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SOCIAL CAPITAL AND HOSPITAL READMISSION OF OLDER ADULTS

Sheryl Emmerling

109 Pages

This dissertation is comprised of three manuscripts exploring the concept of social capital and hospital readmission of older adults. The first manuscript provides a review of the literature evaluating studies that measure the relationship between social capital and health, healthy behaviors, and access to and utilization of healthcare resources. Further research focusing on testing various types of individual social capital and their relationship to key outcomes including hospital readmission is needed.

The second manuscript is a description of the Social Capital and Health Framework that can serve as a guide for assisting nurses and other healthcare providers to consider older adults in the context of relationships and the social environments to which they belong. Lindenberg's Social Production Function Theory, which states that well-being has both physical and social dimensions, both of which have an impact during illness and health, guided the development of this framework.

The third manuscript is a report of the method and results of a descriptive pilot study to examine if levels of individual social capital differ in two groups of patients age 65 and older, those readmitted to the hospital within 30 days of discharge and those not readmitted. One-hundred-twenty-eight older adults participated in the study, with 50 readmitted within 30 days of hospital discharge and 78 not readmitted within 30 days. Social capital levels were measured using the Personal Social Capital Scale. The Social Capital and Health Framework guided the

study. Results of the study indicate there is no significant difference in the levels of social capital between the two groups.

KEYWORDS: Social Capital; Older Adult; Hospital Readmission

SOCIAL CAPITAL AND HOSPITAL READMISSION OF OLDER ADULTS

SHERYL EMMERLING

A Dissertation Submitted in Partial
Fulfillment of the Requirements
for the Degree of

DOCTOR OF PHILOSOPHY

Mennonite College of Nursing

ILLINOIS STATE UNIVERSITY

2017

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SOCIAL CAPITAL AND HOSPITAL READMISSION OF OLDER ADULTS

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CHAPTER I: SOCIAL CAPITAL AND ITS RELATIONSHIP TO HEALTH AND ILLNESS:
A REVIEW OF THE LITERATURE

Abstract

Cultural, economic, and social conditions of social groups and populations influence healthcare needs. Further, the degree of well-being of these groups has an effect on the utilization of medical care. One aspect to consider is how individual and community social capital that is associated with health and healthy behaviors could potentially affect the hospital readmission phenomenon. Social capital is a person's networks coupled with shared norms and trust. It is also grounded in the notion that social relationships are vital resources. Because of these ideas, social capital's significance to health and well-being has gained substantial attention in the literature. This literature review was conducted to evaluate key studies that measure the relationship between social capital and health, healthy behaviors, and access to and utilization of healthcare resources. Significant associations between many aspects of healthcare and a variety of social capital concepts, including bonding and bridging social capital were identified, assisting to develop evidence of the association. However, many limitations are noted. Research that focuses on testing the multiple types of social capital and their relationship to key outcomes utilizing a reliable and valid instrument in a longitudinal context rather than secondary analyses of a variety of data is warranted. Further, a stronger means of measuring or determining health or healthcare utilization at the individual level is necessary.

Introduction

Nearly nine million Medicare patients are hospitalized annually, with approximately one in five of these patients readmitted within 30 days (Goodman, Fisher, & Chang, 2013). These readmissions are creating a financial crisis for both healthcare providers and payers. The Federal government reports the cost of readmission for Medicare patients is \$26 million annually (Lavizzo-Mourey, 2013). As part of healthcare reform, the Centers for Medicare and Medicaid initiated the Hospital Readmission Reduction Program in 2013 to begin penalizing hospitals for higher than expected readmission rates of patients aged 65 and older with specific discharge diagnoses (Gu et al., 2014; Nuckols, 2015). While this financial cost is concerning, so is the human cost. Costs to older adults readmitted to the hospital include the risk of developing hospital-acquired conditions, functional decline, and death (Nuckols, 2015).

Hospital readmission is problematic for the older adult with chronic illness due to inadequate management of physical, social, and psychological factors, including poor self-care and lifestyle management, low levels of social support, and lack of community resources (Glass, Moss, & Ogle, 2012; Prior, Bahret, Allen, & Pasupuleti, 2012). The likelihood of hospital readmission increases for the older adult if he or she has multiple comorbidities and suffers from stress, anxiety, depression, or social isolation, with those living alone having a 30% higher risk of an unplanned readmission than those living with someone (Glass et al., 2012). Older adults living alone lack emotional and practical support that is present when living with another person and this can lead to a poor transition from hospital to home or from hospital to utilization of community services, contributing to a negative health trajectory (Glass et al., 2012).

According to de Leonardis (2006), a person's health condition is dependent on not only science and medicine, but on the cultural, economic, and social conditions of social groups and

populations. Further, the degree of well-being of these groups has an effect on the utilization of medical care (de Leonardis, 2006). Hospital discharge interventions that put emphasis on traditional aspects of care might miss the social gaps in care for the older adult being discharged to home (Greysen et al., 2014; Preyde & Brassard, 2011). Preyde and Brassard (2011) stated that psychosocial factors such as distress and depression, which are vital to functioning and adaptation after discharge, are often missing from discharge planning assessment tools. Greysen et al. (2014) reported that one emerging sub-theme among patients discharged to home is social isolation and a lack of support from family and friends. According to Greysen et al., many of the participants in their qualitative study reported that this absence of support hindered their efforts to recover from their hospitalization and return to their previous level of functioning.

Although no studies have been done to investigate the relationship between social capital and hospital readmission, numerous studies have been conducted on social capital and various aspects of health and health behaviors. The purpose of this literature review is to evaluate studies analyzing the relationship between social capital and health, healthy behaviors, and healthcare utilization, in an effort to develop a case for the potential relationship between social capital and hospital readmission and identify gaps that support future research.

What is Social Capital?

The concept of social capital has multiple facets resulting in a lack of consensus on its definition (Bhandari & Yasunobu, 2009; Kawachi, Subramanian, & Kim, 2008). The concept became entrenched in academic discussion beginning in the 1980s due to the work of several social capital theorists, including Pierre Bourdieu, James Coleman, and Robert Putnam (Bhandari & Yasunobu, 2009; Lewis, DiGiacomo, Lockett, Davidson, & Currow, 2013). As cited by Bhandari and Yasunobu (2009) and Kawachi et al. (2008), James Coleman defined social

capital as a combination of responsibilities, hopes, trust, and flow of information that are part of social structure and an initiator of various actions of persons who are within that structure.

Bhandari and Yasunobu (2009) and Pinxten and Lievens (2014) reported that Bourdieu defined social capital as actual or potential assets that are associated with a long-lasting network of mutual acquaintances or membership in a group. Bourdieu's position, as cited by Bhandari and Yasunobu (2009), is that social capital is a collectively owned asset, bestowing members with individual good. Putnam (2000) defined social capital as networks among individuals, and the norms of reciprocity and levels of trust that come from them. Putnam (2000) stated that norms of reciprocity can be specific, with persons doing things for each other, or generalized, doing something for someone without expecting anything in return. Whether or not social capital is an individual or a collective asset of a group continues to be debated (Chen, Stanton, Gong, Fang, & Li, 2009).

In addition to the various definitions of social capital, the concept is divided into cognitive and structural components. Cognitive social capital refers to trust in others and the norms of reciprocating the beneficial acts of others, while structural social capital relates to a person's networks (Ferlander, 2007). Further, the terms bonding, bridging, and linking describe the diversity of social capital in and among social networks and serve as the nomenclature for various types of social capital (Ferlander, 2007; Putnam, 2000). Bonding social capital is derived from close relationships where there is a strong level of trust between persons in the network, such as family, while bridging social capital is generated from relationships with people who are diverse demographically but at the same social level, such as persons from a different race or religion (Ferlander, 2007; Putnam, 2000). Linking social capital is generated from relationships

with diverse individuals who are in a different social position, such as relationships with employers or elected officials (Ferlander, 2007; Putnam, 2000).

Method

This review of the literature covered peer-reviewed quantitative studies published during a 10-year period from 2005 to 2015. The search included the use of three electronic bibliographic databases: CINAHL, PubMed, and SocIndex. The following keywords were used in the search: social capital; bonding, bridging and linking social capital; structural and cognitive social capital; health; illness; hospitalization; re-hospitalization; and access to care. Terms related to social capital are based on definitions found in the literature. Research studies that examined the association between social capital and physical or mental health, health and disease promoting behaviors, illness prevention, utilization of healthcare resources, and mortality were included. Articles published in languages other than English or dealing with children were excluded.

Results

The aforementioned search strategies identified 28 articles suitable for review after eliminating duplicates. The Review Matrix located in Table 1 shows the sources and characteristics of the 28 reviewed studies, including setting, design and sampling, social capital domain and aim, measures, key findings and limitations. Using the Matrix Method (Garrard, 2014), each of the 28 papers was reviewed on the topics of purpose, definition of the independent and dependent variables, covariates, methodological design, sampling design, number of subjects, data sources, validity and reliability of the data collection, results, and significance. Some form of social capital was identified as an independent variable in each of the studies. Studies were divided into four groups; those that measured social capital at the individual level, neighborhood level, community level, and state level. Studies within each group were then

reviewed for their investigation of the relationship between type of social capital and health, health behavior, quality of life, utilization of healthcare resources, and mortality.

Two meta-analyses of studies involving individual social capital were also reviewed (Gilbert, Quinn, Goodman, Butler, & Wallace, 2013; Nyqvist, Pape, Pellfolk, Forsman, & Wahlbeck, 2014). Kim (2013) and Waverijn et al. (2014) measured both individual and neighborhood or community social capital. Six of the studies reviewed measured social capital at the neighborhood level (Dahl & Malmberg-Heiminen, 2010; Leader & Michael, 2013; Lindenberg, Persson, & Eriksson, 2010; Mohen, Volker, Henk, & Groenewegen, 2012; Moore, Teixeira, & Stewart, 2014; Waverijn et al., 2014). Nine studies measured social capital at the community level (Chappell & Funk, 2010; Derose, 2008; Hsieh, Wang, McCubbin, Zhang, & Inouye, 2007; Kim, Subramanian, & Kawachi, 2006; Kim, 2013; Malino, Kershaw, Angley, Frederic, & Small, 2014; Norstrand, Glicksman, Lubben, & Kleban, 2012; Ueshima, et al., 2010; Yearly, Ounpraseuth, Moore, Bursac, & Greene, 2012). Two studies analyzed social capital at the state level (Mellor & Milyo, 2005; Williams, 2012). One study analyzed social capital at the national level (Elgar et al., 2011). Ten studies measured individual social capital as an independent variable (Aida, et al., 2011; Boehm, Eisenber, & Lamped, 2011; Cao, Li, Zhou & Zhou, 2015; Forsman, Nyqvist, Schierenbeck, Gustafson, & Wahlbeck, 2012; Kim, 2013; Kishimoto, Suzukim, Iwase, Doi, & Takao, 2013; Lindstrom, 2006; Nieminen, et al., 2013; Norstrand & Xu, 2012; Waverijn, et al, 2014).

Only nine of the studies reviewed specifically identified bonding and bridging social capital as independent variables (Boehm et al., 2011; Dahl & Malmberg-Heiminen, 2010; Derose, 2008; Elgar, et al., 2011; Gilbert et al., 2013; Kim et al., 2006; Kishimoto et al., 2013; Norstrand & Xu, 2012; Ueshima et al. 2010). In the meta-analysis conducted by Gilbert et al.

(2013), participation, trust, and reciprocity were assigned to bonding social capital, while social networks, politic or electoral involvement were assigned to bridging social capital. The constructs of voting and trust in legal, political, or government institutions were assigned to the category of linking (Gilbert et al., 2013). In addition to the study by Gilbert et al. (2013), the studies by Boehm et al. (2011); Cao et al. (2015); Derose (2008); Elgar et al. (2011); and Norstrand and Xu (2012) also identified linking social capital.

Social Capital and Health

Putnam (2000) reported studies have demonstrated that social integration determines individual well-being, with those who are more integrated having better health. Sociologists have concluded that social integration and social support offset negative effects of various biomedical risk factors such as cigarette smoking, obesity, high blood pressure, and a sedentary lifestyle (Putnam, 2000). Further, according to Putnam, some studies have determined a connection between social capital and health at the community level, while others have found a relationship between health and social capital at the individual level. This review expands on Putnam's work by reporting on relationships for social capital to health identified at the individual, neighborhood or community, state, and national levels.

Individual Social Capital and Health

Ten of the studies analyzed found that individual social capital is significantly associated with general, mental, or physical self-rated health, (Cao et al., 2015; Dahl & Malmberg-Heiminen, 2010; Forsman et al., 2012; Gilbert et al., 2013; Kim et al., 2006; Kim, 2013; Kishimoto et al., 2013; Nieminen et al., 2013; Norstrand & Xu, 2012; Waverijn et al., 2014). For example, Gilbert et al.'s (2013) meta-analysis of 39 studies revealed a significant association between health and various combinations of social capital elements, such as trust, participation,

and reciprocity, with trust having the greatest impact on good health. Gilbert and colleagues used odds ratio to calculate the effect of social capital on health. It was determined that a one-unit increase in social capital increased the odds of having good health by 27% (Gilbert et al., 2013).

Several studies emphasized the relationship between individual social capital and mental health. Forsman et al. (2012) and Cao et al. (2015) found an association between individual social capital and mental health of older adults. Forsman and colleagues reported that both quantity and quality of interpersonal relationships with friends and number of close relationships with neighbors had a strong association with mental health in older persons. Cao et al. found it was the cognitive aspects of social capital that played a significant role. Cao and colleagues reported that increased social support was significantly associated with lower levels of depression in older adults. According to Cao and colleagues social networks also have an inverse relationship to depression; however, the size of the social network and social participation had no influence. Older adults living in urban areas reported significantly better physical health, with a higher bonding and linking social capital being noted in the study by Norstrand and Xu (2012). Norstrand and Xu (2012) found that individual bonding social capital was associated with better emotional health of older adults living in urban areas despite the fact that older adults living in rural areas had significantly higher levels of bonding social capital.

Neighborhood or Community Social Capital and Health

In the studies review, a significant association between self-rated health and neighborhood or community social capital was reported (Kim et al., 2006; Kim, 2013, Lindenberg et al, 2010; Malino et al, 2013; Mohnen et al., 2012; Norstrand et al., 2012; Waverijn et al., 2014). Kim et al. (2006), whose study was an analysis of bonding and bridging community social capital, found that both forms of community social capital were associated with lower

odds of reporting poor health. Kim (2013) and Waverijn et al. (2014) found that both individual and neighborhood social capital independently had a significant association to health. In the study by Waverijn and colleagues, the higher the reported social capital at baseline, the better the person rated their health in later years. This was also reported by Mohnen et al., (2012) who found that changes in neighborhood social capital is as critical to health as the current state of neighborhood social capital. Norstrand et al. (2012) found that an increase in a person's participation in groups and willingness of neighbors to help were both associated with a 15% increase in the odds of reporting a more positive self-rating of health, and a sense of belonging was associated with an 11% increase. These researchers also found that a decrease in willingness to help was associated with a 19% increase in the odds of having symptoms of depression (Norstrand et al., 2012).

Malino et al. (2013) also found a relationship between social capital and health and this was the only study that correlated a health factor (hypertension) with or against a person's reported health status. These researchers measured social capital utilizing a modified World Bank Group's Social Capital Assessment instrument, with higher scores equating to higher social capital. Malino and colleagues (2013) created a ranked index of social capital model (RISC) that was a 0 to 10 scale based on composite scores. Zero represented a person not scoring high on any social capital factor while a score of 10 meant a person scored high on all 10 factors (Malino et al., 2013). Malino and colleagues found that the higher the number of social capital factors in which an individual scored high was significantly related to hypertension status. According to the researchers, for every additional factor above five there was approximately a 41% reduction in the odds of hypertension. Malino and colleagues (2013) reported that four social capital

factors explained hypertension status: groups and networks, trust, personal empowerment, and collective action.

State and National Social Capital and Health

Only two studies evaluating state or national social capital and its relationship to health were reviewed. Mellor and Milyo (2005) found a significant relationship between state social capital and individual health, after controlling for income. Elgar et al. (2011) evaluated the relationship between bonding, bridging, and linking social capital in 50 countries using a four-factor measure, which after factor analysis, were termed trust social capital, group social capital, civic social capital, and linking social capital. Elgar and colleagues found that these four factors differed substantially across countries and that, while individual level social capital was associated with better health and life satisfaction, it was dependent on whether the person lived in a country where interpersonal trust was high or low. For example, if a person lived in a country with a high mean level of trust there was a stronger association between individual trust social capital and health and life satisfaction than for a person living in a country with a low mean level of trust (Elgar et al., 2011).

Social Capital and Health Related Behavior

In the area of health-related behaviors, a number of noteworthy associations with social capital were found. For example, Leader and Michael (2013) found a significant association between social capital and cancer testing. These researchers found that women who were having mammograms to screen for breast cancer had a mean social capital score significantly higher than those women who did not; those tested for colon cancer had significantly higher social capital scores as well (Leader & Michael, 2013). Even after the researchers controlled for demographics, women with higher social capital were more likely to be tested for these two

forms of cancer (Leader & Michael, 2013). There was no relationship between social capital and screening for cervical cancer, nor was there a significant difference between men screened and not screened for colon cancer (Leader & Michael, 2013).

Several studies examining the connection between cognitive and structural social capital and health behaviors found a significant relationship between social capital and physical activity (Hsieh et al., 2007; Mohnen et al., 2012; Ueshima et al., 2010). According to Mohnen et al. (2012), persons residing in a neighborhood with a high level of social capital had significantly greater odds of being physically active. Individuals with high levels of trust, a form of cognitive social capital, or living in a neighborhood with elevated levels of social capital were less apt to be smokers (Mohnen et al., 2012; Nieminen et al., 2013). Nieminen and colleagues (2013) reported that increased social participation was significantly associated with non-smoking, moderate alcohol consumption, physical activity, eating vegetables, and getting plenty of sleep. Higher structural social capital was also found to decrease the risk of adults relapsing after quitting smoking (Moore et al., 2014).

Quality of Life of Persons with Chronic Illness

Only one study investigated the impact of social capital on the quality of life of persons with a chronic illness. Boehm et al. (2011) found that bonding social capital made a significant contribution to multiple areas of functioning and quality of life in persons with fibromyalgia. Function and quality of life were measured utilizing the Fibromyalgia Impact Questionnaire (FIQ) and the Short-Form Health Survey (SF-36). Boehm and colleagues reported that one aspect of bonding social capital, friend connections, contributed significantly to the variance of all dependent variables, including social function, mental health, and bodily pain. Trust was a significant contributor to the variance of general health, while neighborhood connection

contributed to social function. According to Boehm and colleagues (2011), bonding social capital has a greater influence on function and quality of life in fibromyalgia patients than problem or emotional focused coping strategies. Further, these homogeneous relationships contributed to health related quality of life and functioning to a greater extent than economic or employment status and were a significant resource for fibromyalgia patients (Boehm et al., 2011).

Social Capital and Utilization of Healthcare Resources

Only two studies addressed social capital and access to healthcare or utilization of services. Derose (2008) evaluated the relationship between bonding, bridging, and linking social capital and community access to healthcare. In this study, bonding social capital, as measured by commute times, demonstrated that shorter times to work were associated with fewer preventable hospitalizations. According to Derose (2008), commute time to work was used as a measure of social capital in the Social Capital Benchmark Survey conducted by Helliwell and Putnam in 2004. Derose (2008) found that for every increase of seven minutes in average commute time for workers, there was an increase of 4.1 additional preventable hospitalizations for non-elderly adults and 22.8 additional preventable hospitalizations for elderly adults. Derose (2008) posited that shorter commute times for those who work could enable them to attend appointments with healthcare providers or assist family and others in keeping their appointments.

Bridging social capital, which was measured by interracial and interethnic interactions, was related to decreased hospitalizations in adults specifically (Derose, 2008). According to Derose (2008), for every 30% increase in the probability of racial or ethnic interaction, there was a decrease of 5.6 preventable hospitalizations for adults. No significant relationship between linking social capital and access to healthcare was found; however, there was a correlation

between a lower preventable hospitalization rate and having a safety net clinic within 20 miles (Derose, 2008).

In his secondary analysis of state-level statistics from several sources, Williams (2012) found that utilization of healthcare services varied contingent on amounts of social capital. Williams found decreased social capital equated to an increased length in hospital stay and further healthcare provider visits. In addition, decreased social capital was related to higher numbers of Caesarean sections, carotid endarterectomy, prostatectomy, and lower extremity revascularization procedures (Williams, 2012). According to Williams, social capital explained more utilization of healthcare than income.

Social Capital and Mortality

Studies demonstrate that social capital is related to mortality as demonstrated in the meta-analyses conducted by Nyqvist et al. (2014) and Gilbert et al. (2014). Nyqvist and colleagues reported that higher structural social capital, defined by broader social networks, was associated with decreased mortality regardless of age or gender. Gilbert and colleagues (2013) found that for an average one-unit increase in social capital, the odds of survival increased by 17%. In their analysis, sensitivity testing demonstrated that no individual study significantly influenced the overall estimated effect, because after removing any of the studies, the estimated effect size remained large (Gilbert et al., 2013).

Summary

This review of the literature provides evidence of the association between social capital and various aspects of health. Not only do persons with higher levels of individual or community social capital self-report better health, they also are more apt to participate in healthy behaviors, including not smoking, being more physically active, eating healthy, getting appropriate rest, and

partaking in preventative cancer screens (Hsieh et al., 2007; Leader & Michael, 2013; Mohnen et al., 2012; Nieminen et al., 2013; Ueshima et al., 2010). Further, persons with higher levels of social capital are less likely to have some surgical procedures, have fewer visits to physicians, and have shorter hospital stays (Williams, 2012). Despite having lower use of services, persons with higher social capital have better access (Williams, 2012). Persons with higher social capital also report a better quality of life (Boehm et al., 2011). The studies presented have issues however, including the use of self-reports of health status and secondary analysis of cross-sectional data to determine social capital. There is also no consistent instrument used in the studies evaluated, with only one using a reliable, valid instrument that measured social capital in a comprehensive manner (Boehm et al., 2011). Finally, there is a lack of research focusing strictly on the relationship between social capital and health in the elderly, and more specifically, elderly living in the United States. Of those studies reviewed, only the study by Norstrand et al. (2012) evaluated social capital and its relationship to health. Nonetheless, there is enough evidence of the relationship between social capital and health, healthy behaviors, and healthcare utilization to suggest the need for further research on the association of social capital in the elderly and hospital readmission.

Research that focuses on testing the multiple types of social capital and their relationship to key outcomes in a longitudinal context is warranted (Brisson, 2009). One way to do this would be to measure social capital in older adults after hospital discharge using an evidence-based instrument. By measuring levels of social capital in patients after hospital discharge and ascertaining if levels differ between those readmitted to the hospital within 30 days and those not readmitted, valuable information on the types of services healthcare providers and social workers should focus on to keep patients in their homes could be gained. Not only could this information

contribute to the scientific literature on social capital, it could also contribute new knowledge on the topic of preventing hospital readmission, a phenomenon that is costly in dollars as well as morbidity and mortality.

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Table 1.

Review Matrix

| Reference | Purpose | Design | Sampling/ Setting | Social Capital Domain | Measures | Results | Strengths/ Limitations |
|--|--|---|--|-------------------------------------|--|---|--|
| Aida, Kondo, Hirai, Subramanian, Murata, Kondo, Ichida, Sharai, & Osaka (2011) | Examine relationships between social capital and mortality | Prospective cohort study using self-administered questionnaires | Adults (N=14,668) ≥ 65 years, living in six municipalities of Chita peninsula in Aichi Prefecture, Japan | Individual structural and cognitive | Aichi Gerontological Evaluation Study (AGES). Eight cognitive social capital variables and nine structural social capital variables. All-cause mortality obtained from municipality government registry. | After controlling for all covariates, only the social network friendship variable was a predictor of mortality. For men, higher mortality was related to low frequency of meetings; for women it was lack of friends. | Strengths: cohort study, multiple social capital variables. Limitations: short follow-up period. Potential bias - latent fatal disease and low response rate. Study limited to one region. No reliable or valid instrument used. |

(Table Continues)

| Reference | Purpose | Design | Sampling/ Setting | Social Capital Domain | Measures | Results | Strengths/ Limitations |
|------------------------------------|---|---|--|-------------------------------|---|---|--|
| Boehm, Eisenber, and Lampel (2011) | Determine how social capital, personal coping strategies, and personal and disease-related factors affect the functioning and quality of life of fibromyalgia patients. | Cohort study completing five questionnaires | Convenience sample of fibromyalgia patients ages 18 to 85 (N=57) attending a conference in Tel-Aviv Israel | Bonding, bridging and linking | Fibromyalgia Impact questionnaire (FIQ) The Short-Form Health Survey (SF-36)(reliability and validity not reported) The Modified Social Capital Questionnaire COPE-Multidimensional Coping Inventory (reliability and validity not reported) | Bonding social had a significant impact on all dependent variables, the FIQ, social function, mental health, and bodily pain. Bonding social capital had a greater relationship to quality of life than self-reported economic or work status, and problem-focused and emotional-focused coping strategies. | Strengths: utilized established instrument to measure bonding, bridging and linking social capital. Limitations: convenience sample (selection bias). Small sample size. Limited to one population. |

(Table Continues)

| Reference | Purpose | Design | Sampling/ Setting | Social Capital Domain | Measures | Results | Strengths/ Limitations |
|--------------------------------|--|--|--|-----------------------------|--|---|---|
| Cao, Li, Zhou, and Zhou (2015) | Investigate the relationship between social capital, social support and depression | Cross-sectional design with two-stage stratified cluster sampling. | Adults age 60 and over (N=928) residing in Hangzhou, China | Linking | Geriatric depression scale Position Generator used to assess social network Cognitive social capital measured using one question related to trust (no reliability or validity reported) and questions on reciprocity from the World Bank Social Capital Scale Social support measured by Multidimensional Scale of Perceived Social Support | Significant negative relationship between cognitive social capital and depression. Cognitive social capital related to social support, with social support related to low depression. Social networks had a negative relationship with depression.. | Strengths: provides new evidence that social capital mediates depression directly and indirectly in older adults. Limitations: cross sectional survey from communities in one city. Small sample size. Few questions used to determine cognitive social capital. |

(Table Continues)

| Reference | Purpose | Design | Sampling/ Setting | Social Capital Domain | Measures | Results | Strengths/ Limitations |
|--------------------------|--|-------------------------|--|-------------------------------------|---|---|--|
| Chappell and Funk (2010) | Examine the relationship between advantage, social capital and health status to determine if social capital helps explain what is known about the relationship between advantage and health and adds anything beyond social participation and trust. | Cross-sectional design. | Adults ages 35-64 (N=918) living in a disadvantaged area of Victoria, Canada | Individual structural and cognitive | Health status based on the RAND 36-Item Health Survey 1.0. Perceived expressive support based on modified scale by Pearlin, et al., and self-efficacy measured by the General Self-Efficacy Scale. (no reliability or validity reported). Advantage measured by income. | Income directly related to perceived health and physical function but not mental health. No direct or combined effects of social capital components and health. Indirect significant associations between trust and all health measurements through self-efficacy and perceived expressive support. | Strengths: Large sample size. Limitations: cross-sectional design. No valid and reliable instrument used to measure social capital and only group involvement and trust were examined. No distinguishing between bonding and bridging social capital. |

(Table Continues)

| Reference | Purpose | Design | Sampling/ Setting | Social Capital Domain | Measures | Results | Strengths/ Limitations |
|-----------------------------------|--|------------------------|---------------------------------------|--------------------------------|--|---|---|
| Dahl and Malmberg-Heiminen (2010) | Determine the effect of unequal distribution of social capital on the relationship between socio-economic position and health. | Cross-sectional design | Adults age 18-74 (N=3190) from Norway | Bonding, bridging, and linking | Self-reported health status and chronic illness. Reported emotional and practical support, and number of friends and acquaintances determined bonding social capital. Neighborhood satisfaction and civic participation determined bridging social capital. Level of education and access to professional resources determined linking social capital. Single, question was used to measure generalized trust. | Older respondents more apt to report poor health than younger respondents. Immigrants more likely to report poor health than non-immigrants. Only neighborhood satisfaction and generalized trust were positively associated with self-perceived health; none of the social capital variables were associated with chronic illness. | Strengths: Large sample size Limitations: cross-sectional design. No reliable/valid instrument and few indicators used to determine social capital. Trust was not measured as part of social capital but as a separate variable. Subjective report of health and chronic illness. Low survey response rates. |

(Table Continues)

| Reference | Purpose | Design | Sampling/ Setting | Social Capital Domain | Measures | Results | Strengths/ Limitations |
|---------------|--|------------------------|--|--------------------------------|---|---|---|
| Derose (2008) | Examine the relationship between social capital and community access to healthcare | Cross-sectional design | Secondary data from hospitalized persons (N=837) and community data in Florida | Bonding, bridging, and linking | Zip-code level data. Preventable hospitalizations in each zip-code cluster. Bonding social capital determined by proportion of households with married couples and mean commute time to work. Bridging by voting and ethnicity. Linking by number not-for-profit organizations per capita. Healthcare resources determined by availability and health centers and clinics and ability to pay. | For bonding shorter commute times associated with fewer adult preventable hospitalization. Bridging evidenced by increased interracial and interethnic interactions associated with fewer preventable hospitalization in the elderly. No significant association with linking social capital found. | Strengths: Large sample size; explored interactions. Limitations: cross-sectional design using Zip codes. Social capital measures were limited and not from validated or reliable instruments. Data from one state. |

(Table Continues)

| Reference | Purpose | Design | Sampling/ Setting | Social Capital Domain | Measures | Results | Strengths/ Limitations |
|---|--|-------------------------|---|-----------------------------|--|--|--|
| Elgar, Davis, Wohl, Trites, Zelenski, and Martin (2011) | Investigate the relationship between social capital with self-rated health and life satisfaction | Cross-sectional design. | Person from 50 countries age 15-98 (N=34,075) participating in World Value Survey (WVS) Stratified sample of at least 1000 adults from each country | Bonding, bridging, linking | 21 WVS survey questions related to trust, community life and government institutions. After factor analysis, four social capital factors of trust, group, civic, and linking established. Both self-rated health and life satisfaction measured with one question. | Persons with high trust in countries with high mean trust reported better health and life-satisfaction than those in countries with low. In countries with high group social capital, women reported greater life satisfaction while men reported better health. Negative relationship between age and health and well-being in countries with low linking social capital. | Strengths: multi-dimensional, international study with large sample size. Multilevel analysis. Limitations: Cross-sectional design. Social capital could be influenced by various cultural and political differences across countries that were not controlled for. Confounders of social determinants not considered or measured. |

(Table Continues)

| Reference | Purpose | Design | Sampling/ Setting | Social Capital Domain | Measures | Results | Strengths/ Limitations |
|--|---|-------------------------|---|-----------------------------|--|---|---|
| Forsman, Nvqvist, Schierenbeck, Gustafson, & Wahlbeck (2012) | Study association between social capital and depression | Cross-sectional design. | Adults age 65, 70, and 75 from Sweden (N=3779) and Finland (N=3059). Data from Gerontological regional database and resource center project | Structural and cognitive | Geriatric Depression Scale 4 Structural social capital measured by frequency of contacts with friends and neighbors. Cognitive social capital measured on perceptions of interpersonal trust with friends and neighbors. (No reliability or validity). | Depression lower in individuals with high social contact and high trust (both friends and neighbors). Levels of social capital and depression more prominent in Sweden. Marital status (single) and age (being 80 as compared to 65 and 75) significantly associated with depression. | Strengths: Sample large and from two similar regions. Limitations: Cross-sectional design. Depression self-reported. Limited questions measuring social capital. No reliable or valid instrument used. Postal survey to specific regions. Different sampling strategies were used in rural as compared to urban areas. |

(Table Continues)

| Reference | Purpose | Design | Sampling/ Setting | Social Capital Domain | Measures | Results | Strengths/ Limitations |
|---|---|---------------|--|-------------------------------|--|--|--|
| Gilbert, Quinn, Goodman, Butler, and Wallace (2013) | Assess the bivariate association between social capital and self-reported health and all-cause mortality. | Meta-analysis | Studies conducted internationally (N=39) | Bonding, bridging and linking | Bonding, bridging, and linking social capital, with smaller constructs such as participation, trust, and reciprocity assigned to bonding, social networks and political participation assigned to bridging and voting and trust in legal, governmental or political institutions assigned to linking. (Total of 102 different indicators). | Strong positive relationship between social capital and health and mortality. Reciprocity has largest effect on health. Every unit increase in bonding social capital increased odds of having good health by 30%; every unit increase in bridging increased good health by 18%. | Strengths: Meta-analysis Limitations: Unable to control for interaction effects of demographics and social capital constructs. Unable to distinguish levels of social capital in groups based on socio-economic status, race, and gender. |

(Table Continues)

| Reference | Purpose | Design | Sampling/ Setting | Social Capital Domain | Measures | Results | Strengths/ Limitations |
|---|---|---------------------------------------|---|-----------------------------|---|--|---|
| Hsieh, Wang, McCubbin, Zhang, & Inouye (2007) | Test a model of factors that influence participation in osteoporosis prevention, and estimate direct and indirect effects of personal and social factors on engaging in preventative behaviors. | Correlational cross-sectional design. | Convenience sample. Community-dwellers age 18 and over (N=243) from small agricultural town in Taiwan | Not specified | Personal Resource Questionnaire 85 - Part 2 Osteoporosis Self-Efficacy Scale Facts on Osteoporosis Quiz (reliability and validity not reported) 31-item Scale of Social Capital (SSC) (reliability and validity not reported) Scale of Calcium Intake 16-item Physical Activity Questionnaire | Social capital had a direct effect on exercise and a statistically significant indirect effect via social support and self-efficacy for exercise, demonstrating that persons with higher social capital levels were more apt to exercise. Persons with high social capital reported high levels of social support. | Strengths: model development Limitations: cross-sectional design. Convenience sample used with small sample size. All participants were from the same community. Social capital not separated into bonding, bridging, linking or structural/cognitive. |

(Table Continues)

| Reference | Purpose | Design | Sampling/ Setting | Social Capital Domain | Measures | Results | Strengths/ Limitations |
|---|---|-------------------------|---|---|--|---|---|
| Kim, Subramanian, and Kawachi (2006) | Determine whether community bonding and community bridging social capital, either independently or synergistically are beneficial to health | Cross-sectional design. | Participants from Forty communities ranging from one county to a cluster of counties including four entire states (Montana, Indiana, New Hampshire, Delaware) with median age of participants 45 (N=24,835) | Individual and community bonding and bridging | 2000 Social Capital Community Benchmark Survey (phone). No reliability or validity. Self-reported overall health status. Formal group involvement, reported most important group and its composition, trust, diversity of friendships. | Odds of reporting fair or poor health were significantly lower for persons living in communities with higher bonding and in communities with higher bridging social capital. Individual social capital attenuated the associations of both bonding and bridging community social capital with health but community bonding social capital remained statistically significant. | Strengths: Model development, large sample size Limitations: Cross-sectional design. No reliable and valid tool, few indicators used to determine community social capital. Subjective report of health. Low response rates. Possible bias related to community selection. |

(Table Continues)

| Reference | Purpose | Design | Sampling/ Setting | Social Capital Domain | Measures | Results | Strengths/ Limitations |
|------------|---|-------------------------|--|-----------------------------|--|--|---|
| Kim (2013) | Determine the association between community (macro level) and individual (micro level) social capital and health. | Cross-sectional design. | Individuals from eight Asian countries (Japan, South Korea, China, Malaysia, Thailand, India, Sri Lanka, Uzbekistan) (N=6,061) | Structural and cognitive | Asian Barometer Project dataset (survey). No reliability or validity. Self-reported satisfaction with health. Social network, generalized trust, and political trust at the micro and macro level. | Those older or in low socioeconomic group were significantly more likely to report lower satisfaction with health. Individual and community social capital indicators were significantly associated with health after controlling for socioeconomic and demographic variables. | Strengths: Model development, large sample size Limitations: cross-sectional design. Ages of participants not specified. Lack of reliable and valid tool and small number of indicators used to determine individual and community social capital. Subjective report of health. Low participation. |

(Table Continues)

| Reference | Purpose | Design | Sampling/ Setting | Social Capital Domain | Measures | Results | Strengths/ Limitations |
|---|---|--------------------------------|--|-----------------------------|--|---|--|
| Kishimoto, Suzuki, Iwase, Doi. And Takao (2013) | Determine the relationship between social capital and self- reported health. | Cross- sectional design. | Okayama Mental Health Survey of Elderly People Postal survey of residents age 65 and over living in three rural municipalities in Okayama, Japan (N=11,146) | Bonding and bridging | Social capital measured on Reponses in survey related to participation in six (6) types of groups. Groups with persons of similar background were considered bonding social capital, and diverse composition were considered bridging (no reported reliability or validity). Self- rated health was based on one question. | There was a significant inverse relationship between the number of bonding and bridging group involvements and self- reported poor health for both men and women. Overall, both bonding and bridging and social capital were associated with health in men but only bonding was associated with health in women. | Strengths: Large sample size Limitations: Cross- sectional design. Only conducted in rural area. Possible selection bias since level of participation in study may be influenced by social participation. Bonding and bridging social capital only measured on group involvement. No valid and reliable instrument used. |

(Table Continues)

| Reference | Purpose | Design | Sampling/ Setting | Social Capital Domain | Measures | Results | Strengths/ Limitations |
|---------------------------|---|-------------------------|--|-----------------------------|--|---|---|
| Leader and Michael (2013) | Examine the association between social capital and adhering to cancer screening | Cross-sectional design. | Random-digit dialing telephone, population-based survey Adults age 18-70 living in Philadelphia County PA (N=2668) | Neighborhood | Social capital measured by five (5) questions related to trust, neighbors willing to help, persons in neighborhood working together, sense of belonging to neighborhood, and number of groups or organizations in the neighborhood Adherence to cancer screening measure by self-report to adherence to cervical, breast, and colon cancer screening. | Significant differences in social capital between races married/in a relationship, older, higher education, poverty, a usual source of care and with health insurance vs. counterparts. After controlling for demographics relationship between social capital and screening for breast and colorectal cancer statistically significant. | Strengths: Adjusted for covariates Limitations: cross-sectional design. Low response rate. Selection bias. Study participation limited to blacks and whites only. Persons with higher levels of social capital may be more apt to participate in survey research. Adherence to cancer screening was self-reported. |

(Table Continues)

| Reference | Purpose | Design | Sampling/ Setting | Social Capital Domain | Measures | Results | Strengths/ Limitations |
|---|--|-------------------------|---|-----------------------------|--|--|--|
| Linden- Bostrom, Persson, and Eriksson (2010) | Examine the relationship between neighborhood social cohesion and social capital with social determinants of health. | Cross-sectional design. | Residents age 18-84 (N=2346) from four areas in Orebro, Sweden municipality | Cognitive | Data used from the Life & Health 2004 survey. Social cohesion based on questions related to trust, connectedness, and fear. Social capital based on questions related to personal support, pride, and participation. No reliability or validity provided. Self-rated health based on one question. | Association between social cohesion and self-reported health was indirect and mediated by other factors. Regarding social capital, both lack of personal support lack of not being made proud were associated with poor health even after considering all other factors. | Strengths: Model developed Limitations: Cross-sectional design. Low response rate. Limited to one geographic area. No valid or reliable tool to measure social capital. Self-reported health. |

| Reference | Purpose | Design | Sampling/ Setting | Social Capital Domain | Measures | Results | Strengths/ Limitations |
|---------------------|--|--------------------------------|---|-----------------------------|--|--|--|
| Lindstrom (2006) | Determine impact of social capital on belief of ability to influence health. | Cross- sectional design. | Postal questionnaire study of persons aged 18-80. (N=13,604) in Scania, Sweden | Cognitive | Self-reported belief in the possibility to influence health (no reliability or validity) Self-reported economic stress (no reliability or validity) Social capital measured by social participation and trust (no reliability or validity) | Odds of not believing in possibility to influence one's health significantly higher in persons with low social participation and low trust after controlling for age, country of origin, education and economic stress. | Strengths: Relationship to internal locus of control a focus Limitations: Cross- sectional design, no reliable or valid instruments used to measure social capital. Only two variables making up social capital. Social capital not separated into bonding, bridging, linking. |

(Table Continues)

| Reference | Purpose | Design | Sampling/ Setting | Social Capital Domain | Measures | Results | Strengths/ Limitations |
|---|---|-------------------------|--|-----------------------------|--|--|--|
| Malino, Kershaw, Angley, Frederic, & Small (2013) | Determine the association between social capital and hypertension in rural Haitian women. | Cross-sectional design. | Women aged 18-49, non-pregnant and non-menopausal. (N=306) recruited over three month period from five satellite clinics in central Haiti. | Cognitive and structural | Social Capital measured using survey adapted from the World Bank Group's Social Capital Assessment (SOCAT). Systolic and diastolic blood pressure measurements. Urine sample for proteinuria | Social capital factors explaining hypertension status: groups and networks, trust, personal empowerment, and collective action. After controlling for age, social capital was significantly related to decreased likelihood of hypertension. For every unit increase of ranked index of social capital, there is a 41% decrease in the odds of hypertension. | Strengths: Model developed Limitations: cross-sectional design. Small sample size. Study only conducted in Haitian women. |

(Table Continues)

| Reference | Purpose | Design | Sampling/ Setting | Social Capital Domain | Measures | Results | Strengths/ Limitations |
|-------------------------|---|-------------------------|---|-----------------------------|---|---|--|
| Mellor and Milyo (2005) | Evaluate the relationship between state social capital and individual health. | Cross-sectional design. | Data from heads-of-household in Currently Population Survey (CPS) from 39 states for General Social Survey (GSS) N=68,076 and 48 states for index of state social capital N=75,784. | State | Individual-level data from the CPS for self-reported health status and other demographic variables. GSS and Index of State Social Capital developed by Putnam (2000) for state social capital | Significant relationship between state social capital and health status after controlling for household income. | Strengths: Sample size Limitations: No information on reliability or validity of instruments. CPS does not include information on variables. Unable to control for determinants of health. Eleven states not included in the calculation of the GSS measures. |

(Table Continues)

| Reference | Purpose | Design | Sampling/ Setting | Social Capital Domain | Measures | Results | Strengths/ Limitations |
|--|---|-------------------------|--|-----------------------------|--|---|--|
| Mohnen, Volker, Henk, and Groenewegen (2012) | Determine if health-related behaviors mediate the association between social capital and individual health. | Cross-sectional design. | Data from the health interview in the Second Dutch national survey of general practice and two data sets from the Dutch housing demand survey. Used 672 postcodes with an average of 6,908 residents | Neighborhood | Geriatric depression scale; position generator | Neighborhood social capital is positively associate with health. Direct effect of neighborhood social capital on self-rated health. If in neighborhood with high social capital more active and less likely to smoke. Both physical activity and non-smoking status were associated with self-rated health. | Strengths: Model developed; Limitations: cross-sectional design. Does not separate bonding, bridging, and linking social capital. Does not utilize a reliable, valid tool to measure social capital. Self-reported individual health and health behaviors. |

(Table Continues)

| Reference | Purpose | Design | Sampling/ Setting | Social Capital Domain | Measures | Results | Strengths/ Limitations |
|-------------------------------------|---|-------------------------|--|-----------------------------|--|--|--|
| Moore, Teixeira, and Stewart (2014) | Determine the influence of social capital and social network ties on smoking relapse. | Cross-sectional design. | Persons Age 25 and over participating in 2008 Montreal Neighborhood Networks and Healthy Aging Study and 2010 follow-up study. Two-stage stratified cluster sampling. (N=1087) | Structural | Smoking relapse defined as those who did not smoke in 2008 but reported smoking in 2010. Network social capital - position generator (reliability and validity not provided) Social isolation - name generator (reliability and validity not provided) Smoking alters - name generator | Persons reporting greater social capital network in 2008 significantly less likely to relapse into smoking in 2010. Persons with no core social ties were at greater risk for smoking relapse in 2010. The number of smoking alters (core ties that smoked) only increased the risk of adult smoking relapse if they resided in participant's household. | Strengths: Model, large sample size Limitations: cross sectional design, self-report of smoking both initially and at follow-up. All participants were from an urban area. Does not consider bond, bridging, or linking social capital. |

(Table Continues)

| Reference | Purpose | Design | Sampling/ Setting | Social Capital Domain | Measures | Results | Strengths/ Limitations |
|--|---|-------------------------|--|-----------------------------|--|--|---|
| Nieminen, Prattala, Martelin, Harkanen, Hyypa, Alanen, and Koskinen (2013) | Determine whether social capital is related to health behaviors, self-rated health, and psychological well-being. | Cross-sectional design. | Adults age 30 or over (N=8028) from Finland. | Cognitive and structural | Finnish Health 2000 Survey. Evaluated five (5) health behaviors: smoking, alcohol use, leisure-time physical activity, vegetable consumption, and sleep. 12-item General Household Self-reported health Questionnaire for Psychological wellbeing. Social capital measured on three dimensions: social support, social participation, trust and reciprocity. No formal instrument. No reliability or validity reported for any instrument. | Low levels of social capital were associated with unhealthy behaviors regardless of education or living situation. All three social capital measures were associated with good self-reported health after controlling for socio-demographic factors. Persons with high trust reported good health more often than persons with low levels. | Strengths: Nationally representative population Limitations: cross-sectional design. No formal instrument used to measure social capital. Social capital not separated into bonding, bridging, or linking. Self-reports of health were used in the analysis. |

(Table Continues)

| Reference | Purpose | Design | Sampling/ Setting | Social Capital Domain | Measures | Results | Strengths/ Limitations |
|-------------------------|--|-------------------------|--|-------------------------------|---|---|--|
| Norstrand and Xu (2012) | Examine different types of individual-level social capital and their relationships with physical and emotional health among older Chinese living in urban and rural settings | Cross-sectional design. | Rural Chinese aged 65 and older participating in the Chinese General Social Survey (CGSS) Four-state stratified sampling with unequal probabilities (N=1250) | Bonding, bridging and linking | Self-assessed physical and emotional health. Bonding social capital measured using seven (7) questions related to level of trust and feeling of closeness with family members, friends, and neighbors. Bridging measured using seven (7) questions related to extent people assist each other in organizations in which they have participated. | Older adults in rural areas had significantly higher levels of bonding. Those in urban areas reported better health than rural. Social capital not associated with health in rural despite high level of perceived bonding. High bonding and linking associated with better physical health in the urban and bonding with better emotional health in urban. | Strengths: used bonding, bridging, and linking conceptualization with both physical and mental health outcomes Limitations: cross-sectional design. No reliability or validity on social capital questions. |

(Table Continues)

| Reference | Purpose | Design | Sampling/ Setting | Social Capital Domain | Measures | Results | Strengths/ Limitations |
|---|---|-------------------------|---|-----------------------------|--|--|---|
| Norstrand, Glicksman, Lubben, and Kleban (2012) | Investigate how social capital is related to physical and mental health | Cross-sectional design. | Public Health Management Corporation's Community Health Data Base Adults age 60 and over from five (5) counties in Southeastern Pennsylvania region (N=3219) | Neighborhood | Social Capital measured on six (6) items from the Social Capital Community Benchmark Survey (no reliability or validity) One question to determine self-rated health. Epidemiological Studies Depression Scale (CES-D) to measure depressive symptoms and serve as proxy for mental health | Participation in groups, sense of belonging, and neighbors willing to help were significantly associated with self-rated health. Trust in neighbors, sense of belonging, and neighbors willing to help were significantly associated with depressive symptoms. Poverty was also significantly associated with number of depressive symptoms. | Strengths: model developed, large sample size Limitations: cross-sectional design. Limited number of items to measure social capital and no reliability or validity. Self-rated health subjective. |

(Table Continues)

| Reference | Purpose | Design | Sampling/ Setting | Social Capital Domain | Measures | Results | Strengths/ Limitations |
|--|---|---------------|--|--------------------------------|--|---|---|
| Nyqvist, Pape, Pellfolk, Forsman, and Wahlbeck (2014) | Identify commonly used structural and cognitive social capital indicators and determine the link between the key aspects of each with mortality. | Meta-analysis | Observational cohort studies conducted within the previous five years, population based with a focus on adults, measured social capital as the main focus, and sample size greater than 1,000. N=20 studies | Cognitive and structural | Social participation, social networks, social support, trust | Structural social capital inversely related to mortality. There is a lower mortality risk, regardless of age and gender, when there is higher social participation. Mortality is lower in those with broader social networks. Marginal positive impact of trust on length of life. | Strengths: meta-analysis Limitations: Only two studies reported on trust. Poor health is associated with mortality and not all of the studies controlled for health status. Not all studies were of like participants, with some only focusing on older adults (survival bias). |

(Table Continues)

| Reference | Purpose | Design | Sampling/ Setting | Social Capital Domain | Measures | Results | Strengths/ Limitations |
|---|--|--------------------------------|---|--|---|---|--|
| Ueshima, Fuiwara, Takao, Suzuki, Iwase, Koi... Kawachi (2010) | Determine whether individual bonding and bridging, structural and cognitive social capital levels were related to physical inactivity. | Cross-sectional survey design. | Cluster sampling with random selection 20 school districts in Okayama city, Japan. Age 20-80 N=2260 | Bonding, bridging, structural, and cognitive | Cognitive social capital assessed by one question related to perception of trust, structural/behavior social capital measured by single question related to community activity participation. Whether persons in community activity groups were similar to them or different determined bonding or bridging. Physical activity assessed with single question. | Both bonding and bridging social capital were only marginally significant after adjusting for covariates. High trust was associated with 42% lower odds of inactivity after controlling for covariates. | Strengths: large sample size Limitations: Cross-sectional design. Social capital only measured at individual level and no reliable, valid instrument used. Single question determined bonding or bridging social capital and trust. Physical activity based on one subjective question with no reliability or validity. |

(Table Continues)

| Reference | Purpose | Design | Sampling/ Setting | Social Capital Domain | Measures | Results | Strengths/ Limitations |
|---|--|-----------------------------------|---|---|---|--|--|
| Waverijn, Wolfe, Mohnen, Riken, Spreeuwenberg, & Groenewegen (2014) | Examine relationship between individual and neighborhood social capital and health among persons with chronic illness over time. | Prospective, longitudinal design. | Non-institutionalized adults with chronic illness living in 259 neighborhoods in the Netherlands (N=1048) | Neighborhood and individual related to neighborhood | Housing and living survey 2006 (WoON) data set Statistics Netherlands for control variables National Panel of the Chronically ill and disabled (NPCD) data set RAND-36 short-form health status survey Individual social capital derived from 10 items from NPCD Neighborhood social capital measured by focusing on contacts with neighbors. No reliability or validity provided. | If chronic illness but high levels of individual social capital or married, less likely to have deteriorating health over time. Low income or have severe disabilities reported poor self-health. High neighborhood social capital has a positive relationship to health. Neighborhood and individual have an independent, positive impact on changes in individual self-rated health. | Strengths: prospective design, participant selection and sample size Limitations: Unable to control for relocation of respondents. Use of different data sets so unable to compare respondent's individual and neighborhood social capital. |

(Table Continues)

| Reference | Purpose | Design | Sampling/ Setting | Social Capital Domain | Measures | Results | Strengths/ Limitations |
|--------------------|---|-------------------------|--|-----------------------------|---|---|---|
| Williams (2012) | Explore whether differing degrees of social capital are related to variations in health care utilization. | Cross-sectional design. | Secondary analysis of Dartmouth Atlas data at the state level for United States. N not provided. | Bonding and bridging | Healthcare utilization based on several sets of state-level data. Social capital for states based on Putnam's Comprehensive Social Capital Index and General Social Survey to measure trust (no reliability or validity provided for either). | Last two years of life, higher social capital is associated with fewer hospital days. Social capital explains more utilization of healthcare than income does. Strong negative correlation between social capital and C-section rates after controls. Negative correlation between social capital and several procedures. | Strengths: assessed healthcare utilization on multiple levels Limitations: Unclear whether bonding or bridging social capital is influencing healthcare utilization. Comparative analysis only provided for select states. Levels of social capital for each state and analysis for each state not provided. |

(Table Continues)

| Reference | Purpose | Design | Sampling/ Setting | Social Capital Domain | Measures | Results | Strengths/ Limitations |
|--|--|--------------------------------|---|--------------------------------|--|--|--|
| Yeary, Ounpraseuth, Moore, Bursac, Greene (2012) | Examine social capital as a mediator in religion's association with health. | Cross- sectional design. | Data from 2006 Social Capital Community Benchmark Survey Participants age 19-106 (N=10,828) | Cognitive and structural | Self-reported health based on one question. Religion assessed by five (5) questions, social capital assessed on seven (7) dimensions of trust informal social interaction, formal group involvement, giving and volunteering, diversity of networks electoral participation, and non-electoral participation. No reliability or validity provided. | The direct effect of religiosity on self-reported health was not statistically significant. Indirect effect of religiosity to social capital onto self- reported health was significant, with persons reporting high religiosity reporting higher levels of social capital. Social capital had a significant direct effect on self-reported health. | Strengths: large sample size Limitations: Cross- sectional design. Self- reported health. No reliable or valid instrument used to measure religion or social capital. |

CHAPTER II: SOCIAL CAPITAL, HEALTH BEHAVIOR, AND UTILIZATION OF HEALTHCARE SERVICES AMONG OLDER ADULTS: A CONCEPTUAL FRAMEWORK

Abstract

This paper is a report of the development of a model to advance nursing science and practice in caring for older adults by managing those social dimensions that influence both illness and health. The aging American populace coupled with unhealthy lifestyles, chronic illness, and comorbidities requires a shift away from a disease management strategy to one that manages overall well-being, which is both physical and social. Assisting older adults in obtaining social well-being could be achieved by helping them increase social capital. Core concepts in this model include bonding, bridging, and linking social capital and their structural, cognitive, and sanction components coupled with their bidirectional relationship to health behaviors, healthcare utilization, and mortality. This model is intended to provide a framework to assist nurses and other healthcare providers to consider older adults in the context of relationships and the social environments to which they belong. The entire model requires testing and assessment of its contribution to practice. Improving care transitions by providing access to social support networks or community services in which social capital increases is vital to maintaining healthy behaviors and avoiding utilization of healthcare resources through hospital readmissions.

Introduction

The state of health care in the United States has gained much attention in recent years as costs continue to escalate (Mitchell, 2014). Although more money is spent on health care in the U.S. than in any other country in the world, both per capita and as a percentage of gross domestic product (GDP), the expenditures have not resulted in consistent, high-quality care (Mitchell, 2014). Moreover, according to Mitchell, there is anticipation that medical costs will increase exponentially in the coming years because of the “silver tsunami,” formally known as the graying of America. It is expected that the number of Americans age 65 and older will more than double, increasing from 40.3 million in 2010 to 83.7 million in 2050 (West, Cole, Goodkind, & He, 2014). Mitchell (2014) speculated that population health care needs will be very different in the future because of this phenomenon, yet discussion has centered on reversing the trends of increased costs rather than developing a plan to meet the future challenges.

A plan to manage healthcare needs of this future population is necessary. With the challenge of an aging populace compounded by a greater pervasiveness of unhealthy lifestyles, chronic illness, and comorbidities, there is a need to shift away from a disease management strategy to one that manages overall well-being (Cramm & Nieboer, 2016). Overall well-being, according to Cramm and Nieboer, is a broad concept that has physical and social dimensions, both of which have an impact during illness and health, and can be explained by the social production function theory developed by Lindenberg (1996). According to Lindenberg’s theory, achievement of the universal goal of physical well-being means being in a state of comfort through the presence of a safe and pleasing environment, void of any physiological needs, such as pain, hunger, and thirst. Physical well-being also means having achieved the instrumental goals of physical and mental stimulation (Cramm & Neiboer, 2016; Lindenberg, 1996). The

universal goal of social well-being, according to Lindenberg, is obtained through achieving the instrumental goals of status, acceptance, and affection. Status equates to social ranking based on one's profession, lifestyle and talents; acceptance is obtained by living according to societal norms; and affection includes friendship, intimacy and emotional support (Cramm & Neiboer, 2016). Cramm and Neiboer reported that physical and social well-being are achieved as a person proceeds to overall subjective well-being, and that by being familiar with the hierarchy of well-being goals, the impact of chronic illnesses and their associated functional limitations can be better understood and allow for the determination of care and support required.

Assisting older adults in obtaining the universal goal of social well-being could be achieved by increasing social capital. The concept of social capital dates back as far as Aristotle and is found in the works of several early social science scholars, with specific use of the term attributed to Hanifan in 1916 (Halpern, 2005). Hanifan used social capital to describe those assets most important to individuals and families, such as goodwill, friendship, compassion, and social interaction (Halpern, 2005). The concept became entrenched in mainstream academic discussion beginning in the 1980s due to the work of several social capital theorists, including Pierre Bourdieu, James Coleman, and Robert Putnam (Bhandari & Yasunobu, 2009; Lewis, DiGiacomo, Lockett, Davidson, & Currow, 2013). Each theorist defined social capital differently, but Putnam's definition is widely quoted and his name has become almost synonymous with social capital in present day academia (Halpern, 2005).

Putnam (2000) defined social capital as networks among individuals and the norms of reciprocity (providing something beneficial to another person and receiving something beneficial in return) and levels of trust that come from them. Putnam reported that in evaluating all of the consequences of social capital, it is most established in the areas of health and well-being. There

are several theories on social capital and, while not limited to a specific definition of health, there is evidence that social capital serves as a determinant (Ferlander, 2007; Mellor & Milyo, 2005). In addition to serving as a counterbalance to life's stressors through emotional support and preservation of healthy customs, social capital can also result in political support for public health initiatives and social programs, as well as serve as a means of rapid dissemination of information regarding the latest developments in healthcare (Kim, Subramanian, & Kawachi, 2006; Mellor & Milyo, 2005). The purpose of this paper is to discuss the development of a conceptual framework based on Putnam's definition and concepts identified by Halpern. This framework identifies the relationship between social capital along with its various components, and their relationship to health behaviors, healthcare utilization including hospitalization and rehospitalization, and mortality of older adults.

Background

Components of Social Capital

The components of social capital described in the literature are varied. Ferlander (2007) identified that social capital has cognitive and structural components. According to Ferlander, the cognitive aspect of social capital is composed of norms of reciprocity (types of social support) and trust. Ferlander (2007) defines types of social support as emotional (empathy and caring), instrumental (practical assistance such as money or work), informational (advice or information to solve a problem), and companionship (social or leisure time). Trust includes social trust, which is confidence in others, and institutional trust, which is trust in a formal system, such as the judicial system (Ferlander, 2007).

The structural facet of social capital is a person's social networks (Ferlander, 2007). According to Ferlander, social networks vary in their direction of ties (horizontal or vertical),

formality of ties (formal or informal), strength of ties (weak or strong), and diversity of ties (bonding, bridging, or linking).

Halpern (2005) offered a slightly different perspective on social capital, stating that it has three basic components. While one component is a person's networks, the other components are social norms and sanctions (Halpern, 2005). Halpern stated that social norms are the rules, values and expectations characteristic of the network. While some norms necessitate certain behaviors, others are emotional, and relate to how individuals feel about the network (Halpern, 2005). The concept of norms parallels Ferlander's cognitive aspects of social capital. Examples provided by Halpern include being considerate of neighbors or assisting them by providing resources such as food or money. Sanctions help to maintain social norms by governing behavior, and can be formal or informal (Halpern, 2005). Examples of formal sanctions would be punishments for breaking the law, while informal could be direct, such as being told specifically of an issue, or indirect, through gossip (Halpern, 2005). It is Halpern's position that these three components can be used in the evaluation of any type of community or network at any level.

Bonding, Bridging, and Linking Social Capital

While Ferlander (2007) stated that the terms bonding, bridging, and linking define the diversity of ties between people in networks, a review of the literature finds the terms bonding, bridging, and linking used as a delineation of different types of social capital. Bonding social capital creates strong in-group loyalty (Putnam, 2000). Groups with this attribute exclude outsiders, promote communication and relationships necessary to pursue common goals, and are derived from homogeneous networks (Bhandari & Yasunobu, 2009; Ferlander, 2007). Bonding ties can be strong and with those who are close, such as family and close friends of like demographic elements, (e.g., ethnicity or religion), or they can be weak, involving members

sharing similar interests (Bhandari & Yasunobu, 2009; Ferlander, 2007). An example of a group with weak bonding social capital is an ethnic fraternal organization (Putnam, 2000). Bonding social capital tends to generate thick trust and loyalty in the group and helps persons to cope, as solidarity and specific reciprocity, doing something for another person with the understanding they will do something for you, are present (Bhandari & Yasunobu, 2009; Putnam, 2000).

Bridging social capital, which is inclusive, derives from heterogeneous network ties across groups (Bhandari & Yasunobu, 2009; Ferlander, 2007). Obtainment of bridging social capital occurs through ties with dissimilar persons, albeit at the same level of social order, and can involve civic engagement (Bhandari & Yasunobu, 2009, Kim et al., 2006). This open membership is critical for solving problems of a community by helping people know each other, develop relationships, share information, and mobilize community resources (Bhandari & Yasunobu, 2009). According to Putnam (2000), bridging social capital helps generate a broader identity and generalized reciprocity that facilitates cooperation for mutual benefit and is crucial for people to get ahead. Generalized reciprocity involves trust and doing something for someone else without the expectation of receiving something back from that particular person, yet believing that someone else will do something for you at some point in time (Putnam, 2000).

Linking social capital is like bridging social capital in that it is developed through associations with dissimilar persons; however, it is vertical in its structure and occurs through relationships with persons at various levels of the social pyramid and with various levels of power (Bhandari & Yasunobu, 2009; Ferlander, 2007; Kim et al., 2006). According to Ferlander, like bridging social capital, linking social capital allows people to access resources and information from those external to their own social network. Ferlander stated that strong linking ties would include those between colleagues in the work setting who are at different levels of the

company hierarchy, while weak linking ties would include relationships between average citizens and elected officials.

Bonding social capital and bridging social capital are not interchangeable according to Putnam (2000). However, they are also not categories in which groups belong exclusively to one or the other (Putnam, 2000). While groups may bond across some social dimensions, they may bridge across others (Putnam, 2000). Certain groups as described by Putnam may bridge gaps among dissimilar ethnic communities yet bond along the lines of gender and religion.

Levels of Social Capital

Social capital is considered, for the most part, a dichotomous concept. While social capital has an individual or micro-dimension, there is also a collective, or contextual dimension, also considered macro-level (Halpern, 2005; Ferlander, 2007; Kim, 2013). Social capital at the individual level is related to what a person gains from social networks, such as health, jobs, or emotional support (Ferlander, 2007). Social capital at the collective level, according to Ferlander, relates to social cohesion, including generalized social trust and norms. Halpern (2005) reported that a third level, the meso-level also exists. While macro-level describes broader social capital at a national or regional level involving culture and social habits, the meso-level represents social capital at a community or neighborhood level.

Literature Review

Social Capital and Self-reported Emotional and Physical Health

Research shows that there is a relationship between social capital and self-reported mental and physical health, and that this relationship is seen at the micro, macro, and meso levels. Studies investigating social capital and health at a contextual level have found a significant association between self-rated health and neighborhood or community social capital

(Kim et al., 2006; Waverijn et al., 2014). According to Putnam (2000), the more integrated a person is in their community the less likely they are to experience numerous maladies or sudden death. Putnam reported that studies have demonstrated the protective effects of having close family ties, belonging to a strong networks of friends, participating in social events, being a part of civic organizations, and having a religious affiliation. Kim et al. (2006) conducted a multi-level analysis of bonding and bridging community social capital across 40 communities, with participants age 25 and older. Social capital was measured by reported formal group involvement, group composition, level of trust in the group members, diversity of friendship in one's social network, and number of times invited to the home of a person of a different race/ethnicity during the previous year (Kim et al., 2006). Kim and colleagues found that those with higher bonding and bridging social capital were less apt to self-report poor health.

In a meta-analysis to assess the bivariate association between social capital and self-reported health, Gilbert, Quinn, Goodman, Butler, and Wallace (2013) found an association between health and various combinations of cognitive aspects of social capital, such as trust, participation, and reciprocity. According to Gilbert et al., five studies reported reciprocity, and with every one-unit increase in participation in reciprocal activities, the odds of having good health increased by 39%. Trust had the greatest impact on good health in 22 studies, with every one-unit increase in trust resulting in the odds of having good health increasing by 32% (Gilbert et al., 2013). For every one unit increase in a composite measure of social capital, which included various measures of trust, participation, efficacy, and reciprocity, there was a 27% increased chance of having good health (Gilbert et al., 2013). When analyzing the effect of bonding, bridging, and linking social capital, Gilbert et al. found bonding social capital to have the greatest effect, with every one-unit increase in bonding social capital equating to a 30%

increase in the odds of having good health. One-unit increases in bridging and linking social capital led to an 18% and 10% increase in having good health respectively.

Studies demonstrate that individual and neighborhood or community social capital is related to depression in older adults (Forsman, Nyqvist, Schierenbeck, Gustafson, & Wahlbeck, 2012; Murayama et al., 2014). Forsman et al. did not differentiate between bonding, bridging, and linking social capital, but found that both low structural and cognitive aspects of social capital resulted in statistically higher levels of depression in older adults. Murayama et al. (2014) differentiated between bonding and bridging social capital, and found an inverse relationship between neighborhoods with higher bonding social capital and depression, but not between high bridging social capital and depression. A significant interaction effect between individual and neighborhood bonding social capital was also noted. Murayama and colleagues reported that individuals having lower bonding social capital and living in a neighborhood with low bonding social capital were significantly more likely to report depression.

Where a person lives appears to influence levels of reported social capital and self-reported health. Nordstrom and Xu (2012) found that elderly Chinese living in rural areas (n=405) had significantly higher levels of bonding social capital than those in urban areas (n=1,250), but significantly lower bridging and linking social capital. Elderly residents in urban areas reported significantly better physical health; however, there was no difference between the two groups in relation to emotional health (Nordstrom & Xu, 2012).

Other studies found a significant association between self-rated health and neighborhood or community social capital (Kim et al., 2006; Waverijn et al., 2014). According to Putnam (2000), the more integrated a person is in his or her community the less likely that individual is to experience numerous maladies or sudden death. Putnam reports that studies have

demonstrated the protective effects of having close family ties, strong networks of friends, participating in social events, being a part of civic organizations, and having a religious affiliation. Kim et al. conducted a multi-level analysis of bonding and bridging community social capital across 40 communities, with participants age 25 and older. Social capital was measured by reported formal group involvement, group composition, level of trust in the group members, diversity of friendship in one's social network, and number of times invited to the home of a person of a different race/ethnicity during the previous year (Kim et al., 2006). Kim et al. found that both bonding and bridging social capital were associated with lower odds (14% and 5% respectively) of reporting poor health.

Waverijn et al. (2014) found that both individual and neighborhood social capital independently had a significant connection to changes in perceived health, with individual factors providing a greater explanation of variation in health changes. Their study of 1048 persons with chronic illness from 259 different neighborhoods in the Netherlands, found that higher levels of individual and neighborhood social capital had an independent and positive affect on self-rated health (Waverijn et al, 2014). Further, the higher the reported social capital at baseline, the better the person with chronic illness rated their health in later years (Waverijn et al., 2014). According to Putnam (2000), there is speculation that social capital can serve as a physiological eliciting instrument that stimulates a person's immune system to fight disease and neutralize stress, and that isolation may result in measurable biochemical effects on the body.

Social Capital and Health Behaviors

The literature is replete with studies seeking to determine the association between social capital and health behaviors. Leader and Michael (2013), for example, studied the association between social capital and cancer screening exams. The researchers found that the mean social

capital score for women who were screened for breast and colon cancer was significantly higher than for women not screened (Leader & Michael, 2013). After controlling for demographics, including insurance status, women with higher perceptions of social capital were 10% to 22% more likely to be screened for these two forms of cancer (Leader & Michael, 2013). Hsieh, Wang, McCubbinn, Zhang, and Inouye (2008) found social capital to have both a direct and indirect effect on osteoporosis prevention. In their study analyzing factors influencing osteoporosis preventive behaviors, Hsieh et al. (2008) found that social capital had a significant direct effect on exercise and an indirect effect on calcium intake.

Researchers have reported a significant positive relationship between social capital and physical activity (Hsieh et al., 2008; Mohnen, Volker, Flap, & Groenewegen, 2012; Nieminen et al., 2013; Ueshima et al., 2010) and other healthy lifestyles (Moore, Teixeira, & Stewart, 2014; Aslund & Nilsson, 2013; Nieminen et al., 2013). Moore, et al. (2014) reported that high structural social capital was related to a reduction in the possibility of adults smoking after they quit, while having few social ties and being isolated were associated with a return back to smoking. In each of the studies by Mohnen, et al (2012), Aslund and Nilsson (2013), and Nieminen, et al (2013), it was reported that individuals who were more trusting or resided in a neighborhood where social capital was reported to be higher were less likely to be smokers. Nieminen et al. (2013) also reported a significant positive association between increased social involvement and not over consuming alcohol, eating vegetables, and receiving enough sleep. Aslund and Nilsson (2013) reported that adolescents living in a neighborhood with low bonding and bridging social capital had nearly 60% and 50% greater odds respectively of high alcohol consumption. Low bonding neighborhood social capital led to triple the odds of smoking, while

low bridging doubled the odds (Ashlund & Nilsson, 2013). Low bonding and bridging neighborhood social capital both doubled the odds of illicit drug use (Ashlund & Nilsson, 2013).

The number of persons in one's social network also has an impact. Watt et al. (2014) found that older adults with more than five friends in their social network were more likely to be physically active, while Molloy, Perkins-Porras, Strike, and Steptoe (2008) found that having more than five friends in a social network has an impact on attending cardiac rehabilitation. In their study of patients diagnosed with acute coronary syndrome, Molloy et al. found that patients with five or more persons in their network were almost three and one-half times as likely to participate in cardiac rehabilitation as those with a network size less than four. Molloy et al. also reported that persons with a network of four or five persons were two and one-half times as likely to attend rehab as those with a small social network.

Watt and colleagues (2014) reported that negative health behavior correlated with marital status, with those older adults who were single or widowed more apt to smoke or drink than their married or cohabitating counterparts, even after adjusting for other socio-demographic factors. Ditzen and Heinrichs (2014) stated that being involved in a close social relationship, or perceiving that social support would be available if needed, has the same or greater impact as several behavior modifications, including quitting smoking, refraining from alcohol intake and physical activity. A meta-analysis by Holt-Lunstad, Smith, and Layton (2010) confirmed this and found that social support had a greater impact on longevity than any of the other factors researched.

Social Capital and Healthcare Utilization

Few studies have addressed social capital and access to healthcare or utilization of services. Hendryx, Ahern, Lovrick, and McCurdy (2002) sought to determine if variation in

reported access to health care was associated with community social capital. The researchers used the individual elements of interpersonal trust, reciprocity, efficacy, feelings of personal safety, election participation, and civic engagement to develop a composite mean to determine social capital levels in 22 U.S. cities. Each city had a population of 200,000 or more persons. Access to care was determined by responses to dichotomous questions related to ability to get the medical care needed and if there were times during a 12-month period when obtaining needed care was postponed. Responses of “yes” for either question resulted in further inquiry as to the reason. Using hierarchical linear modeling, Hendryx and colleagues found that in addition to individual predictors, health sector variables of fewer health maintenance organizations and public health-community collaboration were associated with greater access issues. The researchers found the effect of social capital to be significant, with higher community social capital resulting in fewer issues with access to care.

Williams (2012) found in his secondary analysis of data that utilization of services differed depending on levels of social capital. It was his hypothesis that in regions where social capital was higher, physicians would be less inclined to recommend unnecessary services. Williams analyzed the impact of a variety of cross-sectional, state-level statistics, such as engagement in public affairs, voter turnout in presidential elections, community group activity and social trust on use of healthcare services. Williams reported lower levels of social capital led to an increased length in hospital stay and additional physician visits, as well as more Caesarean sections, carotid endarterectomies, prostatectomies and lower extremity revascularization procedures (Williams, 2012).

Rodriguez-Artalejo, Guallar-Castillo'n, & Herrera (2006) measured social networks in older adults and found a relationship between social networks and hospital readmission. These

researchers considered size, relationship status, frequency of telephone contact with family members, and time spent alone at home each day. Persons, who were married, living with someone, saw or had phone contact with a relative daily or most days, and were home alone less than two hours a day were considered to have a high level of social networking. If only three of the factors were present, Rodriguez-Artalejo and colleagues considered the social network to be moderate, and if only two factors were present, it was considered low. Heart failure patients were assessed at baseline and followed to determine if social networking was related to hospital readmission. Their study found that patients with moderate or low social networking had significantly more hospital readmissions than those with high levels of social networking.

Social Capital and Mortality

The seminal work by Kawachi, Kennedy, Lochner, and Prothrow-Stith (1997) noted that the majority of literature up until that time had reported that health outcomes were linked to social networks at the individual level, but were very limited in explaining the role of civic institutions and the economic development of societies. The researchers hypothesized that state differences in income disparity predicted the amount of investment in social capital, which in turn predicted variations in total and cause-specific mortality. Further, the researchers hypothesized that after controlling for the investment in social capital, the direct relationship between state income inequality and mortality was minimal. Kawachi and colleagues found that there was a strong correlation between income inequality and per capita group membership and lack of social trust, and that these two social capital variables were associated with total mortality as well as mortality rates associated with coronary heart disease, cancer, and infant mortality. Measuring income using the Robin Hood Index and perceived fairness to measure social capital, the researchers used path analysis to determine that the effect of income inequality on mortality

was mediated by social capital (Kawachi et al, 1997). Kawachi and colleagues reported that there was a strong, direct relationship between income inequality and disinvestment in social capital, however, when disinvestment in social capital was controlled, the direct relationship between income inequality and mortality was minimal.

Nyqvist, Pape, Pellfolk, Forsman, and Wahlbeck (2013) conducted a meta-analysis of 20 studies and distinguished between structural and cognitive aspects of social capital and their association to all-cause mortality. Using the social capital constructs of social participation, and social networks as structural components and social support as the cognitive component, the researchers found a strong inverse relationship between social participation and mortality and a modest positive relationship between social networks and longevity. While the researchers did not find a significant relationship between perceived social support and mortality, it should be noted that trust was not evaluated.

Conceptual Framework Development

The idea for the emerging framework originated from readings on social capital and studies demonstrating the relationship between social capital and various aspects of health and healthcare utilization. Key ideas were identified and existing social capital literature reviewed to support the relationships identified in the model. Concepts included bonding social capital, bridging social capital, linking social capital, structural and cognitive aspects of social capital, health behaviors, healthcare utilization, hospitalization and hospital readmission, and mortality. The model was developed to explain the relationships between these concepts.

Key Concepts

Contemporary work has led to using the terms bonding, bridging, and linking to describe the different types of social capital. These terms are also used in the Social Capital and Health

Framework (*Figure 1*). Bonding, bridging, and linking have cognitive and structural aspects, which are also delineated in the model. The amount of each sub-type of social capital was selected because of the structural and cognitive components can have a positive or negative affect on the various concepts related to health.

Assumptions Related to Bonding Social Capital

The degree of bonding social capital individuals have is dependent on the number of relationships they are in, the perceived trust they have in persons with whom they have a relationship, and the amount and type of social support provided by those persons (Ferlander, 2007). These relationships occur in exclusive networks with family, close friends, persons with similar demographic characteristics, or persons with similar interests (Ferlander, 2007). Because bonding social capital involves those closest to an individual, it is the first concept at the top of the framework. Kim et al. (2006) report that bonding social capital can foster health when common features between individuals serve as motivators to modify behaviors and there is camaraderie or social support. Individuals tend to mimic health behaviors of those considered similar and who serve as role models, with social networks reinforcing health norms (Kim, et al., 2006; Putnam, 2000). Those closest to an individual also provide various aspects of care according to a report by the National Alliance for Caregiving (NAC) and the AARP Public Policy Institute (2015). This report stated that types of care provided include assisting with activities of daily living, transportation, grocery shopping, and housework. These informal caregivers also interact with formal healthcare providers and agencies on behalf of those they are caring for, as well as provide medical or nursing tasks in the home according the NAC/AARP report. These close relationships not only influence health and wellbeing, but can also prevent

death. An analysis of the deadly Chicago heat wave of 1995 found that those who died were disproportionately more apt to have been socially isolated (Halpern, 2005).

Halpern's (2005) report of norms and sanctions suggests that those closest to a person could provide verbal disapproval or very personal sanctions for unhealthy behaviors, such as withdrawal of affection. For example, verbal disapproval of one's personal appearance because of obesity or body odor related to smoking could take place. Other sanctions, such as not permitting smoking in one's home or vehicle could also occur. Shunning a person because of alcohol or drug use could also happen. If sanctions do not change the behavior, family and close friends may withdraw, leading to decreased bonding social capital for the individual. The person may then increase their negative health behaviors and not seek care for health issues, which in turn can lead to hospitalization, rehospitalization, and even death.

Assumptions Related to Bridging Social Capital

The amount of bridging social capital individuals have is dependent on the number of relationships with people who are different but at the same social level (Ferlander, 2007). It is also dependent on the amount of perceived trust they have in those persons, and the social support provided to them by the individuals (Ferlander, 2007). Because these relationships are heterogeneous and are more distant than those associated with bonding social capital, this concept is next in the framework. Bridging social capital can lead to health benefits as well (Kim et al., 2006). This can occur, for example, through acquisition of resources and information provided by communities striving to improve local services, and that have a vast range of socio-demographic and socioeconomic networks (Kim, et al., 2006).

Access to healthcare providers, including nurses, and the trust individuals have in the healthcare system in their community impact levels of bridging social capital. Lack of general

trust in healthcare providers can lead to ignoring advice regarding diet, exercise, and smoking, for example. Further, it can lead to individuals not seeking services until an illness has progressed to the point of required hospitalization. Not having access to services because of lack of availability of transportation also influences health, both in disease prevention and follow-up after illness or hospitalization. Partaking in unhealthy behaviors can also lead to formal and informal sanctions at this level. For example, persons may be shunned or gossiped about because of their weight or unhealthy habits. Some physicians may even decline to continue to see a patient if they continue to smoke.

Assumptions Related to Linking Social Capital

How much linking social capital individuals have is dependent on their relationships with persons at various levels of the social pyramid and with various levels of power. Like the other forms of social capital, it is dependent on both the amount of trust placed in these people or groups and the amount of social support they provide. This is the third concept in the framework. Linking is important to ensuring equality among people in civil society, particularly in healthcare where measures are implemented to assist the sick, poor, and marginalized (Szreter & Woolcock, 2004). Trust in the public health system, which is run by the government, is crucial. Lack of trust, for example, leads to such things as failure to receive important vaccines including those for influenza and pneumonia. Sanctions at this level are formal, such as fines for not obtaining health insurance.

Nursing's Role

Nurses are key in health promotion and disease prevention and can influence bonding, bridging, and linking social capital and their relationship to health behaviors, healthcare utilization, hospitalization and rehospitalization, and ultimately mortality. Health behaviors,

healthcare utilization, hospitalization and rehospitalization, and mortality comprise the health continuum in the framework. Where a person is along the health continuum, and the type of support needed will drive the nurse's role. For example, when considering the patient and bonding social capital and the need to modify health behaviors, the nurse can ascertain if there are close relationships and the type of support that can be provided by members in that network. If the persons within that network have the same behaviors, then relying on that network to influence a positive behavior change is futile. The nurse would then seek other ways for the patient to develop positive bonding social capital, such church groups and the assistance of faith community nurses, or seek to enhance bridging social capital, such as through community support groups.

Perhaps nowhere is nursing more vital to investigating levels of bonding and bridging social capital than in patients who are hospitalized. What type of support is needed (cognitive) and who will provide that support (structural) after discharge can mean the difference between recovery, rehospitalization, or even death. When patients report an absence of support, the nurse serves as the link between case managers and social workers to ensure appropriate care is provided upon discharge. Linking patients with various community resources such as palliative care, homemaker services, support groups, or "Meals-on-Wheels" can then occur.

Discussion

Studies investigating social capital and its relationship to health have been conducted in all age groups, with few specifically addressing a population that is age 65 and older. Although more research is needed in this regard, a plan to manage healthcare needs of an aging population is necessary. There is a need to manage overall well-being including both the physical and social dimensions, both of which have an impact during illness and health. One way to achieve this is

through bonding, bridging, and linking social capital. As depicted in the Social Capital and Health Framework, each of these concepts has structural and cognitive aspects that are linked to the health continuum. This continuum includes health behaviors, utilization of healthcare resources that includes access to preventative services, hospitalization, rehospitalization, and mortality. Because older adults are often more dependent on others for their healthcare needs and factors that contribute to health in general, it is posited that social capital plays a key role. Nurses and other healthcare providers are instrumental in assessing levels of social capital at each aspect of the health continuum and in assuring individual needs are met.

Case Study

The following case study demonstrates the importance of assessing social capital in older adults and the impact low levels of bonding, bridging, or linking social capital can have on patient outcomes.

Mr. Jones, a widower, is 75 years old and lives alone in his home in a rural area, approximately seven miles from the nearest town. He suffers from diabetes, heart failure (HF), and mild depression. His son and daughter-in-law are his main caregivers, talking to Mr. Jones most days and stopping by his house at least two to three times a week. Mr. Jones was admitted to the hospital after his son brought him to the emergency department over the weekend because of increased shortness of breath. This was his third visit to the emergency department within the past year, with each visit resulting in a hospitalization. Home health was not part of the care plan during either of his previous discharges. Hospitalists made rounds over the weekend and notified Mr. Jones that he would be released on Tuesday morning. Because of his weakness and a sore on his right foot requiring dressing changes, the hospitalist issued an order for home health and a prescription for a new HF medication. His insulin dose was also adjusted. Upon

hearing the news on Monday of the planned discharge, Mr. Jones and his son selected the home health provider they wished to use. The case manager, a registered nurse, talked with Mr. Jones about his illness, educating him on the impact of diet on his condition and the medications he takes, including the new medication prescribed by the hospitalist. Mr. Jones' son asked the case manager if she would make Mr. Jones' primary care physician (PCP) aware of the change in medication. The case manager advised that the PCP would be made aware of his medication changes, but that Mr. Jones or his family would need to schedule a follow-up appointment. The case manager also communicated with the home health nurse who would care for Mr. Jones following discharge, reviewing his clinical needs.

Mr. Jones' son and daughter-in-law were present when the home health nurse conducted the admission and in-home assessment. The home health nurse educated both Mr. Jones and his family about foods that might exacerbate HF and raise his blood glucose levels, reinforcing the education started in the hospital. In the course of this conversation, Mr. Jones' son realized that his dad had been consuming alcohol at night when he could not sleep. Further, Mr. Jones had not been cooking and had been relying on processed foods and prepackaged frozen dinners for most of his meals. The nurse talked to Mr. Jones and his family about salt in processed foods and how this could have an impact on Mr. Jones' illness that would likely result in rehospitalization and an increase in medication dosage. The impact of alcohol on both heart failure and diabetes was also discussed.

Mr. Jones has two key risk factors for returning to the hospital besides his heart failure and diabetes: he lives alone and he is depressed. Even though his son is actively involved, he does not see him daily, nor is he there to oversee meals. It was discovered that he was eating many prepackaged foods high in sodium, but we do not know his use in cooking. We also do not

know if Mr. Jones still drives or who is doing his grocery shopping. We learned that he is using alcohol and we know depression is an issue. An assessment of community services by the case manager could key Mr. Jones and his family into programs that could assist them. For example, it could have been found that healthy meals could be brought to Mr. Jones' home. Are there activity centers in the local community that older adults can attend during the day and receive healthy dinners and have social interaction? What other support systems does Mr. Jones have? Are there other friends or relatives that can check on him on days when his son cannot? Even when bonding social capital may seem adequate, having the ability to connect persons like Mr. Jones to social support networks or community services in which their amount of bridging social capital increases is vital to maintaining healthy behaviors and reducing depression. Linking social capital should also be assessed. Mr. Jones' is over 65 and could be a Medicare patient and/or Medicaid patient. Does he have the resources to pay for medications? What other government social services are available to him. Mr. Jones' situation, potential solutions, and how both fit into the Social Capital and Health Framework are provided in the Application of a Case Study to the Social Capital and Health Framework located in Table 2.

Conclusion

Each of the factors presented can affect utilization of healthcare resources including hospital readmissions and should be considered as we assist older adults in obtaining the universal goals of social and physical well-being. It is known that lack of support from caregivers and others to manage chronic conditions often leads to hospital readmissions (DeCoster, Ehlman, & Conners, 2013). Further, older adults with chronic illness who are unable to manage their own care are at a particularly high risk, with the chance of readmission in less than 90 days increasing if social isolation is a factor (Glass, Moss, & Ogle, 2012). Hence,

healthy behaviors after hospital discharge including proper diet, smoking and alcohol cessation, medication adherence, and observing follow-up appointments can contribute to keeping patients out of the hospital. Moreover, having necessary social support from caregivers and others can assist patients in adherence to the discharge plan. By combining all of these facets into a comprehensive strategy, hospitalizations and associated mortality rates can potentially be reduced.

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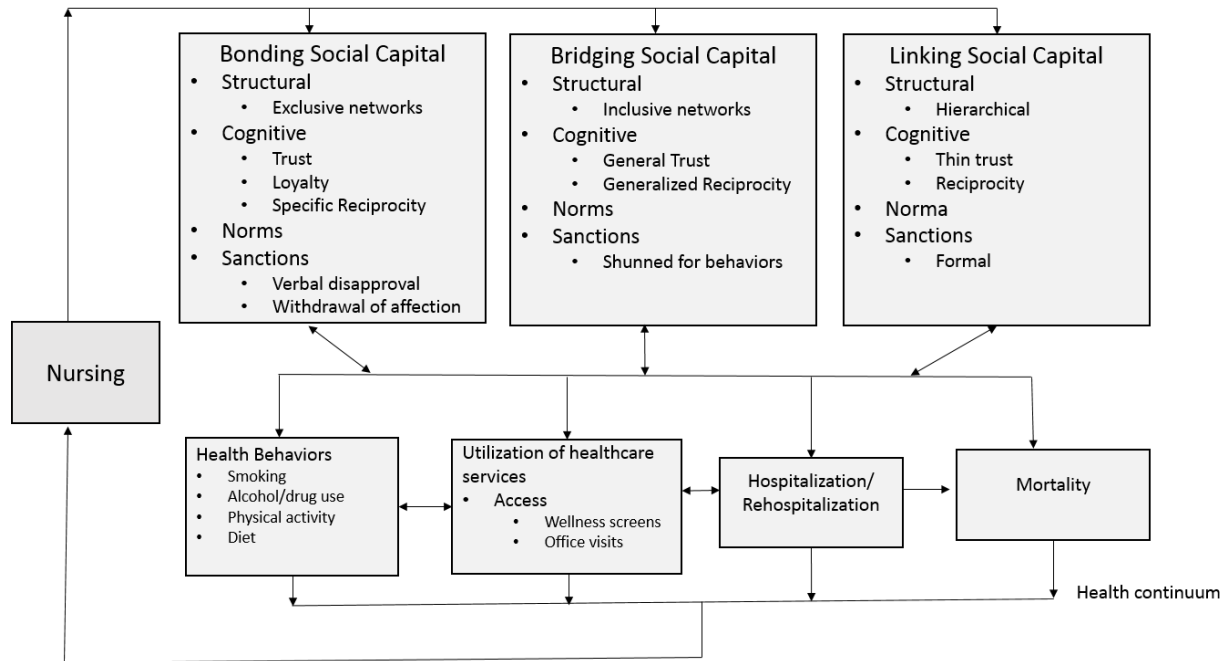


Figure 1. Social Capital and Health Framework based on the work of Putnam (2000) and Halpern (2005). This framework shows bonding, bridging, and linking social capital with cognitive and structural components as well as norms and sanctions, all of which can have a positive or negative affect on the various concepts related to health. The nurse serves as an intermediary, not only discovering patients’ levels of social capital and its relationship to the health continuum, but also assisting patients in developing social capital that contributes to health and wellness, recovery, or palliative care.

Table 2.

Application of a Case Study to the Social Capital and Health Framework

| | | Bonding Social Capital | Bridging Social Capital | Linking Social Capital |
|------------------|--|---|---|---|
| Health Behaviors | Smoker, alcohol use, poor dietary habits, depressed. | Son involved but lives alone and a strong amount of trust and loyalty between father and son could be present. However, son and wife may limit their interaction with Mr. Jones because of his smoking and alcohol use. Because Mr. Jones lives alone, meal preparation is an issue. Medication adherence is also of concern. Bring someone into the home (providing homemaker services, meal services, or home health) and developing a personal relationship are potential solutions. | Lives in rural area with little to no known social interaction. Because no interaction with others, Mr. Jones is depressed and there is no generalized norms of reciprocity present. Mr. Jones continues in cycle of alcohol use, tobacco use, and depression. Getting Mr. Jones involved in activities in the community is one solution. Using internet technology to enhance social support and programs related to smoking cessation or simply as a form of interaction is another strategy. | Providing patients like Mr. Jones with access to insurance that pays for services such as wellness visits, home care (including informal caregiving), medications, behavior modification, and mental health services are critical. The importance of legislation and policies ensuring healthcare for all Americans is vital. |

(Table Continues)

| | | Bonding Social Capital | Bridging Social Capital | Linking Social Capital |
|------------------------------------|---|--|---|--|
| Utilization of Healthcare Services | Has been to the emergency department three times in one year. | Son does not bring father to regular provider visits, but rather, to emergency room when in a crisis. Arranging follow-up visits for Mr. Jones and arranging transportation to these visits could reduce emergency room visits. A healthy diet will also help prevent exacerbations of HF and his diabetes. Adherence to medication regimens will also have a positive impact. | By engaging Mr. Jones in activities that will help him to live a healthier lifestyle (i.e. smoking and alcohol cessation), Mr. Jones will utilize fewer healthcare resources, including visits to the emergency department. | Persons who are unable to pay for necessary services and medications turn to emergency rooms as their primary source of care which in turn drive up healthcare costs |
| Hospitalization/Rehospitalization | Three hospitalizations in one year for same issues. | Reducing emergency room visits will reduce hospitalization and rehospitalization | Reducing emergency room visits will reduce hospitalization and rehospitalization | Reducing emergency room visits will reduce hospitalization and rehospitalization |
| Mortality | Because of Mr. Jones' chronic conditions and lifestyle, he is at high risk for mortality. | Reduces mortality risk. | Reduces mortality risk. | Reduces mortality risk. |

CHAPTER III: A COMPARATIVE STUDY OF SOCIAL CAPITAL AND HOSPITAL READMISSION IN OLDER ADULTS

Abstract

Numerous factors contribute to the hospital readmission of older adults with chronic illness, including inadequate management of physical, social, and psychological well-being. Poor self-care and lifestyle management, low levels of social support, and lack of community resources also contribute to the older adults poor management of their health (Glass, Moss, & Ogle, 2012; Prior, Bahret, Allen, & Pasupuleti, 2014). The concept of social capital which encompasses many of these factors, including social support and community resources, could also influence hospital readmission. Social capital is defined as networks among individuals and the level of trust and exchange of social support among network members (Putnam, 2000). Social support can be emotional, informational or practical (Ferlander, 2007). The purpose of this descriptive study was to determine if levels of individual social capital differ between two groups of patients age 65 and older who were readmitted to the hospital within 30 days of discharge and those not readmitted. A quota sample (n = 106) of patients discharged from hospitals belonging to a large healthcare system in the Midwest with a diagnosis of acute myocardial infarction (AMI), coronary artery bypass grafting (CABG), heart failure (HF), pneumonia, chronic obstructive pulmonary disease (COPD), elective total hip arthroscopy (THA), or total knee arthroscopy (TKA) completed the Personal Social Capital Scale (Chen, Stanton, Gong, Fang, & Li, 2009). Forty-three participants (n=43) were readmitted within 30 days of discharge and 63 were not readmitted (n=63). No significant differences between the two groups' mean levels of bonding or bridging social capital were identified. Further research with a larger sample size using a valid and reliable instrument designed for use in the older adult population is warranted.

Introduction

In 2010, Congress enacted the Medicare Hospital Readmission Reduction Program (HRRP), which penalizes hospitals for above average readmission rates related to certain conditions (Medicare Payment Advisory Commission [MedPAC], 2017). The list of clinical conditions that can impart penalties for readmission has expanded annually and currently includes acute myocardial infarction (AMI), heart failure (HF), pneumonia, chronic obstructive pulmonary disease (COPD), elective total hip or knee replacement, and coronary artery bypass graft (CABG) surgery (MedPAC, 2017). According to MedPAC (2017), in 2017, 80% of hospitals will have payments reduced because of the HRRP, with 19% receiving a penalty between 1% and 3% of their base payment. Moreover, a larger share of those penalized will be major teaching hospitals and those providing care to poor patients (MedPAC, 2017). In 2017, the total penalties levied against hospitals is expected to be \$526 million (MedPAC, 2017).

Because of the penalties associated with hospital readmissions, it is important to investigate potential contributing factors. Two factors that have been studied regarding their association to hospital readmission are social support and relationships with people who provide care after hospital discharge. No studies, however, have investigated these two factors by measuring social capital and its relationship to hospital readmissions. Putnam (2000) defined social capital as networks among individuals and the norms of reciprocity and levels of trust that come from them. Norms of reciprocity are the various types of social support provided by or exchanged between persons in a network including emotional support, instrumental support (e.g., money or employment), and informational support (Ferlander, 2007).

Bhandari and Yasunobu (2009) reported that the terms bonding, bridging, and linking delineate different types of social capital (Bhandari & Yasunobu, 2009). Bonding social capital

is very exclusive in nature in that groups exclude outsiders, and there is strong in-group loyalty (Bhandari & Yasunobu, 2009; Putnam, 2000). Groups with this attribute encourage communication and relationships necessary to pursue common goals (Bhandari & Yasunobu, 2009; Ferlander, 2007). Bridging social capital, on the other hand, is inclusive, with persons associating with others unlike themselves but at the same level socially (Bhandari & Yasunobu, 2009; Ferlander, 2007; Kim, Subramanian, & Kawachi, 2006). In these types of relationships there is problem solving within communities as people get to know each other and cultivate relationships, share information, and mobilize community resources (Bhandari & Yasunobu, 2009). Linking social capital is a form of bridging social capital because individuals form relationships with persons unlike themselves; however, these relationships are with persons at various levels of society and with various levels of power (Bhandari & Yasunobu, 2009; Ferlander, 2007; Kim et al., 2006).

Literature Review

Research that examined the association between social capital and physical or mental health, health and disease promoting behaviors, illness prevention, utilization of healthcare resources, and mortality guided this study. A review of the literature revealed that an individual's level of social capital is significantly associated with general, mental, and physical self-rated health or health factors (Cao et al., 2015; Dahl & Malmberg-Heiminen, 2010; Forsman, Nyqvist, Schierenbeck, Gustafson, & Wahlbeck., 2012; Gilbert, Moss, & Ogle, 2013; Kim et al., 2006; Kim, 2013; Kishimoto, Suzuki, Iwase, Doi, & Takao, 2013; Malino, Kershaw, Angley, Frederic, & Small, 2014; Niemen et al., 2013; Norstrand & Xu, 2012; Waverijn et al., 2014). Individual social capital is also related to healthy behaviors, including cancer screening (Leader & Michael, 2013), physical activity (Hsieh, Wang, McCubbin, Zhang, & Inouye, 2007; Mohnen, Volker,

Flap, & Groenewegen, 2012; Nieminen et al, 2013; Ueshima et al., 2010), and smoking abstinence (Mohnen et al., 2012; Moore, Teixeira, & Stewart, 2014; Nieminen et al, 2013). Nieminen and colleagues also found a relationship between individual social capital and alcohol consumption, diet, and rest.

Social capital and its relationship to use of healthcare services have also been investigated (Derose, 2008; Williams, 2012). Williams (2012) analyzed social capital in relation to variations in utilization of healthcare services based on different geographical locations. Social capital was determined by using Robert Putnam's Comprehensive Social Capital Index. This scale considers how engaged residents are in public affairs including voting in presidential elections, participation in community action groups, and social trust (Williams, 2012). According to Williams (2012), social trust was determined by responses to questions on the General Social Survey such as "Generally speaking would you say that most people can be trusted or that you can't be too careful" (p. 323). Healthcare utilization was determined using data from several organizations, such as the Dartmouth Atlas, Centers for Medicare and Medicaid, Centers for Disease Control, and Express Scripts (Williams, 2012). Analysis of the data showed that in states with lower levels of social capital there were increases in hospital length of stay and additional physician visits (Williams, 2012). Moreover, these states had higher numbers of select medical procedures (Williams, 2012).

Studies have also been conducted investigating the relationship between social capital and mortality. In the seminal work by Kawachi, Kennedy, Lochner, and Prothrow-Stith (1997), these researchers found that there was a strong relationship between income inequality and per capita group membership and absence of social trust, and that these social capital variables were associated with total mortality as well as mortality rates associated with coronary heart disease,

cancer, and infant mortality. Nyqvist, Pape, Pellfolk, Forsman, and Wahlbeck (2014) conducted a meta-analysis using data from 20 different studies and determined higher structural social capital, defined by broader social networks, and social participation were associated with decreased mortality. Nyquist and colleagues found that those with higher social participation had lower mortality rates, with hazard ratio (HR) of 0.87 (95% confidence interval [CI] = 0.82-0.91). Lower mortality was also found in those persons with more social contacts (HR = 0.91, 95% CI = 0.86-0.97) (Nyqvist et al, 2014).

Despite the association between social capital and health, healthy behaviors, healthcare utilization, and mortality, no studies were found that investigated the association between social capital and hospital readmission. Because of this gap in the literature, a comparative study using quantitative methods to determine if levels of bonding and/or bridging social capital differed between older adults discharged from the hospital and readmitted within 30 days compared to older adults discharged from the hospital and not readmitted was conducted. This population was selected because of the HRRP penalties associated with the readmission of Medicare patients. The following research questions were asked: In a comparison of community dwelling adults, age 65 years and older, who are readmitted to the hospital within 30 days and in those who are not,

- 1) What are the differences in levels of personal social capital after hospital discharge?
- 2) What are the different levels of personal social capital when compared by geographical location, gender, marital status, race or ethnicity, level of education, and income?

Methodology

Design, Setting and Sample

This descriptive, cross sectional study was conducted at a large healthcare system in the Midwestern United States. The healthcare system's institutional review board approved the study. A proportionate quota sample (n = 106) was obtained from adults age 65 and older discharged from 11 hospitals belonging to one healthcare system, with ten hospitals located in Illinois and one located in Michigan. These older adults were discharged during a 12-month period with a primary diagnosis of AMI, CABG, HF, pneumonia, COPD, elective total hip arthroplasty (THA), or total knee arthroplasty (TKA). The quota sampling was done using these seven diagnoses in order to ensure that the sample was proportionate to the population. Inclusion criteria were

- 65 years of age or older
- Hospitalized and subsequently discharged with a primary diagnosis of AMI, CABG, HF, pneumonia, COPD, elective THA or TKA
- Able to read and write English, or have someone available who is able to assist them
- Living in the community or in an independent living center, and not discharged to a nursing home or long term care facility, and not incarcerated
- Free from dementia or other cognitive deficits that would interfere with completion of the survey instrument

Procedure

Two reports were generated that identified patients meeting inclusion criteria and discharged in the prior twelve months. One report included eligible patients readmitted within 30

days of their discharge and the other included eligible patients not readmitted. Each report was reviewed to ensure no account number was on the lists more than once to avoid sending multiple surveys to the same person. The list of proportionate discharge diagnoses along with the number of participants is located in the Proportional Quota Sample presented in Table 3.

Eligible persons were mailed a letter (Appendix A) explaining the study and offering them the opportunity to volunteer to participate. Included with the letter were the Personal Social Capital Scale (PSCS) survey developed by Chen et al. (2009) to measure social capital, a demographic survey (Appendix B), and a self-addressed stamped envelope to return all documents. Completing and returning the surveys indicated consent to participate. To determine group responses, light blue paper was used for the surveys sent to patients readmitted, and light yellow paper was used for surveys sent to non-readmitted patients. Each survey was numbered with recipients' corresponding discharge diagnoses (1-7) in order to quantify the number of surveys completed by diagnoses.

Measurement

The Personal Social Capital Scale (PSCS) measures social capital and is a theory-based, empirically tested instrument, with established reliability and validity in the United States and China (Wang, Chen, Gong, & Jacques-Tiura, 2014). Chen et al. (2009) reported that pilot work led to a finalized scale of 10 core questions. The instrument was developed and tested in 128 Chinese adults ages 18 through 50. The 10 core questions are identified as Cap1-Cap10: Cap1-Cap5 measure bonding social capital and Cap6-Cap10 measure bridging social capital. There are two to six answers to each core question. For example, core question Cap3 asks the following: "Among the people in each of the following six categories, how many can you trust?" (Chen et al., 2009, p. 316). For each of the six categories, which includes family members, relatives,

neighbors, friends, co-workers, and old classmates, the participant selects a response that is measured using a Likert scale. One of the Likert scales used range from “none or a few” (1) to “all or a lot” (5). The response scores are added and then averaged to obtain a score for each of the 10 core questions (Cap1-Cap10). Subsequently, the average scores for each of the first five core questions (Cap1-Cap5) are added together and then divided by 5 to determine a score for bonding social capital. The average scores for each of the last five core questions (Cap6-Cap10) are added together and then divided by 5 to determine a score for bridging social capital. The sum of the bonding and bridging scores is the total social capital score, with higher scores indicating higher social capital (Chen et al., 2009). The scores for each type of social capital, bonding and bridging, ranges from 1, as the lowest, to 5, the highest.

Chen et al. (2009) used intrapersonal factors, community environment factors, and activities associated with accumulation of social capital to assess predictive validity of the PSCS. According to Chen and colleagues, correlation analysis indicated that the 10 core items correlated with the total scale score, with correlation coefficients varying from 0.37 to 0.77 ($p < 0.01$ for all) for the overall PSCS (Cronbach's alpha = 0.87). For the five bonding social capital core items, correlation coefficients with the overall PSCS ranged from 0.53 to 0.77 and the Cronbach's alpha for the bonding social capital subscale was 0.85 (Chen et al., 2005). Chen et al. (2005) reported that these five core items were positively correlated with each other ($r = 0.37 - 0.74$, $p < 0.01$ for all). For the five bridging core items, correlation coefficients with the overall PSCS ranged from 0.42 to 0.74 and the Cronbach's alpha for the bridging social capital subscale was 0.84 (Chen et al., 2005). Chen and colleagues reported that each of these five core items also positively correlated with the others, with correlation coefficients ranging from 0.28 to 0.63 ($p < 0.01$ for all).

Demographic information obtained included gender, marital status, race/ethnicity, highest level of education, approximate household income before taxes, and area of primary residence. The area of primary residence was determined by population based on U.S. Census Bureau definitions (Coburn et al., 2007) and is identified below.

- Metropolitan – one city with a population of 50,000 or more
- Urban area – area with a population of at least 1,000 people per square mile
- Suburban area – area surrounding an urban area with at least 500 people per square mile
- Rural – area outside an urban or suburban area with fewer than 500 people per square mile

Data Analysis

All data were analyzed using the IBM SPSS 22.0 (IBM Corp, Armonk, NY, 2013). Descriptive statistics were computed to characterize the sample as well as data distribution and to check assumptions. Multivariate Analysis of Variance (MANOVA) was computed to examine the differences in the dependent variables of bonding and bridging between patients 65 or older readmitted within 30 days and patients 65 and over not readmitted in 30 days. MANOVA also tested the differences in the dependent variables with the independent variables of gender, residence, marital status, education, income, and discharge diagnoses. All statistical significance is reported at $p < .05$.

Results

Information was obtained from only 128 of the 1,185 eligible participants, yielding a response rate of 11%. Of the 128 surveys returned, 22 were not used because they were missing 20% or more of the data and the demographic variables did not differ significantly from those not missing data. Missing data for the remaining surveys were handled by averaging those items

that were scored for each section (Cap1-Cap10). As demonstrated in the Demographics table (Table 4), 61.3% (n = 65) of participants who completed the survey were male and 93.5% (n = 99) were White/Caucasian. Over half of the participants (n = 63, 61.2%) reported having at least some college or were a college graduate, and more than one-third (n = 45, 43%) had an annual income of over \$50,000.

In this study, the Cronbach's alpha was .85 for the overall PSCS, 0.83 for bonding social capital, and 0.87 for bridging. The results from a one-way MANOVA revealed that no significant differences on the dependent variables of bonding and bridging social capital between patients 65 or older readmitted within 30 days and patients 65 and over not readmitted in 30 days, (Wilk's Λ =.995, $F(2, 103)=0.25$, $p=.776$, $\eta^2 =.005$). Older adults who were readmitted within 30 days reported very similar levels of bonding (M = 3.10, SD = 0.75) and bridging (M = 2.54, SD = 0.83) social capital with bonding (M = 3.01, SD = 0.63) and bridging (M = 2.52, SD = 0.73) social capital of those who were not readmitted. There were also no significant differences between education, area of residence, gender, marital status, race/ethnicity, or income on bonding and bridging social capital using the Wilk's Λ criterion (see MANOVAs for Differences in Social Capital Levels of Demographic Groups Table 5).

Discussion

In this descriptive study, we intended to determine if individual bonding and or bridging social capital differed between older adults readmitted to the hospital within 30 days of discharge and those not readmitted. Our study did not find a significant difference in either type of social capital between the two groups. One possible explanation for this finding is that the two groups were homogenous in their composition. Both groups of participants were adults at least 65 years of age, and were hospitalized at least once in the past year. Further, the majority of participants

in each group suffered from at least one illness or injury and may not have been in optimal health. With the exception of the study by Malino et al. (2013), who found a relationship between social capital and hypertension, other studies used self-reported health as the independent variable (Dahl & Malmberg-Heiminen, 2010; Elgar et al., 2011; Gilbert et al., 2013; Kim, et al, 2006; Kishimoto, et al., 2013; Linden-Bostrom, Persson, & Eriksson, 2010; Mellor & Milyo, 2005; Mohnen et al., 2012; Norstrand & Xu., 2012). Patient perceptions of their health were not measured in this study.

Another possible explanation for the lack of a significant difference in the two groups is reverse causation as it relates to health and changes in networks. Rather than social capital having an impact on illness and hospitalization, these factors could influence a person's amount of social capital. Aartsen, Van Tilburg, Smits, and Knipscheer (2004), reported that health conditions could influence the relationships of older adults. According to Aartsen et al. (2004), physical decline can lead to a decrease in interactions with friends and neighbors, but an increase in family interactions. If cognitive decline is present, interactions diminish with both groups (Aartsen et al., 2004). Li and Zhang (2015) reported similar findings. They sought to determine if diverse network types influence older adults' health outcomes differently, and whether the health of these older adults affected the type of networks with which they affiliated (Li & Zhang, 2015). They found the type of social network to which a person subscribed had an impact on their physical, cognitive, psychological, and overall health and that older adults tended to gradually withdraw from networks not consisting of relatives (Li & Zhang, 2015). As a result, older adults became limited to being part of family or restricted networks (Li & Zhang, 2015). When comparing health outcomes of older adults belonging only to family and restricted networks as compared to health outcomes of older adults belonging to diverse network types, Li

and Zhang found that those belonging to only the family and restricted networks had worse health outcomes. Li and Zhang reported that friend-focused networks had the greatest benefit to physical health as compared to family focused networks (2015). Li and Zhang (2015) concluded that many older adults might enter into a cycle where they become a part of networks of little benefit and with inadequate resources that will result in poor physical and mental health, and lead to further withdrawal from social interactions.

Strengths and Limitations

Strengths of this study were the use of proportionate quota sampling and surveying patients discharged from multiple hospitals. Proportionate quota sampling minimizes variances of sample estimates because of different discharge diagnoses, while surveying persons from more than one facility reduces selection bias. In addition, this study did not rely on secondary analysis of data. As pointed out by Abbott (2009), many studies utilize secondary analysis of data sets that were never intended to measure social capital.

There were limitations to this study, however. This was a correlational, cross-sectional study with a small sample size; there were several p-values approaching statistical significance when bonding and bridging were compared by selected demographic variables such as education, residence, marital status, and income. Obtaining a larger sample size in future studies could lead to statistical significance if present. The PSCS developed by Chen et al. (2009) was tested in adults aged 18 to 50. The population for this study was 65 years and over and the survey responses brought one major issue to light. When evaluating bonding social capital, participants were asked how many contacts they have (a lot, more than average, average, less than average, a few) in six categories: family members, relatives, people in their neighborhood, friends, coworkers/fellows, and friends from their hometown or old classmates. They were also asked

how many (all, most, some, few, or none) in each group they keep in routine contact, how many they trust, and how many would help them upon request. Many of the respondents left the coworkers/fellows answers blank in multiple questions. Consequently, data used to measure bonding social capital could be skewed. The instrument should be evaluated and revised for use in a population which includes retired adults. The study was limited to older adults from two states in the Midwest and may not be representative of older adults in general.

Conclusion

There are no studies that have led to the development of a model predicting patient risk for readmission for the elderly (Robinson, Howie-Esquivel, & Vlahov, 2012). Most studies assess readmissions based on demographics, clinical features, and utilization of healthcare resources (Robinson, et al., 2012). The findings of this study coupled with the limitations demonstrate the need for a valid and reliable instrument to measure social capital in the older adult population. Future research should include development and testing of such a tool and then expanding the study to a larger sample size of discharged older adult patients. Face-to-face interviews instead of a mailed survey should also be considered. As reported by Williams (2011), hospital readmissions are potentially indicative of low quality health care and could be related to several manifestations of low social capital. If it is then determined that an association between social capital and hospital readmission exists, further research can be conducted to explore whether low levels of social capital can serve as a predictor for hospital readmission. Further understanding of the link between social factors and recovery after illness can provide information that can influence social program financing as well as enhancement of home health programs and community nursing. Sound research will also be valuable for those who must

make decisions on the funding provided for these programs as well as the development of social policy.

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Table 3.

Proportional Quota Sample

| Discharge Diagnosis | Proportionate quota sample of patients not readmitted | Responses | Proportionate quota sample of patients readmitted within 30 day | Responses |
|------------------------|---|-----------|--|-----------|
| AMI | 67 | 6 | 65 | 8 |
| HF | 300 | 30 | 180 | 13 |
| Pneumonia | 105 | 12 | 90 | 7 |
| COPD | 83 | 8 | 104 | 3 |
| THA | 38 | 7 | 39 | 6 |
| TKA | 62 | 14 | 40 | 11 |
| CABG | 4 | 1 | 8 | 2 |
| Total | 659 | 78 | 526 | 50 |

Table 4.

Demographics

| <i>Demographics</i> | <i>N (%)</i> |
|------------------------------------|--------------|
| Residence | |
| Metropolitan | 32 (30.2) |
| Urban | 18 (17) |
| Suburban | 17 (16) |
| Rural | 39 (36.8) |
| Gender | |
| Male | 65 (61.3) |
| Female | 41 (38.7) |
| Marital Status | |
| Married/Partnered | 60 (56.6) |
| Widowed | 33 (31.1) |
| Divorced | 13 (12.3) |
| Education | |
| Elementary | 3 (2.8) |
| Some high school | 5 (4.7) |
| High school (4 years) | 32 (30.2) |
| Some college | 34 (32.1) |
| College graduate (4 or more years) | 29 (27.4) |
| No response | 3 (2.8) |
| Income | |
| Under \$10,000 | 4 (3.8) |
| 10,000 to 19,999 | 11 (10.4) |
| 20,000 to 34,999 | 15 (14.2) |
| 35,000 to 49,999 | 19 (17.9) |
| 50,000 to 74,999 | 20 (18.9) |
| 75,000 to 99,999 | 15 (14.2) |
| 100,000 or more | 10 (9.4) |
| No response | 12 (11.2) |
| Ethnicity | |
| Asian | 1 (0.9) |
| Black/African American | 2 (1.9) |
| White/Caucasian | 99 (93.5) |
| Two or more races | 1 (0.9) |
| Other | 1 (0.9) |
| No response | 2 (1.9) |

Table 5.

MANOVAs for Differences in Social Capital Levels of Demographic Groups

| Variable | Value | F | df | p | Partial Eta Squared |
|-----------------|--------------|----------|-----------|----------|----------------------------|
| Education | .92 | 2.04 | 4 | .09 | .04 |
| Residence | .89 | 2.07 | 6 | .06 | .06 |
| Gender | .99 | 0.64 | 2 | .53 | .01 |
| Marital Status | .92 | 2.12 | 4 | .08 | .04 |
| Race/Ethnicity | .98 | 0.86 | 2 | .43 | .02 |
| Income | .85 | 1.82 | 8 | .08 | .04 |

APPENDIX A: RECRUITMENT LETTER

Hello.

My name is Sheryl Emmerling. I am a nurse at Saint Francis Medical Center in Peoria Illinois. I am also a student in the PhD program at the Mennonite College of Nursing. I am conducting a research study with my advisor Dr. Kim Astroth, PhD, RN. She is the principle investigator. You are being invited to volunteer to be in this study because you meet the requirements.

Study Title:

Is There a Relationship between Bonding and Bridging Social Capital and Hospital Readmission?

What is the purpose of this research study?

The purpose of this study is to find out if there is a difference in the amount of bonding or bridging social capital in two groups of patients. Bonding social capital includes social support and trust that comes from groups of people that are alike, such as family. Bridging social capital comes from a group of people that are not alike. They may be from a different class, race, or ethnicity. The patients in this study are age 65 and older. The groups are those patients readmitted to the hospital within 30 days after discharge and those who were not readmitted to the hospital after discharge.

How long will I be in the study?

You will be in the study for as long as it takes you to complete the survey and mail it to the research team. It is anticipated that completing this survey will take

How many other people will be in the study?

About 428 persons will be in this study.

What is involved in this study?

You must complete the Personal Social Capital Scale and demographic information.

What are the possible risks or discomforts?

The risks to participating in this study are low. You may feel discomfort answering some of the questions. Your responses are anonymous.

What are the possible benefits of the study?

There may be no benefit to you. It will help determine if there is a relationship between social capital and hospital readmission. Reducing hospital readmissions and improving a person's ability to care for themselves after discharge is important to improving quality of life.

What if I do not want to participate?

You can choose not to participate.

Will I be paid for being in this study? Will I have to pay for anything?

You will receive no payment for taking part in this study. You do not have to pay to be in this study.

When does the study end?

The study ends after 256 surveys, 148 from each group of participants, are collected.

Who can see or use my information? How will my personal information be protected?

Your privacy is important to us. No information that can identify you will be collected.

Whom can I call about my rights?

If you have questions about participation in this study or if you have questions about your rights as a research subject, call Sheryl Emmerling at (xxx) xxx-xxxx. You may also contact the Peoria Institutional Review Board by calling (309) 680-8630 if you have concerns.

Consent

When you complete the survey and mail it, you are agreeing to take part in this research study.

This means you have read this information and you have decided to volunteer.

APPENDIX B: DEMOGRAPHIC SURVEY

Which of the following definitions best describes where you live:

- Metropolitan area – one city with a population of 50,000 people or more
- Urban area – population of **at least** 1,000 people per square mile
- Suburban area – population of **at least** 500 people per square mile
- Rural area – population of **less than** 500 people per square mile

Your gender:

- Female
- Male

Your Marital Status (Choose you current status)

- Married / Partnered
- Separated
- Widowed
- Divorced
- Never married

Highest level of education completed.

- Elementary (0-8 years)
- Some High School (1 to 3 years)
- High School Graduate (4 years)
- Some College (1-3 years)
- College Graduate (4 or more years).

What is your approximate household income before taxes?

- Under \$10,000
- \$10,000 to less than \$20,000
- \$20,000 to less than \$35,000
- \$35,000 to less than \$50,000
- \$50,000 to less than \$75,000
- \$75,000 to less than \$100,000
- \$100,000 or more

Which of the following best describes your racial or ethnic background? Please check one.

- Asian
- Black/African American
- White/Caucasian
- Hispanic
- American Indian or Alaskan Native
- Native Hawaiian or other Pacific Islander

Two or more races
Other (Please specify) _____

If unable to communicate in English, who assisted with completion of the survey?

Not applicable, I communicate in English
Spouse
Child
Relative
Friend or neighbor
Other (Please Specify) _____

END

Please put these surveys in the envelope provided and place them in the U.S. Mail. Do not put any identifying information on the survey or the envelope. Thank you for participating in this study.

APPENDIX C: PERMISSION TO USE PERSONAL SOCIAL CAPITAL SCALE



Wed 9/21/2016 12:16 AM

王培刚 <00009215@whu.edu.cn>

[EXTERNAL] Re: Personal Social Capital Scale

To Sons, Sheryl A.

Cc kmastro@ilstu.edu

You replied to this message on 9/21/2016 7:54 AM.

Message Health Educ. Res.-2009-Chen-306-17.pdf (151 KB)

Dear Shery,

I upload the full-text paper for you in attached file. We all agree with you to use this scale to do research and hope you get fruitful research results.

If you have further questions, do not hesitate to tell me.

BEST.

Peigang Wang