

Health Care Advocacy: The Relationships between Age, Chronicity, Comorbidity, and Perceived Need for Assistance

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Abstract

Background and Purpose: The U.S. population is living longer; therefore, a relatively large proportion of the population is likely to experience chronic illnesses within their lifetime. An experimental study was conducted to examine factors influencing the likelihood of hiring a Health Care Advocate (HCA). **Methods:** Survey data were collected from a randomly selected community sample of participants ($N = 470$) over the age of 18 who were provided with a description of an HCA and a written vignette describing a medical scenario. Participants read one of eight vignettes in which they were asked to imagine they were in a car accident and required medical care. Age, injury (chronic vs. acute), and presence of comorbid chronic condition were manipulated. **Results:** A significant interaction indicated that when there was no pre-existing chronic health condition, sustaining a chronic injury increased the likelihood of hiring an HCA. In addition, younger adults with comorbid conditions were perceived as having greater need for an HCA than younger adults without comorbid conditions. Older adults were perceived as benefiting from HCAs regardless of comorbid conditions. **Conclusion:** This study demonstrates the need for patient-centered support for older adults following an injury, and for younger adults when a pre-existing chronic condition exists. Efforts should be made to target services to these populations of interest.

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Introduction

In the United States (U.S.), the population of older adults continues to grow at a faster rate than the remainder of the population (Fuchs, 1999). In 1950, the number of adults over 65 years of age was 12 million; in 2000, there were 26 million and the number is expected to reach over 80 million by 2035 (Jarvis, 2001). Older adults are living longer and experiencing more age-related health issues, including chronic illness, disability, and functional impairment. Chronic illnesses are experienced by a growing number of adults in a variety of age groups in the U.S., with 80% of Americans over 65 years of age having at least one chronic condition, and 50% experiencing two or more conditions (Centers for Disease Control and Prevention, 2003). Older adults and individuals with at least one chronic condition are the most likely to require ongoing health care

services and, therefore, are the highest users of the health care system.

The current U.S. health care system is fragmented (Wagner et al., 2001), resulting in patients receiving services from multiple health care providers. A study of Medicare patients found that individuals saw a median of two physicians and five specialists within a year (Pham et al., 2009). Among people with multiple chronic conditions, this estimate reached upwards of 16 health care providers per year (Pham et al., 2009). The Medicare population is largely representative of the older American population, as 93.3% of these individuals receive government-assisted health insurance (DeNavas-Walt, Proctor, & Smith, 2012). The lack of established provider coordination within the health care system leads to a greater likelihood of duplicate testing, polypharmacy, contradictory medical advice, and misunderstandings regarding care plans

(Bodenheimer, 2008; Parekh & Barton, 2010). Without coordination of care, an individual's treatment becomes focused on isolated symptoms and acute episodes, which negatively impacts populations requiring ongoing care for multiple, chronic conditions.

Health Care Advocates

Patients with chronic illnesses, typically older adults, are most negatively affected by the fragmented health care system. These individuals must contend with ongoing physical changes and limitations, as well as daily disease management (Hudon et al., 2012). Living well with chronic illnesses requires continued treatment planning and coordination of care. A Health Care Advocate (HCA) is a professional who operates outside of the health care system and actively assists the patient in coordinating care, providing supportive services, and facilitating communication with medical providers. This type of position is unlike that of care coordinators or case managers who operate within some health care systems, because an HCA's obligation is directly to the patient and not the organization. HCAs or patient navigators have been effective in assisting adults of various ages with complex medical conditions, such as cancer (e.g., Fowler, Steakley, Garcia, Kwok, & Bennett, 2006; Seek & Hogle, 2007). Specifically, patient navigators have improved quality of life (Seek & Hogle, 2007) and eased access to healthcare delivery (Pedersen & Hack, 2009). Previous studies have shown that HCAs are considered viable options by respondents when they are presented with hypothetical scenarios of parents making health care decisions for chronically ill children (Wooldridge, Vasserman-Stokes, Cronan, & Sadler, 2013), adult children making decisions for elderly parents affected by cognitive and physical conditions (Van Liew & Cronan, 2012), and individuals making decisions for themselves when considering the possibility of hospitalization because of illness (Cronan et al., 2010). However in these experimental studies, characteristics of the respondent affect participants' perceived likelihood of hiring an HCA. For instance, ethnic minority participants have been found to report higher likelihood of hiring an HCA than White participants (Carlson et al., 2011). Specifically, Hispanic participants have reported greater likelihood of hiring an HCA than

White participants in the context of making decisions for an elderly parent (Van Liew, Wooldridge, Kothari, & Cronan, 2014). In addition, level of satisfaction with social support and age differentially relate to participants' perceived likelihood of hiring an HCA (Carlson et al., 2011). Specifically, participants over the age of 65 and those who reported less satisfaction with their social support system reported the greatest likelihood of hiring an HCA in the context of illness or injury.

The Current Study

In the present study, age, the presence of a chronic condition, and the presence of a comorbid condition were examined to determine their contribution to predicting one's perceived need for patient-centered assistance of an HCA. This was investigated through use of hypothetical vignettes, in which age and illness status variables were manipulated. It was expected that participants assigned to read vignettes in which older adults were described as experiencing chronic injury and comorbid chronic condition would report the greatest likelihood of hiring an HCA because of the challenges associated with navigating the system for these populations. With the rise in the number of older adults and the increasing prevalence of individuals living with multiple chronic conditions, the health care system will be met with the challenge of delivering long-term care within a treatment model that was designed for acute care. The present study was designed to identify areas of patient need and examine the role of an HCA as a potential solution for ensuring effective health care for Americans.

Methods

Study Design

This study used an experimental design in which a community-based sample of participants was randomly selected from a public location and invited to participate, and were randomly assigned to read one of eight vignettes. The San Diego State University Institutional Review Board approved the study, and all data were kept anonymous and confidential.

Participants

The sample was comprised of 470 participants who completed questionnaires regarding health care advocacy. Eligible participants were 18 years of age or older and able to read English. The mean age of participants was 46 years ($SD = 17.6$), with the majority of the sample being White (76.6%), in a committed relationship (61.8%), having a trade school or university degree (79.7%), and an annual family income of \$60,000 or greater (64.4%).

Procedure

Random selection of community-based participants took place in Balboa Park, which is located in San Diego, California. Random selection was carried out using random number sequencing procedures. That is, research assistants attempted to recruit every n th seemingly eligible individual (i.e., appearing to be over the age of 18). Each n was defined as a randomly generated number between 1 and 5, with a new n used for each round of participant recruitment. Research assistants inquired whether the individual in question was interested in participating in a study about health care advocacy. Each potential participant was informed about the requirements for participation, including reading and speaking English and being over the age of 18. They were also offered a \$5 incentive for participation. Participants provided written informed consent and were provided with a cover letter explaining the nature of the study, a description of the role of an HCA, a written vignette describing a medical scenario, and a survey to assess their willingness to hire an HCA based on the vignette. Each research assistant received equal numbers of questionnaires with each vignette condition identified by a code number. The questionnaires were piled and distributed to the research assistants, and then to participants, in random order.

Vignettes

Participants were randomly selected to receive one of eight vignettes that described a scenario in which they were asked to imagine that they were in need of medical attention. In all of the vignettes, participants were asked to imagine that they were recently in a car accident and were brought into the emergency room. As a result of

the accident, they received an injury that limited mobility and required treatment beyond the emergency room. Further, participants were told to imagine that they lived alone in a home they owned and that they had a considerable amount of money saved. None of their family members lived in the area, but they had close friends who lived nearby. In addition, they were told that they had health insurance, but would need to submit paperwork for treatment coverage. They were also made aware that the costs of an HCA were not covered by insurance. Variables within the vignettes were manipulated to determine the factors that influence one's likelihood of hiring an HCA for the following activities: Stay with you while you are in the hospital to provide additional help and support, go with you to your medical appointments to provide additional help and support, deal with insurance issues, coordinate your medical appointments, inform each member of your treatment team of the most recent treatment plan, research treatment options for you, assist you with daily symptom management, and maintain a file that contains all of your medical records.

Vignette Manipulations

Age. The age of the individual in the vignette was manipulated. Participants were asked to imagine that they were either 35 years of age or 80 years of age.

Chronicity. The chronicity of the injury was manipulated by varying the type of injury received and the likelihood of ongoing restrictions to mobility. Participants in the acute injury condition were asked to imagine that, as a result of the car accident, their leg was broken. Participants in the chronic injury condition were asked to imagine that their discs in their lower back were crushed.

Comorbidity. In half of the vignettes, participants were told that aside from the injury received during the car accident, they were healthy (i.e. absence of comorbid health condition). In the other half of the vignettes, participants were told that they also had Chronic Ischemic Heart Disease (CIHD), which is a chronic condition associated with frequent chest pain and shortness of breath (i.e. presence of comorbid health condition). They

were told that they were controlling this condition through symptom management and periodic medical appointments.

Measures

After being provided with a description of an HCA and reading the vignette, participants completed a written questionnaire that was developed for the present study. This same questionnaire format was used in past-published studies from this research team (e.g., Van Liew et al., 2014; Wooldridge et al., 2013). To assess whether participants read and understood the description of an HCA, they were asked to rate their confidence in their understanding of an HCA’s role on a 10-point Likert-type scale, ranging from 1 (“Not At All”) to 10 (“A Great Deal”). To determine whether the manipulation of the injury as acute or chronic was successful, participants were asked how much their injury

would impact their future health, with response options ranging from 1 (“Not At All”) to 10 (“A Great Deal”). This variable was controlled for in the statistical analyses. Participants also provided their demographic information, including age, gender, marital status, level of education, and annual family income. Participants were then asked to rate their likelihood of hiring an HCA for 8 different tasks using a 10-point Likert scale ranging from 1 (“Extremely Unlikely”) to 10 (“Extremely Likely”). Overall likelihood of hiring an HCA was calculated as an average rating of likelihood of hiring for all eight tasks, which were shown to be internally consistent (Cronbach’s alpha = .885). This averaged rating, from 1 to 10, was used as the dependent variable in the analyses. Table 1 displays the demographic characteristics of the participants randomly assigned to each vignette condition.

Table 1

Participant Sociodemographic Information Stratified by Randomly Assigned Vignette Condition									
Demographics	Vignette Conditions								Test Statistic (F or χ^2)
	35/Disc/CIHD	35/Disc/healthy	35/Leg/CIHD	35/Leg/healthy	80/Disc/CIHD	80/Disc/healthy	80/Leg/CIHD	80/Leg/healthy	
Age [M (SD)]	48.42 (17.02)	43.75 (18)	44.35 (17.99)	50.55 (16.73)	43.56 (17.56)	45.76 (18.51)	44.32 (17.58)	44.60 (17.03)	1.32
Gender [N (%)]									4.03
Males	30 (44.8%)	21 (33.3%)	26 (41.3%)	23 (35.9%)	25 (38.5%)	28 (47.5%)	23 (39.7%)	23 (36.5%)	
Females	37 (55.2%)	42 (66.7%)	37 (58.7%)	41 (64.1%)	40 (61.5%)	31 (52.5%)	35 (60.3%)	40 (63.5%)	
Ethnicity [N (%)]									13.76
White	57 (86.4%)	50 (79.4%)	45 (73.8%)	50 (79.4%)	49 (76.6%)	52 (83.9%)	38 (64.4%)	42 (67.7%)	
Ethnic Minority	9 (13.6%)	13 (20.6%)	16 (26.2%)	13 (20.6%)	15 (23.4%)	10 (16.1%)	21 (35.6%)	20 (32.3%)	
Education [N (%)]									11.27
High School or less	5 (7.6%)	15 (23.8%)	10 (16.1%)	11 (17.5%)	17 (27.4%)	15 (24.6%)	14 (23.3%)	14 (22.6%)	
Associate or College Degree	61 (92.4%)	48 (76.2%)	52 (83.9%)	52 (82.5%)	45 (72.6%)	46 (75.4%)	46 (76.7%)	48 (77.4%)	
Household Annual Income [N (%)]									6.31
Less than \$60,000	25 (39.7%)	22 (37.3%)	17 (28.3%)	15 (24.6%)	23 (37.7%)	24 (40%)	22 (37.9%)	23 (39.7%)	
\$60,000 or greater	38 (60.3%)	37 (62.7%)	43 (71.7%)	46 (75.4%)	38 (62.3%)	36 (60%)	36 (62.1%)	35 (60.3%)	

Note: 35 and 80 refer to age within the vignette condition; the vignette accident injuries are denoted by Disc for ‘crushed disc’ and Leg for ‘broken leg’; CIHD refers to the presence of comorbid Chronic Ischemic Heart Disease in the vignette and Healthy indicates absence of comorbid condition in the vignette. None of these demographic characteristics varied across the randomly assigned groups.

Analysis

A one-way analysis of variance (ANOVA) and a series of chi-square tests were performed to determine whether participants assigned to each of the eight vignette conditions differed significantly on any demographic variables. T-tests were also performed in order to determine whether the manipulation of the injury as acute or chronic was effective. An additional analysis was performed to determine whether there were participant gender differences in the reported likelihood of hiring an HCA, to ascertain whether gender should be included as a covariate. Following this, a 2 (Age: 35 years, 80 years) x 2 (Chronicity: chronic injury [crushed disc], acute injury [broken leg]) x 2 (Comorbidity: present, not present) analysis of covariance (ANCOVA) was conducted for the overall likelihood of hiring an HCA, controlling for participant demographics (age, education, ethnicity) and comprehension of the HCA role. Significant interactions from the ANCOVA were further explored to examine the relevant simple effects while controlling for participant age, education, ethnicity, and comprehension of an HCA's role.

Results

A series of 2 x 8 contingency tables were evaluated in order to determine whether statistically significant differences in vignette condition assignment occurred as a function of the following participant variables: 1) Gender [Male or Female], 2) Ethnicity [White or Minority], 3) Education [HS equivalent or less or Some college or more], and 4) Income [<\$60k/yr or ≥\$60k/yr]. None of the omnibus chi-square tests were statistically significant, $ps > .05$; therefore, no further analyses were performed. In addition, a one-way ANOVA revealed that participant age did not differ significantly across the eight groups, $F(7, 506) = 1.317, p = .240$. Thus, the assignment patterns across the eight vignette conditions did not differ significantly as a function of the aforementioned participant variables (see Table 1). These findings suggest that the randomization procedures were successful.

In order to ascertain that the manipulation of the injury as acute or chronic was effective, t-tests were performed. The results indicated that

individuals who were assigned to the chronic injury (crushed disc) condition reported that the injury was significantly more likely to impact future health ($M = 9.08, SD = 1.33$) than participants who were asked the same question about the acute injury (broken leg; $M = 5.77, SD = 2.87$), $t(506) = 16.735, p < .001$. Thus, the manipulation was deemed effective. Participants were also asked how confident they were in their understanding of the role of an HCA on a scale from 1 to 10; the results showed that, on average, participants reported having a good understanding of the concept ($M = 7.96, SD = 1.96$). In addition, a t-test was conducted comparing male and female participants on their likelihood of hiring an HCA to determine whether this variable needed to be added as a covariate in the main ANCOVA analyses. The results indicated that men ($N = 196, M = 5.91, SD = 2.29$) and women ($N = 298, M = 6.16, SD = 2.38$) did not differ in their reported likelihood of hiring an HCA for the individual in the vignette, $t(492) = -1.15, p = 0.25$. As such, gender was not included as a covariate in the main ANCOVA analyses. Alternatively, age, education, and ethnicity were used as covariates because our previous findings indicated that they significantly predict the reported likelihood of hiring an HCA (Carlson et al., 2011; Van Liew et al., 2014).

A 2 (Age: 35 years, 80 years) x 2 (Chronicity: chronic injury (crushed disc), acute injury (broken leg)) x 2 (Comorbidity: present, not present) ANCOVA was conducted for the overall likelihood of hiring an HCA, controlling for age, education, ethnicity, and comprehension of the HCA role. There were significant main effects for Chronicity, $F(1, 458) = 16.802, p < .001$, Comorbidity, $F(1, 458) = 10.644, p = .001$, and Age, $F(1, 458) = 18.609, p < .001$ (see Figure 1). Specifically, participants who read the vignette in which they were asked to imagine they had crushed discs in their lower back reported a greater likelihood of hiring an HCA ($M = 6.45, SD = 2.26$) than those who read about a broken leg (acute injury; $M = 5.63, SD = 2.34$). In addition, the presence of a comorbid chronic condition (CIHD) was associated with a greater likelihood of hiring an HCA ($M = 6.37, SD = 2.18$) than the absence of comorbidity ($M = 5.74, SD = 2.43$). Lastly, imagining being 80 years of age ($M = 6.53, SD = 2.08$) was associated with a

greater likelihood of hiring an HCA than being 35 years of age ($M = 5.57, SD = 2.48$). For descriptive purposes, Table 2 was included so that the reader can see the average ratings (and

standard deviations) for the likelihood of hiring an HCA for each specific HCA task stratified by vignette condition received.

Table 2

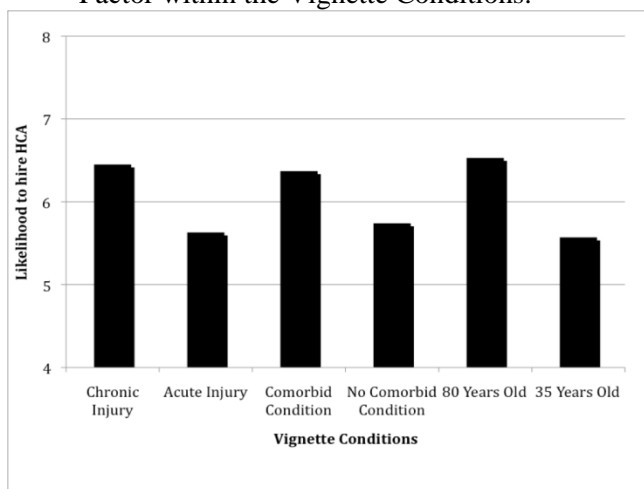
Average Ratings for Likelihood of Hiring an HCA, Stratified by Vignette Condition

HCA Tasks	Vignette Conditions								Overall
	35/Disc/ CIHD	35/Disc/ healthy	35/Leg/ CIHD	35/Leg/ healthy	80/Disc/ CIHD	80/Disc/ healthy	80/Leg/ CIHD	80/Leg/ healthy	
	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	
Stay in hospital	5.94 (2.77)	5.67 (2.83)	4.94 (2.57)	3.91 (2.65)	5.88 (2.49)	6.02 (2.71)	5.62 (2.42)	5.54 (2.73)	5.44 (2.71)
Go to appointments	6.03 (2.69)	5.60 (3.00)	5.56 (2.58)	4.47 (3.04)	7.03 (2.14)	6.61 (2.52)	6.82 (2.10)	6.29 (2.67)	6.05 (2.71)
Deal with insurance	6.88 (2.58)	6.68 (2.95)	6.45 (2.75)	4.72 (2.95)	7.68 (2.14)	7.05 (2.60)	7.15 (2.41)	6.21 (2.54)	6.60 (2.74)
Coordinate appointments	5.36 (2.79)	5.00 (3.05)	5.11 (2.94)	3.55 (2.51)	6.12 (2.81)	6.47 (2.43)	6.28 (2.60)	5.78 (2.69)	5.45 (2.86)
Inform treatment team	6.55 (2.73)	6.21 (3.20)	5.94 (2.76)	4.33 (2.82)	7.32 (2.46)	6.65 (2.49)	6.67 (2.29)	6.30 (2.55)	6.25 (2.78)
Research treatments	7.00 (2.84)	7.29 (2.84)	6.44 (2.77)	4.81 (2.84)	7.91 (2.06)	7.45 (2.39)	6.98 (2.31)	6.43 (2.66)	6.79 (2.73)
Symptom management	6.17 (2.78)	5.81 (2.59)	5.47 (2.64)	4.10 (2.75)	6.76 (2.63)	6.81 (2.39)	6.37 (2.16)	6.39 (2.74)	5.98 (2.71)
Medical records	5.90 (2.88)	6.19 (3.31)	6.27 (2.98)	3.95 (2.91)	6.94 (2.87)	6.92 (2.50)	6.25 (2.62)	6.16 (2.98)	6.07 (3.00)
Overall	6.20 (2.40)	6.09 (2.44)	5.78 (2.34)	4.19 (2.30)	6.95 (1.98)	6.73 (2.10)	6.52 (1.87)	6.14 (2.25)	6.07 (2.43)

Note: 35 and 80 refer to age within the vignette condition; the vignette accident injuries are denoted by Disc for ‘crushed disc’ and Leg for ‘broken leg’; CIHD refers to the presence of co-morbid Chronic Ischemic Heart Disease in the vignette and Healthy indicates absence of co-morid condition in the vignette.

Figure 1

Likelihood of Hiring an HCA Ratings for Each Factor within the Vignette Conditions.



A significant interaction was found between Age and Comorbidity, $F(1, 458) = 3.784, p = .05$. A

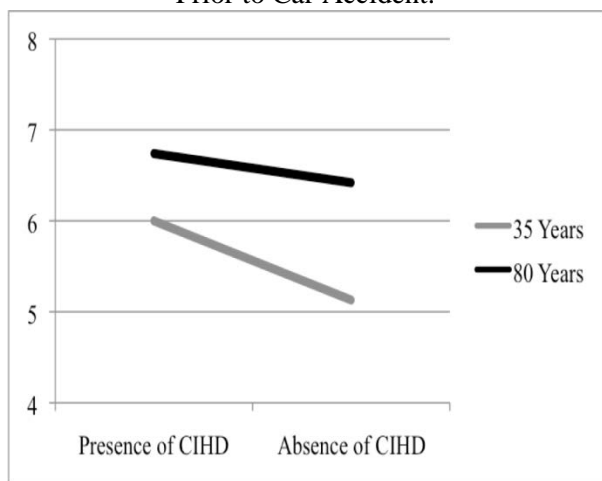
simple effects analysis revealed that in the 35-year-old vignette conditions, participants reported being more willing to hire an HCA if they had a comorbid condition ($M = 6.00, SD = 2.37$) than if they were relatively healthy aside from their car accident injury ($M = 5.13, SD = 2.54, F(1, 496) = 8.89, p = .003$). Conversely, in the 80-year-old vignette conditions, there was no significant difference in the likelihood of hiring an HCA, regardless of the presence or absence of a comorbid health condition ($M = 6.74$ and 6.42 , respectively), $F(1, 496) = 1.31, p = .25$.

There was also a significant interaction between Comorbidity and Chronicity, $F(1, 458) = 4.430, p = .04$. A second set of simple effects analyses demonstrated that in the vignettes with the comorbid condition, there was no significant difference in the likelihood of hiring an HCA across the groups in the broken disc ($M = 6.58, SD = 2.23$) and broken leg ($M = 6.14, SD = 2.14$)

injury conditions, $F(1, 496) = 2.57, p = .11$. That is, incurring any type of injury, in addition to a having longstanding comorbid condition, yielded similar ratings of willingness to hire an HCA. In the healthy condition, a significant simple effect was revealed, $F(1, 496) = 18.85, p < .001$; those who read about having a crushed disc following a car accident were more likely to hire an HCA (chronic; $M = 6.41, SD = 2.29$) than those with a broken leg (acute; $M = 5.16, SD = 2.47$).

Figure 2

The Interaction Effect of Age and Comorbidity on Reported Likelihood of Hiring an HCA, Measured by the Presence or Absence of Chronic Condition Prior to Car Accident.

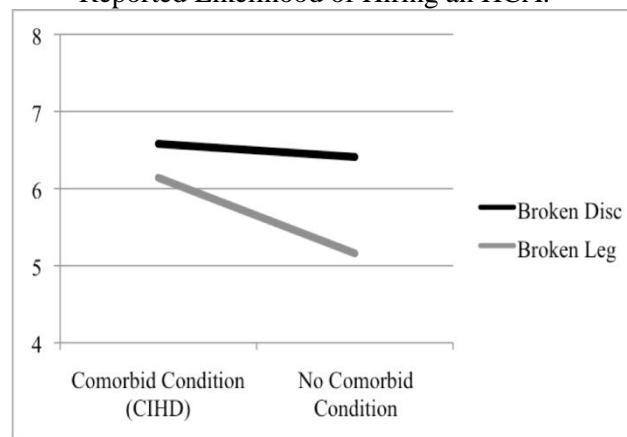


Given the significant interaction and hypothesized need for assistance in the presence of chronic illness, a set of contrasts was conducted to compare the healthy (i.e. no CIHD) and acute (broken leg) vignette to all other variations of vignettes based on Chronicity and Comorbidity, while statistically controlling for participant age, education, ethnicity, and comprehension of an HCA’s role. These contrasts were statistically significant, $F(3, 462) = 10.09, p < .001, r^2 = .059$. Each of the individual contrasts was also statistically significant (chronic injury/comorbid illness, $\hat{\Psi}_1 = 1.486, 95\% \text{ CI } (913, 2.058), t(462) = 5.106, p < .001$; chronic injury/healthy, $\hat{\Psi}_2 = 1.243, 95\% \text{ CI } (.668, 1.817), t(462) = 4.257, p < .001$; acute injury/comorbid illness, $\hat{\Psi}_3 = 1.076, 95\% \text{ CI } (.495, 1.658), t(462) = 3.635, p < .001$).

That is, the presence of at least one chronic condition (i.e. CIHD, crushed disc) increased the reported likelihood of hiring an HCA more than when there was no chronic condition. Descriptively, the likelihood of hiring an HCA increased further in the presence of two chronic conditions. Of note, these contrasts accounted for all of the variance associated with the interaction ($SS = 151.309$).

Figure 3

The Interaction Effect Between Injury (chronic vs. acute) and Comorbidity (Presence vs. Absence of Pre-Existing Chronic Condition) on Reported Likelihood of Hiring an HCA.



Discussion

The present study assessed factors associated with the likelihood of seeking patient-centered assistance from an HCA. The findings indicated that age, presence of chronic injury, and presence of a comorbid chronic condition predicted the likelihood of hiring an HCA. Specifically, individuals who imagined they were 80-years-old, had experienced a chronic injury (crushed discs), or had a comorbid chronic illness (CIHD) reported greater likelihood of hiring an HCA than those who imagined they were 35-years-old, experienced an acute injury (leg fracture), or were healthy apart from the injury, respectively. These main effects suggest that individuals perceive the need for additional assistance in older age and in the presence of conditions that require ongoing care.

The significant interaction between age and comorbidity showed that individuals in the 35-year-old condition were more likely to hire an HCA in the presence than in the absence of a comorbid condition (CIHD). It is likely that younger adults are perceived as less experienced in the management of chronic illness, because it is a less common experience for someone under the age of 65. In fact, it has been shown that generally, older adults are more likely to actively engage in health-promoting behaviors (e.g. attending medical appointments, engaging in self-management activities) than younger adults (Prohaska et al., 1985). Younger adults might be perceived as being less prepared to face the challenges of multiple conditions than one condition given their age and the relatively low prevalence of multiple chronic conditions among younger adults. This might explain why participants reported an increased likelihood to seek out assistance of an HCA for the 35-year old condition when faced with an injury in the presence of another medical condition that required ongoing self-managed care.

When individuals read vignettes where they were described as being 80 years of age, they were similarly likely to hire an HCA, regardless of the presence or absence of longstanding chronic illness. That is, any injury (broken leg or crushed disc) incurred by an 80-year-old is perceived as a condition that necessitates seeking additional assistance for care beyond what is offered within the hospital setting. This finding might be explained by the perception of many individuals in our society that old age is synonymous with frailty. This is consistent with research that has demonstrated the pervasiveness and durability of stereotypes concerning frailty in old age (e.g. see Angus & Reeve, 2006; Palmore, 2001).

Another noteworthy finding of our study was the interaction between chronicity and comorbidity. Notably, the findings demonstrated that the presence of two chronic conditions engendered the greatest increase in the likelihood of hiring an HCA than in the acute injury/no comorbidity condition. Thus, it seems that participants recognized the challenges associated with chronic health problems—especially when multiple, chronic conditions existed—which resulted in

diminished feelings of confidence in self and the health care system to manage these conditions alone. Overall, the finding demonstrates that the situations in which individuals feel the most medical assistance is needed, such as chronic illness care, are the situations in which the present health care system is least effective in caring for them (e.g., Lynn & Adamson, 2003; Rothman & Wagner, 2003).

Limitations

Though our study provides numerous valuable insights concerning the effects of age, chronicity, and comorbidity on perceptions of need for medical assistance, the findings may not generalize across other levels of these factors. For example, it cannot be known whether other types of chronic injury or illness would produce similar findings. It should be noted that it is likely that the chronic injury (crushed discs) may have been perceived as chronically painful and that the chronic, comorbid condition (CIHD) may have been perceived as particularly life-threatening, given that it is a risk factor for myocardial infarction and is associated with the cardiovascular system in general. In the present study, these chronic conditions were included in order to assess participant willingness to hire an HCA based on qualitatively different types of chronic condition. However, further examination is required to better understand the unique needs of those with health conditions who require ongoing medical care in order to guide both health care reform and services offered by an HCA.

It should be noted that the sociodemographic description of the individual in the vignette might limit generalizability of the findings. Specifically, the individual in the vignette was described as living alone in a home he/she owned, living far from relatives and close to friends, and having notable financial savings. This vignette description was held constant across conditions in order to allow for systematic comparison; however, doing so also limits the scenario to a subset of individuals in the population who fit this description. These parameters were chosen to account for a subset of the population who might be most interested in receiving external support for health care needs. Future studies would benefit from an examination of other subgroups of the

population to determine degree to which the results are generalizable.

Beyond this, because the vignette instructed individuals to imagine they were financially stable (e.g. being a home owner and having savings), the findings may not generalize to individuals of lower socioeconomic status given the personal cost of hiring an HCA. Future studies should assess public perceptions of the cost-benefit ratios of hiring HCAs (i.e. whether HCAs are perceived as being worth the cost).

Lastly, although participant demographics were statistically controlled for in the analyses, it is important to note that the sample was largely comprised on middle-aged adults; therefore, many did not fit the description of the individual in the vignette. Future studies should include a sample comprised of individuals who are *actually* experiencing the challenges of managing multiple, chronic conditions and are navigating the health care system for these conditions.

Conclusion

The current health care system is designed for short-term care for acute conditions; however, the population as a whole is living longer and more Americans are being diagnosed with chronic conditions. There will be a significant increase in older adults with at least one chronic condition as the baby boomers reach retirement age. As such, it is important to anticipate patient needs and ways to bridge the gap in care before a crisis is reached. Through the use of vignettes and self-reported perceptions, our study highlights the perceived weaknesses of the present health care system with respect to providing care for those in greatest need and offers valuable information concerning the situations that community-dwelling adults perceive as requiring additional, professional assistance.

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