to 215 organisational members by the WVRHA, 30 community health centres by the WVPCA, and 12 providers by the ACO. For the members at WVRHA and WVPCA, the electronic survey hosted by [qualtrics.com](https://www.qualtrics.com) was used. For the members at the ACO, copies of the cover letter and the survey were disseminated at a provider meeting and responses were returned to an investigator at the meeting or via the United States Mail.

Data analysis

Data were analysed using SAS (Statistical Analytical Software 9.4). Additional narrative comments were saved. Descriptive statistics was used to report the results. Statistical differences were assessed using chi-square and Fisher exact test for categorical responses.

Ethical considerations

The research protocol, as well as the survey instrument, was reviewed and approved by the University of Charleston's Human Subjects Institutional Review Board in November, 2015 (15-0031).

Results

We received a total of 65 responses. After ruling out 6 responses from non-practitioners or uni-professional practices, there were 59 observations resulting a response rate of 23.0%. The characteristics of respondents are reported in Table 1.

Table 2 compares HCP perceptions of various outcomes of interprofessional care by daily availability of a PCP at the practice sites and their perceptions of medication outcomes by whether there was a pharmacist on the teams. Overall, respondents favourably perceived the effectiveness of interprofessional care on various outcomes, including improved patient outcomes, increased clinic efficiency, and better care coordination and patient follow-up. It is noticeable that there was a higher percentage of neutral or somewhat disagree responses in clinic efficiency (11.9% neutral and somewhat disagree) and care coordination and patient follow-up (8.5% neutral). When stratifying the sample by whether there was at least one PCP available each day at the practice site, the ratings for those with at least one PCP available daily were more favourable than those without PCPs available on a daily basis. The medians of response scales for each domain were reported for the whole sample and by daily PCP availability. The results of Fisher's Exact test showed that there were no statistically significant association between daily availability of PCPs and perceptions of improved patient outcomes ($p = .069$) and increased clinic efficiency ($p = .081$). However, the perceived effect of daily PCP availability appeared to be statistically significant on care coordination and patient follow-up ($p = .015$). When conducting subgroup analysis comprised of only Medical Doctors or Doctors of Osteopathy ($n = 50$), no significant association was present between daily PCP availability and perceived outcomes of interprofessional care ($p = .66$, $.49$, and $.32$ respectively). Using Mann-Whitney Exact Test to assess whether there were significant differences in response scales between practice sites with and without daily PCP availability, the results confirmed those based on Fisher's Exact

Tests. There was a higher variation in HCP perceptions regarding medication use review provided by pharmacists compared with other types of outcomes associated with interprofessional care. More than 60% of respondents perceived favourably medication use review provided by pharmacists, while 31.5% remained neutral and 5.6% either somewhat disagree or strongly disagree. When further comparing HCP perceptions of medication outcomes of interprofessional care by whether there was a pharmacist included in the interprofessional team, Fisher's Exact Test revealed a statistically significantly positive association between whether a pharmacist is on the team and HCP perceptions that medication use review provided by pharmacists at practice would decrease drug-related problems ($p < .0001$).

Discussion

We found that in an underserved area, HCPs favourably perceive the role of interprofessional care in improved patient outcomes, increased clinical efficiency, and better care coordination and patient follow-up. Daily PCP availability was perceived as a necessary component of interprofessional care in care coordination and patient follow-up. The association between interprofessional care and patient outcomes and clinic efficiency perceived by HCPs did not differ significantly by daily availability of PCPs. Interprofessional team-based care may have advantages on designing work flow and integrating health information technology. Furthermore, interprofessional team-based care incorporates different healthcare professionals in the team, such as advanced practice registered nurses (Hajewski & Shirey, 2014), pharmacists (Pape et al., 2011), physician assistants, and community health workers (DePue et al., 2013), and may extend the capacity of physicians when they are not immediately available (Suter et al., 2012).

In contrast to physicians who perceived consistent daily availability of PCPs as unnecessary to affect patient outcomes, clinic efficiency, and care coordination, practice sites that lack consistent daily PCP presence perceived on-site daily availability of PCPs as a necessity for care coordination and patient follow-up. This may be attributable to individual patient scenarios where the clinical expertise of PCPs is considered imperative to make treatment decisions (Fagnan et al., 2011).

In addition, it appears that pharmacist participation in the team was associated with more favourable provider perceptions with regard to medication use review provided by pharmacists and reduction of medication-related problems. More studies are needed to understand the variation in perceived outcomes of medication-related services provided by pharmacists.

There are limitations in this study. First, the sample size was small. Second, response rates varied substantially between surveyed groups. Nonresponse bias could have occurred in the subgroups with a low response rate. However, there were 84.7% of physicians among the survey respondents. Such a response rate in this study is comparable to other survey studies among similar populations (Field et al., 2002). Third, our study participants were only limited to a sample of HCPs in WV. Therefore generalisation of the results may be only applied to areas with similar geographic, demographic, and cultural characteristics.

Concluding comments

The results of this study suggest that in rural and underserved areas, providers across different clinical settings perceived interprofessional care models as a useful strategy to improve various outcomes across different clinical settings in the context of a shortage of PCPs. Future research is needed to examine the effects of interprofessional team-based intervention programmes targeted at patients with certain chronic conditions, develop practical tools to aid the adoption of interprofessional team-based care models in real practice, and investigate strategies to integrate different types of healthcare professionals, such as specialists and community pharmacists, to expand the availability and effectiveness of interprofessional team-based care (Fisher, 2008).

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References

- DePue JD, Dunsiger S, Seiden AD, Blume J, Rosen RK, Goldstein MG, . . . McGarvey ST (2013). Nurse-community health worker team improves diabetes care in American Samoa: Results of a randomized controlled trial. *Diabetes Care*, 36(7), 1947–1953. doi:10.2337/dc12-1969 [PubMed: 23393217]
- Fagnan LJ, Dorr DA, Davis M, McGinnis P, Mahler J, King MM, & Michaels L (2011). Turning on the care coordination switch in rural primary care: Voices from the practices—clinician champions, clinician partners, administrators, and nurse care managers. *Journal of Ambulatory Care Management*, 34(3), 304–318. doi:10.1097/JAC.0b013e31821c63ee [PubMed: 21673531]
- Field TS, Cadoret CA, Brown ML, Ford M, Greene SM, Hill D, . . . Zapka JM (2002). Surveying physicians: Do components of the “Total Design Approach” to optimizing survey response rates apply to physicians? *Medical Care*, 40(7), 596–605. doi:10.1097/00005650-200207000-00006 [PubMed: 12142775]
- Fisher ES (2008). Building a medical neighborhood for the medical home. *New England Journal of Medicine*, 359(12), 1202–1205. doi:10.1056/NEJMp0806233 [PubMed: 18799556]
- Hajewski CJ, & Shirey MR (2014). Care coordination: A model for the acute care hospital setting. *Journal of Nursing Administration*, 44 (11), 577–585. doi:10.1097/nnn.0000000000000129 [PubMed: 25340922]
- Pape GA, Hunt JS, Butler KL, Siemieniczuk J, LeBlanc BH, Gillanders W, . . . Bonin K (2011). Team-based care approach to cholesterol management in diabetes mellitus: Two-year cluster randomized controlled trial. *Archives of Internal Medicine*, 171(16), 1480–1486. doi:10.1001/archinternmed.2011.417 [PubMed: 21911633]
- Silvaggi A, Nabhani-Gebara S, & Reeves S (2017). Expanding pharmacy roles and the interprofessional experience in primary healthcare: A qualitative study. *Journal of Interprofessional Care*, 31(1), 110–111. doi:10.1080/13561820.2016.1249281 [PubMed: 27996358]
- Suter E, Deutschlander S, Mickelson G, Nurani Z, Lait J, Harrison L, . . . Grymonpre R (2012). Can interprofessional collaboration provide health human resources solutions? A knowledge synthesis. *Journal of Interprofessional Care*, 26(4), 261–268. doi:10.3109/13561820.2012.663014 [PubMed: 22390728]

Table 1.

Characteristics of survey respondents.

Characteristics	All respondents No. (%) *
Gender (<i>n</i> = 58)	
Men	26 (44.8%)
Women	32 (55.2%)
Age (years) (<i>n</i> = 59)	
Mean $\pm$ SD	51.0 $\pm$ 11.3
Median (range)	53.0 (27–68)
Years of practice (<i>n</i> = 58)	
Mean $\pm$ SD	21.2 $\pm$ 11.0
Median (range)	21.5 (0–46)
Race (<i>n</i> = 58)	
Black	1 (1.7%)
White/Caucasian	56 (96.6%)
Other	1 (1.7%)
Specialty [†] (<i>n</i> = 59)	
Family medicine	38 (64.4%)
Internal medicine	3 (5.1%)
Paediatrics	2 (3.4%)
Multi-specialty	7 (11.9%)
Nurses	2 (3.4%)
Safety net/public health professionals [‡]	7 (11.9%)
Type of practice (<i>n</i> = 59)	
Private solo practice	3 (5.1%)
Private group practice	9 (15.3%)
Community health centre	30 (50.8%)
Hospital	8 (13.6%)
Urgent care	1 (1.7%)
Ambulatory care pharmacy	1 (1.7%)
Free and charitable primary care clinic	3 (5.1%)
Other	4 (6.8%)
Volume (<i>n</i> = 56)	
75	6 (10.7%)
76 – 100	4 (7.1%)
101–125	1 (1.8%)
126	45 (80.4%)
Whether there is a PCP [‡] on the team (<i>n</i> = 59)	
Yes	53 (89.8%)
No	6 (10.2%)
Whether there is a PCP available everyday (<i>n</i> = 59)	

Characteristics	All respondents No. (%) *
Yes	44 (74.6%)
No	15 (25.4%)
Number of types of healthcare professionals [#] (<i>n</i> = 59)	
4	18 (30.5%)
5–6	15 (25.4%)
7–8	18 (30.5%)
9 or more	8 (13.6%)
Total number of healthcare professionals [#] (<i>n</i> = 59)	
7	16 (27.1%)
8–12	13 (22.0%)
13–21	15 (25.4%)
22 or more	15 (25.4%)

* Number of responses varies due to missing data

[†] Respondents with family medicine, internal medicine, paediatrics, and multispecialty of family medicine/internal medicine/paediatrics were Medical Doctors or Doctors of Osteopathy (*n* = 50).

[‡] Safety net/public health professionals were a mix of different healthcare providers serving free/charitable primary care clinic, rural health centre, family service centre, local health department, school-based clinic, reproductive health centre, and community mental health centre (*n* = 7)

[§] Primary care physician

[#] Types of healthcare professionals included in the survey are Medical Doctor or Doctor of Osteopathy, Physician Assistant, Nurse, Nurse Practitioner, Pharmacist, Midwife, Physical Therapist, Social Worker, Dentist, Optometrist, Psychiatrist, Psychologist, Nutritionist, Dietician, and Community Health Worker. Other types provided by survey respondents include phlebotomist, licensed professional counsellor, medical assistant, pharmacy technician, occupational therapist, care coordinator, certified diabetes educator, and trained volunteers.

Table 2.

Healthcare providers' perceptions of effectiveness of interprofessional care by daily availability of primary care physicians ($N = 59$) and by availability of pharmacists ($N = 54$).

Statement	Measurement scale	PCP available % ($N = 44$) (Median = 1.0)	Not available % ($N = 15$) (Median = 1.0)	Whole sample ($N = 59$) (Median = 1.0)
Interprofessional care at my practice site results in improved patient outcomes	Strongly agree	84.1 (37)	60.0 (9)	78.0 (46)
	Somewhat agree	13.6 (6)	26.7 (4)	17.0 (10)
	Neutral	2.3 (1)	13.3 (2)	5.1 (3)
	Somewhat disagree	0	0	0
	Strongly disagree	0	0	0
Interprofessional care at my practice site results in increased clinic efficiency	Strongly agree	(Median = 1.0)	(Median = 1.0)	(Median = 1.0)
	Somewhat agree	68.2 (30)	60.0 (9)	66.1 (39)
	Neutral	25.0 (11)	13.3 (2)	22.0 (13)
	Somewhat disagree	4.6 (2)	26.7 (4)	10.2 (6)
	Strongly disagree	2.3 (1)	0	1.7 (1)
Interprofessional care at my practice site results in better care coordination and patient follow-up *	Strongly agree	0	0	0
	Somewhat agree	(Median = 1.0)	(Median = 2.0)	(Median = 1.0)
	Neutral	77.3 (34)	46.7 (7)	69.5 (41)
	Somewhat disagree	20.5 (9)	26.7 (4)	22.0 (13)
	Strongly disagree	2.3 (1)	26.7 (4)	8.5 (5)
Statement Medication use review provided by pharmacist(s) at my practice site results in fewer drug-related problems as part of interprofessional care *	Somewhat disagree	0	0	0
	Strongly disagree	0	0	0
	Pharmacist available % ($N = 36$)	Not Available % ($N = 18$)	Whole Sample ($N = 54$)	
	(Median = 1.0)	(Median = 3.0)	(Median = 1.5)	
	Strongly agree	66.7 (24)	16.7 (3)	50.0 (27)
	Somewhat agree	19.4 (7)	0	13.0 (7)
	Neutral	11.1 (4)	72.2 (13)	31.5 (17)
	Somewhat disagree	2.8 (1)	5.6 (1)	3.7 (2)
	Strongly disagree	0	5.6 (1)	1.9 (1)

* $p < .05$

two-tailed Fisher exact test due to cell count minimums.

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