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Experiences of care coordination among older adults in the United States Evidence from the Health and Retirement Study

Marisa R. Eastman^a,

Viktoryia A. Kalesnikava^a,

Briana Mezuk^{a,b,*}

^aCenter for Social Epidemiology and Population Health, Department of Epidemiology, University of Michigan School of Public Health, Ann Arbor, MI, USA

^bResearch Center for Group Dynamics, Institute for Social Research, University of Michigan, Ann Arbor, MI, USA

Abstract

Introduction: The goal of this study was to examine variation in patient experiences and perceptions of care coordination across sociodemographic and health factors.

Methods: Data come from the 2016 Health and Retirement Study (N = 1, 216). Three domains of coordination were assessed: 1) Perceptions (e.g., patient impressions of provider-provider communication), 2) Tangible supports (e.g., meeting with a care coordinator, being accompanied to appointments), and 3) Technical supports (e.g., use of a “patient portal”). Logistic regression was used to quantify the frequency of each domain and examine variation by racial minority status, socioeconomic status, and health status.

Results: Approximately 42% of older adults perceived poor care coordination, including 14.8% who reported receiving seemingly conflicting advice from different providers. Only one-third had ever met with a formal care coordinator, and 40% were occasionally accompanied to appointments. Although racial minorities were less likely to have access to technical supports, they were more likely to use them. Better perceived coordination was associated with higher care satisfaction (Odds Ratio: 1.43, 95% CI: 1.27–1.61).

Conclusions: Important gaps in care coordination remain for older adults.

*Correspondence to: University of Michigan School of Public Health, Center for Social Epidemiology and Population Health, 1415 Washington Heights, Ann Arbor, MI 48109, USA. bmezuk@umich.edu (B. Mezuk).

CRediT authorship contribution statement

Mezuk: Conceptualization, Data curation, Writing – review & editing, Supervision. **Kalesnikava:** Conceptualization, Methodology, Data validation, Writing – review & editing. **Eastman:** Conceptualization, Writing – review & editing, Data analysis. All authors have agreed to this manuscript submission.

Prior presentations

An earlier version of this paper was presented at the 2018 Gerontological Society of American Scientific Sessions.

Conflict of interest statement

The authors declare that there are no conflicts of interest and no financial interest to report.

Appendix A.: Supporting information

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.pec.2022.03.015.

Practice implications: Providers should consider assessing patient perceptions of care coordination to address these gaps in an equitable manner.

Keywords

Patient-centered care; Care coordination; Care management; Disparities

1. Introduction

The US healthcare system has been criticized by multiple stakeholders for being fragmented, costly, and inefficient, and generally requires patients to navigate various providers and payers to receive the care they need in a timely manner [1–3]. Despite the success of the Affordable Care Act at increasing access to care, substantial gaps in care coordination remain across care settings, healthcare systems, and providers [4].

The aims of care coordination are to promote communication and continuity of care across providers, specialties, and medical systems, with the ultimate goal of reducing healthcare costs, and improving clinical outcomes [4–6]. Such coordination is important in the management of complex acute care needs and post-hospital transitions, but care coordination plays an equally important role in a day-to-day management of chronic illnesses, including cardiometabolic conditions and mental disorders that are leading drivers of healthcare utilization [7–9]. The burden of navigating across care providers is most often felt among older adults who are more likely to have multiple chronic conditions, take multiple medications, and have to undergo procedures from providers across different specialties [8,10–12].

In the past decade, the position of a clinical care coordinator/nurse care manager has emerged to address fragmented healthcare systems [13]. The intent of this role is to facilitate patient-to-provider and provider-to-provider communication, coordinate specialist referrals, provide patient education, and monitor treatment adherence [14]. Another relevant formal role is that of community health workers (CHW), which are trained, non-healthcare personnel who serve as liaisons between patients, providers, and community resources and programs to provide tailored, long-term support to patients with chronic care needs [15]. Despite positive impacts of patient experiences [16,17] and clinical outcomes [14], wide scale implementation of these formal coordinator roles has been limited due to challenges related to reimbursement by payers and structural and organizational barriers in establishing effective inter-professional communication between multiple providers [18–20]. Beyond these staff roles, technology is increasingly being used to bridge gaps in health coordination by supporting frequent communication and telehealth efforts, a change that has been accelerated by the COVID pandemic [21]. This includes technology to support communication between multiple providers via electronic medical records and between patients and providers via patient “portals” and similar tools [22,23].

Beyond these roles and technology within the healthcare setting, family and friends can play an important role in coordinating care by providing both emotional and tangible support (e.g., transportation or accompanying to appointments). While the importance of support from family members is well-recognized for children and adolescents, such informal care is

often critical for older adults, particularly during care transitions (e.g., post-hospitalization) and navigating complex care systems [24,25].

Finally, efforts to understand gaps in, and improve coordination of, care should be situated within an framework of addressing social inequities in healthcare quality [26]. Structural factors like systematic racism shape health inequities in the US, as starkly magnified by the COVID-19 pandemic which has disproportionately affected minority populations [27]. These structural factors contribute to poorer access to care (even among fully-insured populations, i.e., Medicare beneficiaries), [28] poorer patient-provider communication, and lower patient trust, which ultimately results in the delivery of inferior quality of care and worse health outcomes for minority patients [26,29].

With a few exceptions [30], most empirical studies of care coordination have been situated within specific healthcare systems (e.g., Veterans Health Administration [31] and Kaiser Permanente [32]), specific payers (e.g., Medicaid [33] or Medicare [34]), or specific diseases (e.g., depression, diabetes, cancer) [35]. As a result, patient perceptions and experiences with the multiple facets of care coordination are largely unknown at a population scale. Therefore, the objectives of this study are (1) to quantify and examine variation in patient experiences with three domains of care coordination and (2) to examine the relationship between experiences of care coordination and care satisfaction. These aims are addressed using data from the 2016 Health and Retirement Survey (HRS), a nationally-representative cohort of older adults.

2. Methods

2.1. Sample

The HRS is a nationally-representative, longitudinal study of approximately 20,000 adults aged > 50 years old; details of the HRS design, protocols, and characteristics are described elsewhere [36]. This analysis used data from an Experimental Module on Coordinated Care (CC) fielded in the 2016 wave. A random sample of 1720 respondents were eligible for the Module. Only those who reported receiving healthcare in any setting (e.g., primary care office, health clinic, urgent care, pharmacy “minute clinic,” or emergency room) within the prior two years screened in to complete the Module. Respondents who had not received care in the prior two years, had missing data on covariates of interest, or had non-positive sampling weights were excluded, yielding a final analytic sample of 1216.

The HRS is approved by the IRB at the University of Michigan and all respondents provided informed consent. This analysis used only publicly available data.

2.2. Outcomes

The Module assessed respondents’ experiences with care coordination, care satisfaction, and beliefs. Details of item wording, response options, and variable recoding are provided in Supplemental Table 1. Items regarding care coordination were grouped into three domains: (1) Perceptions (5 items, e.g., *How often did you seem to get conflicting advice from different healthcare providers?* each assessed on a 5-point Likert scale); (2) Tangible supports (5 items, e.g., *Has a spouse, daughter, son, other family member or friend ever*

gone with you to one of your health care appointments to help manage your care? Have you ever talked with a nurse care manager or care coordinator about your health care needs?); and (3) Technical supports (2 items, e.g., *Does your health care provider offer a “patient portal” or other internet website that allows you to see the results of your medical tests and communicate with your health care providers?*). For each domain we also created an overall measure.

Care satisfaction in the prior 2 years was recoded as a dichotomous variable (*Very/Somewhat satisfied vs. Neutral/Somewhat dissatisfied/Very dissatisfied*) and importance of being involved in decision-making regarding treatment plans was recoded as *Very important vs. Some-what/Not very important* for analysis.

2.3. Independent variables

Respondent characteristics included age (years), sex (male/female), race/ethnicity (recorded in the HRS public-use data as non-Hispanic white (n = 845, 80.0%), Black/African American (n = 261, 11.1%), and other race/ethnicity (n = 110, 8.8%), which was recoded as non-Hispanic white (NHW) vs. Any racial minority for analysis due to small cell sizes), and marital status (recoded as currently married/partnered, formerly married (separated, divorced, widowed), and never married). We included two indicators of socioeconomic status (SES): education (high school diploma/GED or less vs. at least some college) and net worth (i.e., cumulative assets minus cumulative debt, dichotomized at the median <\$158,000 vs. \$158,000). Health insurance was indicated by a dichotomous variable (i.e., Medicare, Medicaid, CHAMPUS, or private or employee-sponsored health insurance vs. no insurance coverage). Health status was indicated by a summary variable of nine self-reported conditions: hypertension, diabetes, cancer, lung disease, heart problems, stroke, psychiatric problems, arthritis, and sleep disorder), dichotomized as ≥ 3 vs. < 3 conditions.

2.4. Analysis

Descriptive statistics were used to examine the frequency of the three domains of care coordination. Spearman correlation coefficients were used to examine the relationships among the various indicators of care coordination. Multivariable logistic regression was used to identify respondent characteristics associated with the three domains of care coordination, and results from these models are shown as a function of race/ethnicity, SES (e.g., education and wealth), and health status. All models were adjusted for age, sex, race/ethnicity, education, wealth, insurance status, marital status, and health status. Finally, the relationships between the domains of care coordination with care satisfaction were estimated using logistic regression, adjusted for all covariates.

All analyses were conducted in SAS (9.4) using survey procedures to account for the HRS sampling design. All p-values refer to two-tailed tests and statistical significance was evaluated using 95% confidence intervals.

3. Results

Respondents in the analytic sample were on average 65.2 years old, 51.8% were female and 80.0% were NHW consistent with the overall HRS cohort [36]. One-third had three

or more medical comorbidities. Most (92.2%) felt satisfied with their care experiences in the prior two years, and 87.6% said it was very important for them to be involved in their care planning. The full distribution of respondent characteristics is provided in Supplemental Table 2.

As shown by Table 1, formal and informal tangible supports were positively correlated, and both were generally associated with better perceptions of care coordination. For example, being accompanied to medical appointments was negatively correlated with feeling confused ($\rho = -0.16$) or receiving seemingly conflicting advice ($\rho = -0.21$) about managing one's health. Similarly, having met with a formal care coordinator was negatively correlated with feeling confused ($\rho = -0.14$) and receiving conflicting advice ($\rho = -0.17$), and positively associated with perceptions of coordination (e.g., being asked about visits with ($\rho = +0.19$) or medications prescribed by ($\rho = +0.10$) other providers). Using technical supports was consistently associated with better perceptions of coordination including being asked about medications prescribed by ($\rho = +0.20$) and visits with ($\rho = +0.15$) other providers, and feeling that providers were communicating with each other ($\rho = +0.17$). There was little correlation between use of tangible (whether formal or informal) and technical supports, except for seeing a formal care coordination and more frequent use of a patient portal ($\rho = +0.20$).

The first column of Table 2 shows the distribution of coordinated care across the three domains. Approximately two-thirds said that providers asked them about medications and visits they had with other providers, and the majority (79.7%) felt that their providers communicated with each other frequently. About 15% often felt confused about managing their health or received seemingly conflicting advice from providers. Over half (55.9%) were never accompanied to their appointments and 63.7% did not rely on help from family/friends. Only one-third had ever met with a formal care coordinator. Finally, approximately 70% said their healthcare providers offered a patient portal, but only half who had access used it frequently.

The remaining columns of Table 2 show the fully-adjusted odds ratios (OR) and 95% confidence intervals (CI) of the associations between select respondent characteristics (racial minority status, SES, and health status) and indicators of coordinated care. Racial/ethnic minorities were significantly more likely to report feeling confused (OR: 1.80; 95% CI: 1.10–2.96) and receiving seemingly conflicting advice from providers (OR: 1.79; 95% CI: 1.13–2.84) relative to non-Hispanic whites. Racial minorities were more likely to report using tangible supports for coordinating their healthcare, including being twice as likely to receive help from family/friends (OR: 1.90; 95% CI: 1.24–2.92) and to have met with a formal care coordinator (OR: 2.28; 95% CI: 1.54–3.37). Finally, while minorities were less likely to report access to a patient portal, conditional on having access they were more likely to use this technology (OR: 1.57; 95% CI: 1.08–2.28).

In general, neither indicator of SES was related to any indicator of perceptions of care coordination, with the exception that higher education was positively associated with being asked about medications prescribed by other providers (OR: 1.67; 95% CI: 1.21–2.30). However, both SES indicators were inversely associated with use of tangible supports,

including significantly less likely to ever be accompanied to appointments by family/friends or receiving their help from others in coordinating health care. Education, but not wealth, was positively associated with access to a patient portal, but neither indicator of SES was associated with frequency of use of this technological support.

Having a high health burden was associated with all the indicators of perceived care coordination, both positive (e.g., being asked how visits with other providers were going) and negative (e.g., feeling confused about how to manage their health). For example, persons with three or more health conditions were twice as likely (OR: 1.90; 95% CI: 1.12–3.21) to report getting seemingly conflicting advice from their providers compared to those with fewer medical morbidities. Higher health burden was also associated with greater use of tangible supports for coordination, both formal and informal (e.g., twice as likely to have met with a care coordinator or be accompanied to appointments by family/friends). Health burden was unrelated to access to or use of technical supports for care coordination.

Table 3 shows the relationship between domains of care coordination and reporting high satisfaction with care, adjusted for all sociodemographic characteristics and health status. The summary measure of the perceptions of care coordination domain was significantly associated with reporting high care satisfaction (OR: 1.43; 95% CI: 1.27–1.61), a relationship that was primarily driven by perceived communication among providers and not feeling confused or receiving conflicting advice. In contrast, use of tangible supports for care coordination was not significantly associated with higher care satisfaction (OR: 0.99; 95% CI: 0.91–1.08). Finally, technical supports were associated with higher care satisfaction (OR: 1.26; 95% CI: 1.01–1.56), largely driven by access to a patient portal.

4. Discussion and conclusion

4.1. Discussion

This study examined multiple facets of care coordination experienced by older US adults. The primary findings from this study are that most older adults in the US perceive moderate levels of care coordination among their providers, but concerning gaps remain, including 15% who report being frequently confused about or receiving seemingly conflicting advice from different providers regarding their healthcare. Most adults report low utilization of tangible supports, particularly formal roles, for care coordination. Despite this, use of both formal and informal tangible supports were associated with more positive perceptions of care coordination. Although most older adults had access to technical supports via a “patient portal” and only half frequently used it; use of technical supports was associated with better perceptions of care coordination. There are significant differences in perceptions of, and in use of supports for, care coordination as a function of being a racial minority, SES, and health status. Finally, better perceptions of care coordination were strongly associated with higher care satisfaction. In sum, our findings demonstrate important gaps in care coordination perceived by older adults and suggest that increased utilization of both tangible and technical supports may potentially address some of these gaps.

There are persistent social disparities in access to and quality of healthcare services [28]. It is therefore reasonable to believe that similar disparities would be seen in relation to

care coordination activities and services. Previous research has identified a distinct lack of racial diversity among advanced practitioners and has discussed challenges in the patient-provider relationship due to racial discordance, often leading to poor health outcomes among minority patients [37]. Consistent with this, our findings suggest that racial/ethnic minorities were more likely to perceive that their providers were not effectively coordinating their care. However, we found that minorities were more likely to use tangible support, both formal and informal, for coordination, which is consistent with prior studies [38]. We also found systemic differences in access to technical supports, with persons of lower education and lower wealth and racial minorities reporting less access to a “patient portal” than higher SES or non-Hispanic whites. However, conditional on having access to this technology, racial minorities were more likely to use it, even after accounting for health status. This finding illustrates the structural nature (i.e., lack of access vs. lack of interest or individual preferences) in racial disparities in healthcare technology of all types, consistent with prior work [39,40]. How the rapid expansion of telehealth due to the COVID-19 pandemic potentially impacted these existing inequities is still unclear [41].

Findings illustrate a nuanced relationship between patient perceptions and use of tangible supports for care coordination. Use of both informal and formal tangible supports was positively associated with better perceptions of care coordination; however, use of these supports may potentially be a compensatory mechanism whereby patients (or their family members) may seek additional support in response to concerns that their healthcare needs are not being adequately addressed. In addition, providers may emphasize the value of (and/or payers may potentially restrict reimbursement for) [42], formal nurse care coordinators or CHWs to only those patients with complex medical needs (e.g., cancer, comorbid mental illness)[43,44] or to those for whom standard care practices have proved ineffective to support patient self-management [45,46].

Findings should be interpreted in light of study limitations and strengths. The primary limitation of this study is the lack of data on provider or payer perceptions of care coordination; future research should examine how these agents’ reports compare with that of patients’ perceptions to inform the optimization of care coordination in a manner consistent with patient-centered outcomes [45]. This analysis was cross-sectional, although the ongoing follow-up of the HRS cohort provides opportunities for examining the relationship between coordination perceptions and healthcare utilization outcomes. Study strengths include the nationally-representative sample, which provides among the first estimates of coordinated care among older adults on a national level without restriction to a particular diagnosis, healthcare system, or payer. This study also examined multiple facets of coordinated care operationalized across three domains, as compared to prior work which has generally addressed these elements in a piecemeal manner.

4.2. Conclusion

Coordinated care is particularly important for patients with multiple chronic health conditions, particularly those that impact engagement with care (e.g., depression) [45,47]. Consistent with this finding, participants with high medical morbidity were over twice as likely to have met with a formal care coordinator. Even accounting for sociodemographic

characteristics, participants with greater medical morbidity were more likely to report both positive (e.g., asked about visits with other providers) and negative (e.g., received seemingly conflicting advice) perceptions of care coordination than those with fewer conditions. The factors that contribute to these negative perceptions of care coordination for patients with substantial medical needs are likely multi-factorial. For example, in a study of primary care physicians and oncologists, providers felt that patient-provider communication failures were common, and resulted from factors related to patients, fellow providers, and the healthcare system [48]. For example, providers felt that patients themselves revealed inconsistent information across their providers (e.g., downplaying symptoms, side-effects, etc.) which resulted in the patient being given inconsistent or conflicting clinical advice. However, they also reported inaccurate and/or insufficient communication between providers (e.g., not being told the full extent of the patient's condition, scan results, etc.) and acknowledged the limits of expecting patients to be a conduit between providers, especially when providers themselves may have differing opinions about patient care needs. Finally, they also pointed to system-level factors, including limited appointment times and a lack of explicit protocols for coordination among providers for outpatient care as relevant. While this study focused solely on cancer care, these factors are salient to healthcare for any complex health condition [49,50].

Various coordinated care models have been developed for specific clinical diagnoses that require intense patient self-management, such as the Collaborative Care Model (CCM) for comorbid depression and medical conditions [51]. There is strong experimental evidence that formal care coordinator roles, including CHWs, are effective at improving clinical outcomes for patients with complex medical needs [47,52]. While this study did not examine clinical outcomes, most (69%) participants who met with a coordinator reported they were helpful, although this did not vary significantly by medical morbidity.

4.3. Practice Implications

Care coordination is a complex activity that requires effective communication between patients, providers, and payers within and across healthcare systems over time. Providers should assess patient past experiences of care coordination and needs (e.g., preferred mode and frequency of communication) as part of intake screening procedures in order to identify patients who would benefit from working with a formal care coordinator [46,48]. Providers should implement, and payers should reimburse for, team-based care with clear protocols and designated staff to ensure effective communication between patients and providers and to address breakdowns in provider-provider and patient-provider communication in a timely manner when it occurs [48,53]. Patients should be explicitly encouraged to involve family and friends in their care (e.g., attending appointments, discussing results), and provide resources to help them understand their role in supporting the patient [54]. Health information technology needs to be made inter-operable to realize the potential of tele-health to support coordination [55].

Perhaps most actionable short-term, providers should tell patients about the fragmented reality of the US healthcare system so they can both adjust their expectations of provider-provider coordination and learn how to communicate among their various providers more

effectively. For example, a 2004 Harvard Health Letter (a publication aimed at patients) stated: “To put it mildly, American health care is not very well coordinated. Especially if you’re seeing several specialists, you can’t assume that they have conferred (*indeed, they probably haven’t*). Medical records are often balkanized, with information collected at one office or institution never reaching another [emphasis added].”[56] The fact that poor coordination is a *feature*, not a *bug*, of the US healthcare system may be well-recognized among providers [50,57], but this is not the expectation of most patients. The result is a care system that claims to “center” the patient without informing them of the specific activities of their central role.

While it remains unclear if care coordination promotes healthcare efficiency or cost savings [58], the ultimate beneficiary of effective coordination is the patient [16]. Findings from this analysis can inform efforts to address coordination gaps from the patient perspective and provide insights into how to support equitable implementation of coordination for the aging population.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1

Spearman correlation coefficients of the 14 items of the Coordinated Care Module: 2016 Health and Retirement Study.

	Domain 1: Perceptions							Domain 2: Tangible support				Domain 3: Technical support			Care satisfaction & importance	
	V453	V454	V455	V456	V459	V460	V461	V462	V463	V464	V465	V466	V467	V468	V469	V470
Domain 1: Perceptions	1	0.41***	-0.06	-0.16***	0.09**	0.001	-0.03	-0.04	0.10***	-0.07	0.19***	-0.09	0.00	0.12***		
V453 Medications		1	-0.03	-0.08**	0.23***	0.06**	0.05	0.06*	0.19***	0.09	0.15***	0.15***	0.04	0.13***		
V454 Other visits			1	0.53***	0.20***	-0.16***	-0.05	-0.15***	-0.14***	0.04	0.07*	-0.03	0.48***	0.04		
V455 (R) Confused				1	0.20***	-0.21***	0.01	-0.15***	-0.17***	0.10*	0.03	-0.04	0.37***	-0.004		
V456 (R) Conflicting advice					1	0.05	0.06	0.06*	0.10**	0.28***	0.17***	0.14***	0.32***	0.09**		
V459 Communication						1	-	0.35***	0.27***	0.02	0.01	0.04	-0.07**	0.02		
V460 Accompanied							1	-	0.03	0.14**	0.04	-0.03	-0.001	-0.10**		
V461 Freq. accompanied								1	0.21***	0.21***	-0.05	0.07	-0.02	-0.04		
V462 Help with care									1	-	0.07*	0.20***	-0.04	0.05		
V463 Care coordinator										1	0.06	0.06	0.13**	-0.003		
V464 Coordinator helped											1	-	0.09***	0.11***		
V465 Have portal												1	0.01	0.08*		
V466 Use portal													1	0.04		
V457 Satisfaction														1		
V458 Involvement															1	

See Supplemental Table 1 for additional information on variables and coding. Cells with - indicate skip pattern.

Items V455 and V459 were reverse-coded (R), such that a higher score represents a more positive assessment of perceived care.

* p < 0.05

** p < 0.01

*** p < 0.001

Table 2
 Relationship between respondent characteristics and indicators of coordinated care: 2016 Health and Retirement Study

	Adjusted Odds Ratio (OR) and 95% Confidence Interval (CI)				Health status
	Overall	Race/ethnicity	Education	Wealth	
<i>N</i> (%) *		Racial minority (ref. NHW)	> 12 years (ref. 12 years)	High net worth (ref. <\$158,000)	3 conditions (ref. <3 conditions)
Domain 1: Perceptions of Care Coordination					
<i>How often asked about medications prescribed by other doctors (n = 1185)</i>					
Most of the time/almost always/sometimes †	726 (64.3)	1.13 (0.80, 1.60)	1.67 (1.21, 2.30)	1.45 (0.99, 2.12)	1.40 (1.05, 1.86)
Rarely/never	459 (35.7)				
<i>How often asked how other appointments were going (n = 1196)</i>					
Most of the time/almost always/sometimes †	454 (38.0)	1.49 (0.94, 2.36)	1.33 (0.97, 1.83)	1.04 (0.73, 1.50)	1.75 (1.24, 2.46)
Rarely/never	742 (62.0)				
<i>How often felt confused about how to manage your health</i>					
Most of the time/almost always/sometimes †	168 (14.2)	1.80 (1.10, 2.96)	0.76 (0.49, 1.18)	0.93 (0.57, 1.52)	1.93 (1.16, 3.20)
Rarely/never	1048 (85.8)				
<i>How often seemed to receive conflicting advice</i>					
Most of the time/almost always/sometimes †	183 (14.8)	1.79 (1.13, 2.84)	1.05 (0.70, 1.58)	0.88 (0.53, 1.44)	1.90 (1.12, 3.21)
Rarely/never	1033 (85.2)				
<i>How often providers seem to communicate with each other</i>					
Most of the time/almost always/sometimes †	972 (79.7)	0.98 (0.60, 1.60)	0.85 (0.55, 1.32)	1.00 (0.67, 1.51)	1.54 (1.02, 2.34)
Rarely/never	244 (20.3)				
Domain 2: Tangible Support for Care Coordination					
<i>Ever accompanied to appointments by family/friend</i>					
Yes ‡	589 (44.1)	1.35 (0.96, 1.90)	0.70 (0.51, 0.97)	0.75 (0.54, 1.04)	2.06 (1.53, 2.79)
No	627 (55.9)				
<i>[If yes] How often are you accompanied to your appointments</i>					
Usually ‡	240 (38.3)	1.78 (1.11, 2.85)	0.68 (0.41, 1.13)	0.88 (0.562, 1.47)	1.70 (1.09, 2.66)
Occasionally/rarely	349 (61.7)				
<i>How often gets help from others in coordinating care</i>					
Most of the time/almost always/sometimes †	472 (36.3)	1.90 (1.24, 2.92)	0.55 (0.39, 0.79)	0.47 (0.33, 0.67)	1.67 (1.21, 2.31)

	Adjusted Odds Ratio (OR) and 95% Confidence Interval (CI)				Health status
	Overall	Race/ethnicity	Education	Wealth	
N (%) *	Racial minority (ref. <i>NHW</i>)	> 12 years (ref. 12 years)	High net worth (ref. <\$158,000)	3 conditions (ref. <3 conditions)	
Rarely/never	744 (63.7)				
<i>Ever met with a care coordinator</i>					
Yes †	446 (32.2)	2.28 (1.54, 3.37)	0.91 (0.66, 1.27)	0.89 (0.64, 1.23)	2.44 (1.68, 3.53)
No	770 (67.8)				
<i>[If yes] How much did they help coordinate your care (n = 443) **</i>					
Somewhat/a great deal †	322 (69.3)	1.41 (0.69, 2.88)	0.49 (0.30, 0.80)	0.94 (0.44, 1.99)	1.27 (0.74, 2.19)
A little bit/not at all	121 (30.7)				
Domain 3: Technical Support for Care Coordination					
<i>Has access to a patient portal</i>					
Yes †	798 (70.1)	0.62 (0.40, 0.98)	2.05 (1.43, 2.94)	1.27 (0.86, 1.87)	1.39 (0.98, 1.97)
No	418 (29.9)				
<i>[If yes] How often do you use the patient portal (n = 797)</i>					
Sometimes/often †	368 (47.2)	1.57 (1.08, 2.28)	1.20 (0.82, 1.76)	0.90 (0.59, 1.37)	0.95 (0.65, 1.38)
Rarely	429 (52.8)				

N=1216 unless otherwise noted.

* Percentages reported are weighted column percentages.

All ORs are adjusted for age, sex, racial minority status, net worth, marital status, education, health insurance status, and number of chronic conditions.

† Indicates the level of response variable that is being modelled.

** Excludes n = 3 who responded don't know to what degree their coordinator helped them.

Table 3

Relationship between care coordination and satisfaction with healthcare received in the prior 2 years: 2016 Health and Retirement Study.

Domains of Care Coordination	Adjusted Odds Ratio (OR) 95% Confidence Interval
<i>Perceptions of Care Coordination (ref. Never/Rarely)</i>	
How often asked about medicines prescribed by other providers	0.84 (0.49, 1.44)
How often asked how visits with other providers were going	0.92 (0.99, 1.05)
How often left doctor's office confused about managing health	0.10 (0.06, 0.17)
How often received conflicting advice from different providers	0.15 (0.07, 0.32)
How often providers talk with each other about patient care	5.37 (3.00, 9.62)
<i>Summary Measure of Perceptions Domain</i>	1.43 (1.27, 1.61)
<i>Tangible Support for Care Coordination</i>	
Ever accompanied by family or friends to appointments (ref. No)	0.69 (0.34, 1.41)
How often family or friends accompany to appointments (ref. Rarely/Occasionally)	1.11 (0.53, 2.31)
How often family or friends help coordinate care (ref. Never/Rarely)	1.02 (0.52, 1.99)
Ever talked with a nurse care manager or care coordinator (ref. No)	1.26 (0.63, 2.53)
Care coordinator helped (ref. Not at all/A little bit)	1.82 (0.70, 4.74)
<i>Summary Measure of Tangible Supports Domain</i>	0.99 (0.91, 1.07)
<i>Technical Support for Care Coordination</i>	
Health care provider offers a "patient portal" (ref. No)	1.87 (1.12, 3.12)
How often use this "patient portal" (ref. Never/Rarely)	1.49 (0.66, 3.37)
<i>Summary Measure of Technical Supports Domain</i>	1.26 (1.01, 1.56)

All ORs are adjusted for age, sex, racial minority status, net worth, marital status, education, health insurance status, and number of chronic conditions.

See Supplemental Table 1 for additional variable coding.