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언론정보학과석사학위논문

The Knowledge Gap Hypothesis in the Context of Stomach Cancer

: Examining Cognitive and Social Mechanisms of the
Theory

위암 상황에서의 지식격차가설
: 이론의 인지, 사회적 매커니즘의 고찰을 중심으로

2016년 8월

서울대학교 대학원

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Context of Stomach Cancer:
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Theory**

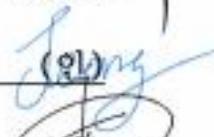
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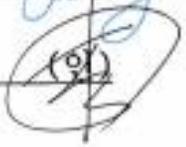
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Abstract

The Knowledge Gap Hypothesis in the Context of Stomach Cancer

**: Examining Cognitive and Social Mechanisms of the
Theory**

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The burden of cancer has been rapidly increasing over the past century as people in the modern era engage in more cancer-associated behaviors such as unhealthy diet and smoking. Among many types of cancer, the incidence of stomach cancer in Korea holds a particular concern in public health since the morbidity of stomach cancer is much higher than that of other cancer cases. The rate is also an uncommon phenomenon when compared to other countries, for stomach cancer is not considered as a prioritized disease in many of Western countries. Despite the fact that the

threat of stomach cancer in Korea does not subside, cancer is a preventable disease when accompanied with healthy lifestyle. Therefore, enlarging public health knowledge and persuading people to engage in healthy behaviors have become important tasks of health communication researchers.

The present study attempted to observe issues related to health knowledge disparities in the context of stomach cancer. Specifically, as health knowledge has been regarded as a sufficient predictor of health intentions and behaviors, examining knowledge disparities among populations provides insights of ways in which our society takes collective actions to reduce health disparities in general. The current study observed how information acquisition behaviors predict stomach cancer knowledge with the moderating effects of socio-economic status (SES), reflective integration, and social capital. Applying a traditional communication theory, the knowledge gap hypothesis, to the context of stomach cancer, the study contributed not only to a confirmation of the existing state of knowledge disparities, but to a refinement of the traditional theory by incorporating cognitive and social factors into the model.

To discover the gap in knowledge, three waves of panel data were collected, and the temporal gap in knowledge was analyzed through a set of ordinary least squares (OLS) regressions. The hypotheses that SES,

reflective integration, and social capital would moderate the relationship between information acquisition and stomach cancer knowledge were generally not supported. To remedy limitations of the result and capture the effects of other factors on the relationship, following additional analyses were conducted: (a) moderation effects of reflective integration and social capital (b) main effects of source-specific information acquisition behaviors. However, results of the supplementary approaches to the research model were not significant. Despite the findings, this study further discusses the implication of the model and suggests limitations of the survey and measurement to enhance future research exploring the knowledge gap in the health domain.

Keywords: health communication, knowledge gap hypothesis, stomach cancer, communication theory, health knowledge, public health

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INTRODUCTION

The right to health was stipulated by the World Health Organization (WHO) Constitution to ensure every human being the highest standard of health. As part of human rights, the right to health indicates that no one in the world should be excluded from adequate sanitation, food supply, healthy environment, and proper health care (World Health Organization, 2013). However, the health rights have not been equally met in general population as certain people have limited access to health care and information, or even safe foods and essential nutrients. The issue of health disparities should be interpreted beyond a simple distinction between healthy and unhealthy people as it stems from social inequalities inherent in enduring unequal social structure. In the face of health disparities, the role of communication in public health has been increasingly recognized and celebrated as people are prone to change their behaviors due to the influence of effective communicative acts in health interventions (Rimal & Lapinski, 2009). As part of the Healthy People 2010 objectives, health communication attempts to increase public knowledge and awareness of health issues, foster beliefs and attitudes for behavior change, correct myths and misconceptions, and promote health policies (Freimuth & Quinn, 2004). Employing various communication strategies such as entertainment education, mobile

technology, and interpersonal interaction, public health professionals increasingly strive for the reduction of health disparities. However, even with the advance of health care services and development of communication technology, certain people are not free of burden of diseases, nor are they provided with sufficient health information.

Cancer has been considered as a pressing global health issue as it is responsible for approximately 14 million new cases and 8 million deaths a year (World Health Organization, 2015). In Korea, cancer is also the top leading cause of deaths, and especially, stomach cancer is identified as one of the most burdensome diseases in Korea (Jung et al., 2012). According to the recent nationwide cancer statistics, stomach cancer is the most prevalent cancer case for male and the fourth for female, and it is the second most prevalent cancer case in general population following thyroid cancer (Jung et al., 2012; National Cancer Center, 2015). Despite the demanding cancer burden, efficient cancer communication may reduce potential risks by making people engage in preventive actions such as healthier eating habits, exercise, and screening (Rutten, Squiers, & Hesse, 2006; Stein & Colditz, 2004; Viswanath et al., 2006). However, even if media and health campaigns provide efficient cancer prevention messages to people, the intervention does not always lead to the improvement of public cancer knowledge, but rather, generates inequalities in society.

Health knowledge has emerged as an important predictor of health

behavior (Lee, 2009; Viswanath et al., 2006). In spite of extensive information flow in our current society, however, the issue of disparities in health knowledge and behavior among different social groups has been magnified as a major concern. A substantial literature suggests that people of different SES segments acquire and develop health information differently, resulting in widened knowledge gap over time (Niederdeppe, 2008; Tichenor, Donohue, & Olien, 2007; Viswanath et al., 2006). Moreover, even with the overall decline in cancer incidence rate and the increase of cancer information in media, the rates of risks and deaths are still high for low socioeconomic status (SES) groups and ethnic minorities (Viswanath, 2005). Health disparity is also a major challenge in Korea. Kim (2007) found out that health disparities explained by SES significantly increase with the age, and Lee (2005) suggested that education, job, and residential areas independently account for one's health status. In addition, focusing on broader level, Kim (2010b) showed that SES and trust in one's own community affect health inequalities. Also, Kim et al. (2004) argued that the mortality and morbidity rates are unequally distributed among different SES segments. Even though numerous studies have discovered components that affect health disparities in Korean society, research on explicating factors that influence health knowledge and its gap among different SES groups seems limited. Based on the idea of knowledge gap hypothesis, this paper examines how information acquisition modes lead to stomach cancer

knowledge with the impact of socio-economic status (SES), reflective integration, and social capital.

THEORETICAL BACKGROUND

1. Knowledge Gap Hypothesis

Tichenor, Donohue, and Olien (1970) defined the knowledge gap hypothesis: “As the infusion of mass media information into a social system increases, segments of the population with higher socioeconomic status tend to acquire this information at a faster rate than the lower status segments, so that the gap in knowledge between these segments tends to increase rather than decrease.” The hypothesis raised the alarm about the role of mass media as information providers since media-generated information increases disparities among people rather than decrease them. In the hypothesis, SES, or income and education, acted as a predictor of knowledge acquisition through media; people with high income and education level showed that their knowledge grew exponentially by increasing the gap between high and low SES groups overtime (Tichenor et al., 1970). In addition, the sharp difference in acquiring knowledge was found in “more publicized” topics

such as medical and social science issues (Tichenor et al., 1970). In sum, the hypothesis posits that the gap between high and low SES individuals increases overtime, especially when the knowledge is associated with public issues. As stomach cancer is an issue relevant to general public, and it entails high morbidity rate in Korea, it is expected that factors that engender stomach cancer knowledge gap are extant.

1.1 Macro to Micro Perspectives of the Theory

The knowledge gap hypothesis has attracted scholars in diverse communication research fields; it has been extensively investigated and elaborated with a wide range of variables. Social scientists and policy makers paid attention to such gaps in order to understand how the same knowledge leads individuals to act upon social and political issues differently (Viswanath & Finnegan, 1996). For instance, Eveland and Scheefe (2010) focused on the macro-level perspective of the knowledge gap hypothesis as it brings civic participation into the research rather than individual characteristics such as information processing abilities and communication skills. The scholars have found that the heavy use of television news may decrease the gaps in knowledge, but newspaper use is not as efficacious in reducing gaps. Also, even though newspaper seemed to increase overall civic participation, positive influence of newspaper on more educated individuals was significantly greater than less educated individuals.

In addition, Cho and McLeod (2007) approached the knowledge gap hypothesis with both individual and macro-level perspectives. They examined how three traits of community, community density, education level, and social cohesion affect political knowledge and participation. The result of the study suggests that higher community cohesion leads to narrower participation gaps, but higher community density widens the gaps. Therefore, the study expands the knowledge gap framework to participation gaps asserting that the knowledge is a fundamental resource for one to take advantage of social system. Further, Viswanath and Finnegan (1996) conducted a meta-analysis of research on the knowledge gap hypothesis to identify key determinants. According to the research, nature of the topic, community boundedness, complexity of knowledge, publicity, and channel are major factors that scholars have considered to enhance the knowledge gap hypothesis. The aforementioned research have approached the knowledge gap theory with different perspectives ranging from community to individual level, but they seem to agree upon the fact that knowledge is a powerful resource that makes one more proactive in acquiring social benefits. The social benefits are also held in health domain as one can adopt healthy behaviors on the basis of the acquired knowledge. By narrowing its focus on individual level, this study aims to examine how one's cognitive and social factors induce stomach cancer knowledge gap.

1.2 Health and the Knowledge Gap in SES Segments.

A sizable research on health communication has incorporated the knowledge gap hypothesis to explain why certain people are more likely than others to learn from information, which in result, generate disparities in health condition. It has been found that high SES individuals maintain healthier lifestyles than low SES individuals in a variety of health contexts including cigarette smoking (Niederdeppe et al., 2008a ; Niederdeppe et al., 2011), cancer control (Gaziano & Horowitz, 2001; Lee et al., 2012; Niederdeppe, 2008), AIDS (Salmon et al., 1996), and diet (Jeffery et al., 1991; McLaren, 2007). Lee (2009) examined how education affected Internet engagement, which led to the health knowledge gap. The study found that for those with higher level of education, the relationship between Internet engagement and health knowledge was stronger, but weaker for the lower education counterparts. In other words, the health knowledge gap was intensified as different SES segments engage in the Internet use (Lee, 2009). Along with the research on health knowledge gap on the internet, Shim (2008) suggested that the cancer screening knowledge acquired by online seeking was lower in less educated groups, and overall cancer knowledge sought on the internet also showed gaps among different ethnic groups. Also, according to Niederdeppe et al. (2008b)' s systematic literature review on smoking cessation campaign effectiveness, there is a great evidence that

campaign was less effective among lower SES populations, and the disparities may occur in three stages: campaign exposure, motivational response, and sustainability of smoking cessation. Considering the fact that the cigarette smoking rates are already different between higher and lower SES populations (Niederdeppe et al., 2011), the difference in knowledge acquisition by SES segments may aggravate the disparities even more. In the context of cancer, it must be noted that cancer is surely a preventable disease if it is accompanied with proper health behaviors that reduce cancer risks. The behaviors include engaging in healthy diet and exercise, reducing smoking and alcohol consumption, and getting regular cancer screening (Stein & Colditz, 2004). However, if the gap in cancer knowledge widens in SES populations, certain people will lose the opportunity to prevent themselves from the morbidity of cancer.

Considerable public health and health communication research in Korea has focused on factors including SES, age, and residential district in an attempt to analyze health disparities issues. However, research concentrating on health knowledge gap is relatively limited. Since knowledge is identified as a sufficient predictor of health behavior (Viswanath et al., 2006), understanding the knowledge gap in health will provide insights to resolve health inequalities in Korea.

1.3 Cognitive and Social Mechanisms of the Theory

In the original study of the theory, Tichenor et al. (1970) categorized the factors that widen the knowledge gaps influenced by the level of media input into five groups. The first factor is communication skills. Individuals with high SES have better reading and comprehension abilities than low SES individuals. Second, the amount of existing knowledge acquired from mass media or formal education varies among people. If a person already has an ample amount of stored information on certain topic, he or she may process and understand the information better. A third factor includes relevant social contacts that allow individuals to discuss certain topics with others. Sharing information with others may accelerate knowledge acquisition progress. A fourth reason why knowledge gap occurs includes selective exposure, acceptance, and retention of information. A person with higher SES tends to voluntarily select and accept the information, while low SES individuals may not be able to find or have interests in the information. The last factor is the mass media system itself. According to the initial study, print media with which higher SES individuals are more familiar delivers most of science and public topics. Since science and public affairs are not repetitively distributed unlike advertising, low SES individuals may lose the chance to be exposed to the information.

While a sizable communication research have incorporated the knowledge gap hypothesis, it seems that certain aspects need to be improved by rigorously conceptualizing ambiguous concepts and variables. First, a

consensus on conceptualizing information exposure seems to be unmet. The original study measured media exposure as simply reading magazine or newspaper, but the measurement needs to be extensively refined. This study attempts to conceptualize the information acquisition measure by dividing two different modes – information seeking and information scanning. The concepts may elucidate the process how the different information acquisition modes engender the knowledge gap. Also, analyzing the knowledge gap with cross-sectional data gives insufficient understanding of why the gap occurs, how it widens overtime, and what should be done to address the exacerbated social inequality problem. Tichenor et al. (1970) mentions the possibility of the ceiling effect as the mass media information is incessantly introduced to a society. However, analyzing the time trend of the knowledge gap is still essential in social science research because it suggests a solution of how the society should respond to the augmenting gap among people. Third, the original study of the knowledge gap only speculated on the five contributory aspects to explain why the gap widens overtime as the media input increases, but the factors have not been empirically tested. This study aims to refine those five different factors by conceptualizing concepts of reflective integration and social capital and empirically test the variables to obtain a concrete understanding of what mechanisms affect the gap. While certain studies have attempted to empirically test the factors, more exact concept refinement is required.

Addressing the aforesaid issues regarding the theory, it is expected that the study would contribute to enhance the theory, which in turn, develop a theoretical ground to thrive future research on the knowledge gap in the health domain.

2. Refining the Concept of Information Acquisition

In today's information-rich society, people come across much information through countless sources including television, radio, newspaper, Internet, and interpersonal sources like family, and friends. Information source, such as advertising agents, designs and distributes message in an attempt to change target audiences' behavior. Early communication research, therefore, had focused on developing effective persuasive techniques and communication strategies without paying much attention to why and how the receiver seeks the information (Johnson & Meischke, 1993). However, even if people are exposed to the same message, anticipated behavioral results vary among the audience as information acquisition modes are different (Czaja, Manfredi, & Price, 2003). In other words, if one devotes one's attention and cognitive efforts to the message greatly, the message impact on the person may be greater than those who

halfheartedly read or hear the message. In the domain of health communication, numerous public health information sources provide essential messages to promote people's health conditions. With the increase in health information availability, it has become increasingly important to understand how people acquire and process information to make proper health decisions (Czaja et al., 2003; Niederdeppe et al., 2007). Health information may lead an individual to make appropriate health decisions such as improving nutrition intake and engaging in physical activities depending on how the individual acquires and processes the information. For example, based on actively sought information, people are more likely to get cancer screening than those who are merely exposed to the information because people who actively seek information may have sufficient knowledge to make cancer related decisions (Niederdeppe et al., 2007). Also, even though patients are generally expected to actively seek information on the disease for treatment purposes, not all diagnosed individuals engage in information seeking behaviors (Ramanadhan & Viswanath, 2006; Rees & Bath, 2001). Therefore, the research attention was increasingly paid to identifying and conceptualizing different information acquisition modes to illuminate the reasoning behind the process of acquiring knowledge.

2.1 Conceptualization of Seeking and Scanning

It was not until the 1970s that communication scholars move research focus from the information system to the “person as a finder, creator, and user of information” (Case, 2002). The mass media studies started to analyze what people experience with the information rather than what effects and ideas are injected into people’s mind (Case, 2002). Accordingly, considerable communication research has proposed the concept of “information seeking,” with a variety of definitions propounded. Johnson (1997) explained that information seeking is a “purposive acquisition of information,” and Niederdeppe et al. (2007) conceptualized the concept as “active efforts to obtain specific information outside of the normal patterns of exposure to mediated and interpersonal sources.” Outside of the habitual exposure to the information, people take a further step to know the information and actively engage in learning process of the messages.

On the other hand, not much is known as a definition of scanning behavior as scholars have not yet concurred with the way of conceptualizing and operationalizing the concept. For example, it has been termed “passive information seeking” (Brashers, Goldsmith, & Heieh, 2002; Wilson, 1999), “routine information acquisition” (Griffin, Dunwoody, & Neuwirth, 1999), “mere or incidental exposure” (Shapiro, 1999), or “nonstrategic information acquisition” (Berger, 2002). In this study, information scanning is conceptualized as “information acquisition that occurs within routine

patterns of exposure to mediated and interpersonal sources that can be recalled with a minimal prompt” (Niederdeppe et al., 2007). The concept certainly captures the information acquisition mode, which is distinguished from deliberate information seeking, and at the same times, does not overlook the importance of minimal cognitive effort to be used in information acquisition enough for making subsequent message effect followed by the actions.

To validate Niderdeppe et al. (2007)’s concept on information scanning behavior, Kelly, Niderdeppe, and Hornik (2009) made an attempt to corroborate the measurement of scanned information exposure in the context of cancer prevention and screening. The study result shows that the mean intra-scan (scanned information on 6 different health behaviors) correlation was significantly higher than the mean correlation between scanned information exposure and general media use (Kelly et al., 2009). Also, the mean intra-scan correlation was significantly higher than the mean correlation between scanned information acquisition and sought information acquisition (Kelly et al., 2009). The finding suggests that the scanning behavior is a validated concept that is distinguishable from general media use and seeking behavior. Moreover, by underscoring the fact that general population, other than patients whose issue salience is high, may collect cancer information in a more incidental way, Kelly et al. (2010) segregated the concept of information scanning from seeking and investigated how

those modes are associated with health behaviors. The study found that seeking and scanning are both associated with the target health behaviors, underpinning the assumption that seeking and scanning may explain adoption of behavior (Kelly et al., 2010). In addition, it showed that while scanning behaviors occur more frequently than seeking behaviors, seeking was more greatly associated with health behaviors than scanning (Kelly et al., 2010). The result implies that behavioral change may be resulted from seeking but less so from scanning.

Nevertheless, information seeking and scanning are not to be considered as utterly opposite concepts just because the former includes “active” acquiring behavior, and the latter includes “passive” one. Information scanning goes beyond simply “paying attention” to the issue. More specifically, scanning includes browsing information in a less purposeful way, paying attention to the information, and further, storing the information in memory to be retrieved later (Niederdeppe et al., 2007). In fact, information seeking and scanning behaviors may be concurrent as people engage in both behaviors to obtain the information; those who are seekers, can also be scanners (Niederdeppe et al., 2007; Shim, Kelly, & Hornik, 2006). Also, information seeking and scanning behaviors are contingent on various factors such as types of specific decision to be made, proximity to cancer and properties of disease, and individual sociodemographic characteristics such as race, age, gender, and education

(Kelly et al., 2010; Niederdeppe et al., 2007; Shim et al., 2006). For example, Shim et al. (2006) found that females and college graduates are both seekers and scanners, and African Americans are more likely to be scanners while White and Hispanics tend to be seekers. Similarly, Kelly et al. (2010) showed that internet was greatly associated with seeking among diverse information sources, both Blacks and Hispanics were more involved in seeking, and married individuals were more likely to seek information. Therefore, information seeking and scanning are hardly tenacious concepts, but rather they are compliant to a number of contextual factors. As such, incorporating demographics, cognitive, and social factors in the information acquisition processes is essential to predict consequent health outcomes.

2.2 Seeking, Scanning, and the Knowledge Gap

Despite some findings that not only sought information but also scanned information leads to health behaviors (Kelly et al., 2009; Shim et al., 2006), this study posits that seeking and scanning facilitate the gap in accumulated knowledge which may influence health behaviors. It is not surprising to see that information acquisition, whether seeking or scanning fosters knowledge accumulation. Shim, Kelly, and Hornik (2006) found that those who sought cancer information showed greater cancer-related knowledge than non-seekers, and those who paid great attention to health information sources (high-scanners) demonstrated greater knowledge than

non-scanners. To have an exhaustive understanding of information acquisition through seeking and scanning, one must note that the processes closely align with the cognitive concepts highlighted by the Elaboration Likelihood Model (Petty & Cacioppo, 1984). Originally rooted in persuasion context, the model describes dual routes of information processes: systematic and peripheral routes. In systematic or central route, individuals are more motivated to contemplate on the message content, analyze the given evidence, garner necessary information; such actions result in better recall of the message and sustained attitude or behavioral change (Cacioppo, Petty, & Morris, 1983). In peripheral route, one invests minimal cognitive effort to understand the message by focusing on issue-deviant peripheral cues, and consequently produces short-term attitude or behavioral change (Petty & Cacioppo, 1984). The difference in processing information gives insights to understand the concepts of seeking and scanning employed by the individual (Griffin, Dunwoody, & Neuwirth, 1999; Niederdeppe et al., 2007). While active seekers are motivated to acquire information and retain more knowledge on which they practice actions (Ramanadhan & Viswanath, 2009), scanners incorporate peripheral processing which has less impact on health knowledge and decision (Niederdeppe et al., 2007). In Case (2002)'s term, information acquisition manners are associated with the idea that "informationally rich get richer, the poor get poorer."

In addition, the knowledge acquired by seeking and scanning is notably related to one's socioeconomic status. Communication intervention to promote health conditions of public may be moderated by SES, which may intensify disparities in knowledge and behavior. The difference in exposure and process of information between different SES groups can be found in a number of situational factors. Low SES individuals may not have an opportunity to get the message in the beginning (Case, 2002) or do not have enough time to look for the information needed. Also, higher SES populations tend to use more extensive information sources and engage in more seeking than the lower counterparts (Ramanadhan & Viswanath, 2009). Further, message recall and comprehension level varies between higher and lower SES populations (Niederdeppe et al., 2008b). The gap in cancer knowledge, therefore, is not only caused by different information acquisition modes, but moderated by one's SES.

3. Contribution 1: Revealing the Cognitive Mechanism of the Knowledge Gap

The impact of news media exposure on audience's knowledge and behavior has been a major focus in media effects research. However,

exposure alone does not determine the effects of the message anymore. When people encounter a message, they put cognitive efforts not only to grasp the information but also to elaborate on the information through reflection of the new knowledge to varied contexts. For instance, when a doctor advises a cancer patient to increase vegetable intake to reduce cardiovascular disease risks, the patient may compare the information with what he or she already knew about the disease or nutritional intake and recall the information later at a supermarket and shop more vegetables. Applying the information to a variety of contexts, one may expand it to have a thorough knowledge system. Moving beyond the simple “exposure-effect” framework (McLeod & McDonald, 1985) of traditional media effects research, communication scholars presented a great range of perspectives on information elaboration strategies by reviewing cognitive psychological aspects. One of the key assumptions drawn from the research is that people have intellectual capacity to elaborate on the given information. The concept is identified as communication skills in the knowledge gap hypothesis, which explains that different comprehending abilities widen the knowledge gap among people with the increase of message input (Tichenor et al., 1970). Whether people are motivated to search for certain information in a deliberate way or they are incidentally exposed to the information, people may engage in elaboration, or discussed in this study as, reflective integration.

3.1 Conceptualizing Reflective Integration

Communication scholars have focused on the role of news media message elaboration in obtaining political and news knowledge (Beaudoin & Thorson, 2004; Perse, 1990). Demonstrating an exhaustive news knowledge gain system, Eveland (2001) presented the “cognitive mediation model” and found three key factors that affect news learning: surveillance motivation, attention, and elaboration. The study accentuates the role of elaboration by explaining that motivation leads people to engage in further information processing to acquire knowledge. In other words, a motivation to be aware of the events in one’s surroundings makes individuals engage in effortful cognitive behaviors. The cognitive mediation model seems to be originated from uses and gratification theory (Katz, Blumler, & Gurevitch, 1973) as it explains that people are motivated to use media to satisfy their needs, but the model takes a further empirical approach and integrates human cognition mechanisms into the process (Eveland, Shah, & Kwak, 2003). Specifically, the cognitive mediation model demonstrates that motivations do not have a direct influence on learning, but they influence knowledge only indirectly through information processing of the news message (Eveland, 2001). Eveland et al. (2003) extended the research further by testing causal claims of the cognitive mediation model in the context of the 2000 U.S. presidential election campaign. The study argues

that the “O-S-O-R perspective” provides a foundation on the cognitive mediation model. By adding structural, cultural, cognitive, and motivational characteristics that one brings in the consumption of the message (the first “O”) and the audience activities (elaboration) that happen between the reception and response (the second “O”) to the simple stimulus-response (S-R) process, O-S-O-R perspective provides more comprehensive understanding of media effects (Eveland et al., 2003). Elaboration, as one of the information processing strategies, occurs when one establishes cognitive connections between prior experience and knowledge and newly accessed information. Other scholars label the similar concepts with “reflective integration,” “active integration,” and “amount of invested mental effort” (Eveland et al., 2003). Furthermore, Cho et al. (2009) draws upon the cognitive mediation model and O-S-O-R model of communication effects to theorize and test “O-S-R-O-R model” in the context of campaign exposure and political engagement. By including interrelated reasoning process(R) into the longstanding O-S-O-R model, the study suggested three key mediators: interpersonal political conversation, online political discussion, and cognitive reflection (Cho et al., 2009). The study argues that interpersonal discussion is an essential factor in reasoning process. By engaging in conversation with others, individuals can organize what they already knew, make connection between the old and new information, and

finally, learn from other people's perspectives (Cho et al., 2009). In addition to the personal cognitive process, interpersonal communication may further expand the scope of reflective integration.

3.2 Reflective Integration of Health Information

The cognitive process of information increases a chance for one to have better health knowledge and make adequate health decisions such as reducing risky behaviors (Greene, Krcmar, Rubin, Walters, & Hale, 2002). Applying cognitive mediation model to health contexts, Ho, Peh, and Soh (2013) found that elaborating news information about H1N1 pandemic makes people to take precautionary actions. The study also found that interpersonal communication as well as elaboration significantly predicts knowledge of H1N1, which finally leads to behavioral intentions (Ho et al., 2013). The role of interpersonal communication in reflective integration has also been stressed in Cho et al. (2009). Also, Jensen (2011) attempted to account for the effects of elaboration on cancer knowledge by extending the cognitive mediation model. The study found that the individuals who incorporated cognitive process skills into the consumption of cancer news scored better on comprehension of cancer information, but not on recognition of the factual information (Jensen, 2011). In addition, Fleming, Thorson, and Zhang (2006) conceptualized the two information processing approaches as "elaborative processing" and "active reflection;" the former is

an extension of reflective integration, and the latter is a combination of active elaboration and reflective integration. The study conducted a survey to see the effect of the strategies on public food safety perception and found that the local news only have indirect effects on public concerns as the two information processing strategies mediate the relationship (Fleming et al., 2006). The research implies that elaboration process is a key determinant of knowledge acquisition in health domain.

Reflective integration has been considered as a pivotal factor that determines the relationship between message exposure and effects. Exposure to the information is certainly a prerequisite for knowledge acquisition, but without taking cognitive reasoning process into consideration, it is hard to fully grasp the whole mechanism of knowledge obtainment. By thoroughly processing the information, specifically, making meaningful connections between prior knowledge and experience and new information, one can effectively learn from the message. In addition, discussing health issues with others let people easily recall the information and expand their knowledge system so that they are more likely to adopt healthy lifestyle behaviors. As also implied in the knowledge gap hypothesis (Tichenor et al., 1970), such communication skills, or reflective integration may accelerate the knowledge gap between the rich and the poor (Dutta-Bergman, 2005).

4. Contribution 2: Revealing the Sociological Mechanism of the Knowledge Gap

For the past few decades, social capital has emerged as one of the most salient themes addressed in social science research (Lin, 1999a). While perspectives on the concept are divergent, majority of scholars agree upon the fact that social capital is a resource embedded in social networks – invisible human connections among members of the society (Lin & Erickson, 2008). Social capital involves concepts like norms, trust, networks, and resources. This study investigates how social capital affects the knowledge gap.

4.1 Different Approaches to the Concept

Focusing on three scholars who set a milestone in social capital research, Robert Putnam, James Coleman, and Pierre Bourdieu, this study explicates the major ideas of the scholars and provides comparative analysis of the different perspectives.

First of all, Putnam takes a macroscopic analysis on social capital (Lin, 1999a). Putnam (1995) brings the concept of social capital in a community level by providing empirical evidence in declination of civic

engagement and erosion of trust and democracy in American society. Social capital, in Putnam's (1995) term, is an essential component of social organization that facilitates coordination and cooperation for mutual benefit. Social capital, specifically, is a resource that social members can use to achieve social cohesion and prosperous community (Putnam, 1993). Social capital is generated from horizontal relationships among people, and it serves as an efficient tool not only to achieve social aggregation, but also to accomplish desirable economic condition and political environment (Putnam, 1993). To measure the level of social capital, Putnam (1995) incorporates a number of indicators in his research. For example, participating in religious affiliation, labor unions, parent-teacher associations, and even organization with entertainment purposes ("tertiary associations" in Putnam's text) such as Red Sox fan club are all the indicators that measure the level of social capital. Declination of membership in such groups makes people feel that they have fewer obligations to social actions, and it eventually leads to a destruction of trust and civic engagement in the society (Putnam, 1993). Hence, Putnam (1995) focuses on the positive function of social capital and calls for an urgent recovery of the community.

Next, Coleman (1988) embraces social capital from micro to macro level. Social capital involves both hierarchical and horizontal relationships among people, and it is greatly defined by its function (Lin, 1999a). Unlike

physical or human capital, social capital inheres in social structures and facilitates actors to produce common benefits. Coleman (1988) identifies three qualities that constitute social capital: trust, information channels, and norms. Social capital relies on trust among people, and it allows people to extend social networks and have more access to social resources they can utilize. Also, social capital provides people with access to information and norms that constrain any externalities that may hinder group interests (Coleman, 1988). Moreover, Coleman (1988) emphasizes the importance of “strength of closed ties” to facilitate social capital among human relationships. High degree of closure among people develops norms and provides sanction (Lin, 1999a). Closed form of social structure is also a primary concept in Bourdieu’s social capital, but Coleman, instead of drawing a line between haves and have-nots, underscores positive functions of closed form of social ties in social capital. Therefore, according to Colman (1988), social capital is a crucial resource that allows people to overcome social problems and achieve public interests.

Last, Bourdieu (1986) takes an individualistic approach to social capital, as it represents resources embedded in social networks, which allow individuals to access them under mutual recognition and acknowledgement within the networks. The aggregate of resources, which one can mobilize largely depend on the size of the given network (Lin, 1999a). Social capital is a product of continuous effort on building relationships through repeated

exchange with members of a certain group by reaffirming the boundary of the group (Bourdieu, 1986). The capitals, therefore, are produced and reproduced by the homogenous group members, and they eventually aggravate disparities among social groups. Bourdieu (1986) identified convertibility of the different forms of capital, economic, cultural, and social capital, and described how each form transforms to one another by reinforcing objective homogeneity of the institution. Among the three forms, economic capital becomes the backbone of the other types; cultural capital and social capital are derived from economic capital (Bourdieu, 1986). For example, a personalized gift not only implies a monetary exchange, but also presupposes personal time, care, and concern. Even though it can be seen as a waste in economic standpoint, it is surely a purposive investment in long-term effect of social relations. Cultural capital is also capable of transforming to other types of capitals. In contrast to the fact that economic capital is usually inherited in a visible and immediate way, cultural capital has great degree of concealment (Bourdieu, 1986). For example, a child born affluent unconsciously or invisibly acquires cultural capital such as cultivated attitude, paintings, and academic opportunity from the family. Even though the educational qualification seems like an opportunity that one can achieve irrespective of his innate property, it is, in fact, subject to a more disguised form of transmission than economic capital. Similarly, social

capital is also built upon “what is already there.” Economic and cultural capitals determine the scope of which individual can put his effort on through social practices such as parties, sports, ceremonies that reinforce and strengthen certain qualifications of the group (Bourdieu, 1986). Mutual recognition and acknowledgement in social capital, in Bourdieu’s (1986) words, serve as a symbolic power that distinguishes one social class from another by granting membership and access right to resources only to the relevant and limited individuals. Therefore, Bourdieu (1986) posits that inherited capitals from one’s parents largely determine the extent to which one can practice social capital.

4.2 Applying Bourdieu’s Social Capital

Health communication and public health research has identified social capital as an essential social determinant of health in a variety of contexts. Measuring in terms of “civic engagement,” “social trust,” “reciprocity,” and “human interactions,” many scholars have examined positive effects of social capital on people’s physical and psychological well-being (Kim, 2010b; Sohn, 2010; Jung & Cho, 2007; Cattell, 2001; Kawachi, Kennedy, & Glass, 1999). Sampson, Raudenbush, and Earls (1997) defined social capital as collective efficacy in community rather than individually possessed social resources and found that the efficacy helps to decrease criminal violence rates. Similarly, following Putnam (1995),

Kawachi, Berkman, Lochner, and Prothrow-Stith, (1997) measured social trust and civic engagement and discovered that the investment in social capital is negatively related to population-level poverty and mortality inequalities. Consistent with the studies, drawing connection between social capital and health has also been prevalent in Korean public health research. Kim (2013) illuminated how social contacts buffer the effects of depression among senior citizens with chronic arthritis. Lim et al. (2010) found that underprivileged people who have high social trust in personal relationships, community, and institution are more likely to engage in healthy behaviors such as reducing alcohol consumption and having regular diet. Also, in Cho (2012)'s comparative study of Korea, Germany, Italy, Greece, and Turkey showed that individual trust, reciprocity, and civic engagement are significantly related to one's subjective health evaluation in Korea compare to other countries.

Notwithstanding the research stream that Putnam (1995) and Coleman's (1988) concepts have been predominantly applied to the health research, this study analyzes how the individually possessed social resource widens the gap among populations by adopting Bourdieu's (1986) social capital into the model. Making use of the knowledge gap hypothesis to examine disparities in different SES groups, Niderdeppe (2008) delineated the process of how social capital moderated the celebrity cancer news effect on information seeking. The study argues that high SES individuals have

greater social capital, or social integration, and the affiliation with community gives them greater opportunity to seek more information about cancer news than low SES counterparts (Niederdeppe, 2008). Social integration, admittedly, imparts more information source and interpersonal communication opportunity to people, but taking Putnam (1995)'s approach appears to be insufficient in explaining why social resource is unequally distributed among different SES groups and how it contributes to social inequalities, and eventually, health disparities. Niederdeppe (2008) assumes that low SES populations have less social capital, and they are less likely to get social benefits in that they are disengaged from civic matters. The reasoning behind the assumption is perhaps indisputable, but as supported by previous studies, low SES individuals also make meaning out of social capital, and its effect on their health conditions appears substantial (Almedom, 2005; Kawachi et al., 1997; Lim et al., 2010; Sohn, 2010). To unravel mechanisms of inequality shaped by social capital, one should grasp to what extent an individual has access to such resources and how much the person facilitates information process to obtain knowledge by using the accessible social networks. Communication researchers tend to treat social capital as a neutral concept that anyone can utilize in a community, but identifying the concept as a macro-level indicator may not reveal an underlying social structure, which contributes to social inequalities. Therefore, understanding stratified hierarchy in social capital, an

overarching idea of Bourdieu (1986)'s work, is more conducive to analysis of the knowledge gap among different SES segments. As Lin and Erickson (2008) stated, having meaningful human networks, in other words, having contacts with prestigious occupations (e.g. having a friend who is a doctor) determines the richness of social capital. Those who have such contacts are in better position of attaining social status (Erickson, 2003; Lin, 1999b). As also underscored in social mechanism of the knowledge gap hypothesis (Tichenor et al., 1970), social contacts broaden the gap as people develop an idea by exchanging information with one another.

RESEARCH HYPOTHESES

Hypothesis 1 (H1): Information seeking will increase stomach cancer knowledge overtime.

Hypothesis 2 (H2): Information scanning will increase stomach cancer knowledge overtime.

Hypothesis 3-1 (H3-1): Information seeking on stomach cancer knowledge will be moderated by income.

Hypothesis 3-2 (H3-2): Information seeking on stomach cancer knowledge will be moderated by education.

Hypothesis 3-3 (H3-3): Information scanning on stomach cancer knowledge will be moderated by income.

Hypothesis 3-4 (H3-4): Information scanning on stomach cancer knowledge will be moderated by education.

Hypothesis 4-1 (H4-1): Income will be positively associated with reflective integration, which in turn moderates the relationship between information seeking and stomach cancer knowledge.

Hypothesis 4-2 (H4-2): Income will be positively associated with reflective

integration, which in turn moderates the relationship between information scanning and stomach cancer knowledge.

Hypothesis 4-3 (H4-3): Education will be positively associated with reflective integration, which in turn moderates the relationship between information seeking and stomach cancer knowledge.

Hypothesis 4-4 (H4-4): Education will be positively associated with reflective integration, which in turn moderates the relationship between information scanning and stomach cancer knowledge.

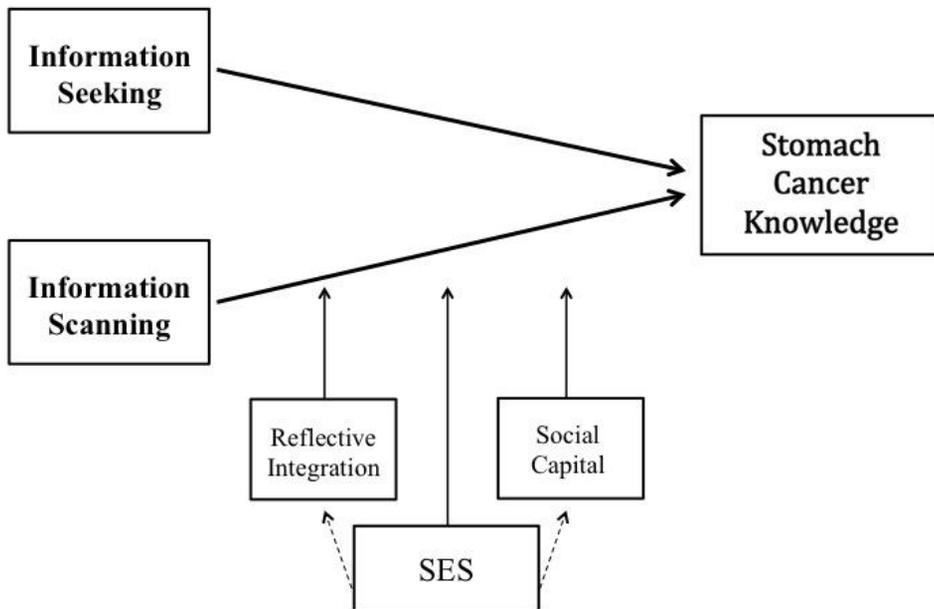
Hypothesis 5-1 (H5-1): Income will be positively associated with social capital, which in turn moderates the relationship between information seeking and stomach cancer knowledge.

Hypothesis 5-2 (H5-2): Income will be positively associated with social capital, which in turn moderates the relationship between information scanning and stomach cancer knowledge.

Hypothesis 5-3 (H5-3): Education will be positively associated with social capital, which in turn moderates the relationship between information seeking and stomach cancer knowledge.

Hypothesis 5-4 (H5-4): Education will be positively associated with social capital, which in turn moderates the relationship between information scanning and stomach cancer knowledge.

RESEARCH MODEL



RESEARCH METHOD

1. Sample and Procedures

To empirically test hypotheses and research model of this current study, a longitudinal panel survey was implemented. Three waves of data were collected over six months (February 2014 through August 2014) at a trimonthly interval among those who participated at Wave 1. An online survey company in Korea (www.embrain.com) recruited research participants. The company retains more than one million panels for research purpose. A total of 5,900 people were invited to the survey via e-mail. All survey participants received approximately \$2 as compensation. 1,130 people completed the survey at Wave 1 in February 2014 (participant rate of 19%), and 813 people completed the survey at Wave 2 in May 2014. The number of people who completed the survey at Wave 3 was 582. The attrition rate for Wave 2 and Wave 3 were 28.0% and 28.4% respectively. Participants were confined to those who are over the age of 40 based on the fact that cancer morbidity is increasingly more frequent in people aged 40 or older, and they are recommended to have gastroscopy by the Korean National Cancer Center (National Cancer Center, 2014). Data from Wave 1 is excluded from the analysis, as stomach cancer knowledge was not

measured. Therefore, this study used the data from the second and third wave surveys for a lagged analysis. For descriptive statistics, see Table 1.

As the standardized form of cancer communication research tools have not been fully developed in Korea, this study referred to HINTS (Health Information National Trends Survey) and UPENN CECCR (University of Pennsylvania Center of Excellence Cancer Communication Research) surveys. The measurement tools were modified in the Korean context (i.e. including information sources of Korean media).

Table 1. Descriptive Statistics of Variables

| | Wave 2 (n=813) | Wave 3 (n=582) |
|--------------------------|-----------------------|-----------------------|
| | M (SD) or % | M (SD) or % |
| Age | 51.91 (8.20) | 52.08 (8.19) |
| Gender | 48.2% female | 46.7% female |
| Marital status | 82.9% married | 84.7% married |
| Employment status | 64.3% employed | 66.0% employed |
| Doctor visit | 2.23 (1.27) | 2.17 (1.23) |
| Personal cancer history | 6.3% "yes" | 6.4% "yes" |
| Family cancer history | 63.1% "yes" | 64.8% "yes" |
| Income (\$) | 45.72 (22.46) | 46.55 (23.02) |
| Education (years) | 14.73 (2.29) | 14.90 (2.17) |
| Reflective integration | 1.37 (1.33) | 1.48 (1.31) |
| Social capital | 59.9 (17.22) | 61.5 (15.82) |
| Information acquisition | 1.35 (1.19) | 1.38 (1.19) |
| Stomach cancer knowledge | 5.68 (1.52) | 7.20 (1.53) |

2. Measures

Stomach Cancer Knowledge

The current study measured stomach cancer knowledge with nine item questions addressing essential information about stomach cancer. The items on stomach cancer knowledge were developed based on the information on National Cancer Information Center. The items with the correct answers (in parenthesis) are as follows: (1) Stomach cancer will spread if I eat meat (False). (2) If stomach ulcer is exacerbated, it will develop into stomach cancer (True). (3) Smoking cigarettes is not related to stomach cancer (False). (4) *Helicobacter pylori* are related to stomach cancer (True). (5) Salty and burnt foods are related to the onset of stomach cancer (True). (6) In many cases, early stomach cancer is symptom-free (True). (7) Stomach cancer screening is useful for early stomach cancer examination (True). (8) Having gastroscopy once every two years is helpful in early detection of cancer (True). (9) Stomach cancer occurs frequently to people over the age of 40 (True). As to these nine items, respondents answered each item with “true,” “false,” or “don’t know.” The items were converted to a 0-1 metric; the scales “false” and “don’t know” were converted to 0, and “true” was converted to 1. The sum of correct answers was computed as the final score of stomach cancer knowledge.

Information Acquisition

Stomach cancer information seeking and scanning were both measured to capture comprehensive effect of information exposure on knowledge. The survey clarified the fact that there are two types of information acquisition behaviors by stating that some people may use media sources or have conversation with others in order to get information about stomach cancer, and other people may be accidentally encountered to information about stomach cancer while they use media sources or have conversations with others without prior intention of getting the information. To test the effect of *information seeking* on stomach cancer knowledge, the survey asked respondents if they have looked for stomach cancer information with certain objectives, and for *information scanning* measure, the respondents were asked if they have been accidentally exposed to the information in a less purposive manner. The measures confined the period of observation to past three months to make it correspond with the temporal gap between Wave 2 and Wave 3 and to allow participants enough time to recall their behaviors and precisely report them. The respondents were asked to answer frequency of using nine different information sources: newspapers, magazines, television news, health-related television programs, online news, health-specialized internet websites, social network sites or online communities, family and friends, and healthcare professionals. The items

also provided example of the sources for respondents to readily understand the items and recall their behaviors on each source. Across the nine items, respondents answered each item on a five-point scale, “never,” “1 to 2 times,” “3 to 4 times,” “5 to 6 times,” and “more than 7 times.” All items are transformed into ratio variables as response “never” was recoded as 0, “1 to 2 times” as 1.5, “3 to 4 times” as 3.5, “5 to 6 times” as 5.5, and “more than 7 times” as 7.

Even though the theoretical background of this study bases on the idea of how different information acquisition modes, seeking and scanning, are associated with stomach cancer knowledge, seeking and scanning measures are combined and treated as a single variable, “information acquisition” in the analysis. Since correlations of seeking and scanning variables were high (.87 at Wave 2; .85 at Wave 3), separating those variables may cause multicollinearity issues. The items were averaged for each measure (9 items each), and then a total of 18 items (both seeking and scanning) were averaged to see the effect of general information acquisition on knowledge. Therefore, all the hypotheses are tested and assessed treating an independent variable as *information acquisition*. This study, however, stands by the idea that conceptualizing seeking and scanning as information acquisition modes is viable as found in numerous literatures. It is worth to be discussed in a later section of this paper.

Socio-economic Status (SES)

To examine moderating roles of SES, this study measured income and education and observed the effects of the variables separately. For income measure, respondents indicated monthly household income (the sum of conjugal relationship income) on a 12-point scale where “0 – 990,000 KRW” = 1, “1,000,000 – 1,990,000 KRW” = 2, “2,000,000 – 2,990,000 KRW” = 3, “3,000,000 – 3,990,000 KRW” = 4, “4,000,000 – 4,990,000 KRW” = 5, “5,000,000 – 5,990,000 KRW” = 6, “6,000,000 – 6,990,000 KRW” = 7, “7,000,000 – 7,990,000 KRW” = 8, “8,000,000 – 8,990,000 KRW” = 9, “9,000,000 – 9,990,000 KRW” = 10, “10,000,000 – 14,990,000 KRW” = 11, “More than 15,000,000 KRW” = 12. Unique score was assigned to each index based on the median income amount (response 1 was recoded as 5, response 2 was recoded as 15, response 3 was recoded as 25, and so on). Respondents were also asked to report the highest level of education. The measure was coded as “Less or equal to elementary school graduate” = 1, “middle school graduate” = 2, “high school graduate” = 3, “community college graduate” = 4, “four-year college graduate” = 5, and “graduate school graduate” = 6. Each index was recoded as the number of cumulative years of education (response 1 was recoded as 6, response 2 was recoded as 9, response 3 was recoded as 12, response 4 was recoded as 14, response 5 was recoded as 16, and response 6 was recoded as 18).

Reflective Integration

Four items have been constructed to measure respondents' information processing activities after exposure to stomach cancer information. The variable also qualified the period of observation as "past three months" for each item. The items to observe the moderating effect of reflective integration are as follows: (1) I associated stomach cancer information acquired from media sources with my personal experience. (2) I thought about how stomach cancer information acquired from media sources is associated with other information that I already knew. (3) I recalled stomach cancer information acquired from media sources and thought about the information. (4) I talked with family or friends to find out how they think about the stomach cancer information that I acquired from media sources. Participants indicated how often they are engaged in each reflective integration activity on a five-point scale (1=not at all, to 5=more than seven times). All items were recoded into ratio variables as response "never" was recoded as 0, "1 to 2 times" as 1.5, "3 to 4 times" as 3.5, "5 to 6 times" as 5.5, and "more than 7 times" as 7.

Social Capital

Social capital is measured with the "Position Generator," originally developed by Lin and Dumin (1986). The Position Generator lists occupations ranging from high to low prestige levels, embracing wide

variety of resources that each occupation possesses (Lin & Erickson, 2008). The participants were inquired to indicate if they have relatives, friends, or acquaintances in a series of 22 occupations provided in the position generator. Social capital was calculated base on the job prestige scores (Lin, Fu, & Hsung, 2001). Each item has its unique score, and the highest job prestige score obtained determined each respondent's social capital level. The 22 occupations and the assigned scores (indicated in parenthesis) are as follows: professor (78), lawyer (73), CEO (70), congressperson (64), production manager (63), middle school teacher (60), human resource manager (60), writer (58), nurse (54), software programmer (51), secretary at major company, (49), bookkeeper (49), police officer (40), farmer (38), receptionist (38), factory worker (34), hair designer (32), taxi driver (31), security guard (30), babysitter (23), janitor (21), bellboy (20). It should be noted that the item "professor" did not show variations in the data, as near 70% of participants were college graduates or above. The item is excluded from the calculation of the variable.

Control Variables

Three types of control variables have been identified in this current study. First, demographics including age, gender, marital status, and employment status were treated as control variables. Second, three health-related variables (doctor visit, personal cancer history, and family cancer

history) were also included in the control variables, as they may have direct or indirect effect on main variables. The doctor visit measure asked participants how often, in the past three months, they had visited doctors due to health-related problems. Respondents reported the frequency of doctor visit on a 5-point scale (never = 1, once = 2, twice = 3, about once a month = 4, and more than once a month = 5). Participants also indicated whether they were ever diagnosed with cancer (personal cancer history) and whether their family or close friends were (family cancer history). The dichotomized measures were recoded as either 0 for “no” or 1 for “yes.” Last, to properly assess the impact of information acquisition at Wave 2 on stomach cancer knowledge at Wave 3 in a lagged analysis, the knowledge variable at Wave 2 was controlled.

Analytic Procedures

To test research hypotheses and questions, this study employed a series of regression analysis. H1 and H2 are tested by examining the causal relationship between information acquisition and stomach cancer knowledge. Also, to account for causal ordering, this study analyzed the data with ordinary least squares (OLS) regressions which included the control variables, main-effect variables (information acquisition), and interaction terms between (1) information acquisition and income and (2) information acquisition and education. All research hypotheses and questions were

tested with a cross-sectional analysis of Wave 2, and then with a lagged analysis examining the effect of independent and moderating variables at Wave 2 on stomach cancer knowledge at Wave 3. In the lagged analysis, stomach cancer knowledge at Wave 2 was controlled. Controlling for the dependent variable at a prior wave illuminates the effect of information acquisition on knowledge changing over time. As a theoretical idea of this study is based on the knowledge gap, the study attempts to identify the time trend of the knowledge gap.

To reduce multi-collinearity in the interaction terms, the main effect variables (information acquisition, income, and education) were z-standardized before assessing the moderating effects of income and education. The stomach cancer knowledge variables at Wave 2 and Wave 3 were transformed to log forms after a test of normality. For zero-order correlation coefficients between main variables and stomach cancer knowledge, see Table 2.

Table 2. Correlation Coefficients between Key Variables and Stomach Cancer Knowledge

| | Stomach cancer knowledge | |
|-----------------------------------|--------------------------|---------|
| | Wave 2 | Wave 3 |
| Block 1: Control variables | | |
| Age | .082* | .024 |
| Gender (male=0, female=1) | -.041 | .051 |
| Marital status | -.023 | .016 |
| Employment status | .118** | -.078* |
| Doctor visit | -.125** | -.088* |
| Personal cancer history | .002 | -.021 |
| Family cancer history | -.156*** | -.122** |
| Stomach cancer knowledge (W2) | – | .392*** |
| Block 2 | | |
| Information acquisition (W2) | -.093* | -.116** |
| <i>N</i> | 582 | 582 |

Notes: * $p < .05$; ** $p < .01$; *** $p < .001$.

RESULT

1. Cross-sectional Analysis

Cross-sectional analysis of Wave 2 was conducted before testing a lagged analysis to examine how variables at Wave 2 are involved in the research model at a baseline. This way, one can compare baseline with lagged analysis and observe a temporal change in the level of knowledge, enabling an examination of the knowledge gap. In the cross-sectional analysis of data at Wave 2, main effect of the independent variable, information acquisition, and moderation effects of income and education were tested. First, H1 and H2, which state that information acquisition (seeking and scanning) increases stomach cancer knowledge, were not supported (see Table 3A). The moderation effects of income and education on the relationship between information acquisition and knowledge were not significant (see also Table 3A). The outcome of the interaction terms rejects H3-1 through H3-4 that drew an assumption that SES will moderate the relationship between information acquisition and stomach cancer knowledge. As the moderation effects of income and education were not identified, H4 (H4-1 through H4-4) and H5 (H5-1 through H5-4) are consequentially rejected. Although H4 and H5 speculate that SES is positively related to

reflective integration and social capital respectively, which in turn moderates the relationship between information acquisition and stomach cancer knowledge, the insignificant moderation effects of SES did not verify the assumptions. However, sole moderation effects of reflective integration and social capital are worth to be analyzed, and it will be discussed in the additional analysis section.

Besides hypothesis testing, main effects of control variables in the three models suggest that what factors are associated with the relationship between information acquisition and knowledge. Gender was negatively related to the relationship, implying that male populations are more likely than females to engage in information acquisition, which leads to knowledge obtainment. Also, employment status, doctor visit, and family cancer history were negatively associated with the relationship.

Table 3A. Testing the Effects of Information Acquisition, Income, and Education at Wave 2: Cross-sectional Analysis

| | Model 1: Main Effect | Model 2: Income × Info.acq. | Model 3: Education × Info.acq. |
|--------------------------------|-------------------------|--------------------------------------|---|
| <i>Step 1</i> | | | |
| Age | .081 | .081 | .081 |
| Gender (male=0, female =1) | -.121** | -.121** | -.121** |
| Marital status | -.058 | -.058 | -.058 |
| Employment status | -.159** | -.159** | -.159** |
| Doctor visit | -.139** | -.139** | -.139** |
| Personal cancer history | .001 | .001 | .001 |
| Family cancer history | -.158*** | -.158*** | -.158*** |
| Incremental R ² (%) | 7.4*** | – | – |
| <i>Step 2</i> | | | |
| Information acquisition | -.068 | -.067 | -.069 |
| Incremental R ² (%) | .4 | – | – |
| <i>Step 3</i> | | | |
| Info.acq. × Income | – | .060 | – |
| Info.acq. × Education | – | – | .045 |
| Incremental R ² (%) | – | .3 | .2 |
| Total R ² (%) | 7.8 | 8.1 | 8.0 |
| <i>N</i> | 582 | 582 | 582 |

Notes: * $p < .05$; ** $p < .01$; *** $p < .001$. Displayed values are weighted standardized regression coefficients and explained variances.

2. Lagged Analysis

The present study also conducted a lagged analysis by examining how information acquisition and its interactions with income and education influence stomach cancer knowledge at a later wave (Wave 3). To accurately identify the effects, prior round of knowledge was controlled. According to the results, H1 and H2 were rejected, as main effects of information acquisition on knowledge across the models were not identified (see Table 3B). In addition, moderation effects of income and education were also not significant. As such, H3 (H3-1 through H3-4) is rejected. Accordingly, H4 (H4-1 through H4-4), and H5 (H5-1 through H5-4), which suppose that reflective integration and social capital influenced by SES would moderate the relationship between information acquisition and stomach cancer knowledge are rejected.

Regarding control variables, it is discovered that stomach cancer knowledge at Wave 2 is strongly related to stomach cancer knowledge at Wave 3. By controlling the variable at a prior round, this study implemented a more rigorous assessment of the data. The effects of other control variables were not substantial.

Table 3B. Testing the Effects of Information Acquisition, Income, and Education at Wave 2 on Stomach Cancer Knowledge at Wave 3: Lagged Analysis

| | Model 1: Main Effect | Model 2: Income × Info.acq. | Model 3: Education × Info.acq. |
|--------------------------------------|----------------------------|--------------------------------------|---|
| <i>Step 1</i> | | | |
| Age | .002 | .002 | .002 |
| Gender (male=0, female =1) | .068 | .068 | .068 |
| Marital status | .031 | .031 | .031 |
| Employment status | .000 | .000 | .000 |
| Doctor visit | -.036 | -.036 | -.036 |
| Personal cancer history | -.026 | -.026 | -.026 |
| Family cancer history | -.061 | -.061 | -.061 |
| Stomach cancer knowledge (Wave 2) | .381*** | .381*** | .381*** |
| Incremental R ² (%) | 16.5*** | – | – |
| <i>Step 2</i> | | | |
| Information acquisition | -.074 | -.069 | -.079 |
| Incremental R ² (%) | .5 | – | – |
| <i>Step 3</i> | | | |
| Info.acq. × Income | – | -.025 | – |
| Info.acq. × Education | – | – | -.044 |
| Incremental R ² (%) | – | .1 | .2 |
| Total R ² (%) | 17.0 | 17.1 | 17.2 |
| <i>N</i> | 582 | 582 | 582 |

Notes: * $p < .05$; ** $p < .01$; *** $p < .001$. Displayed values are weighted standardized regression coefficients and explained variances.

3. Additional Analysis

Since hypotheses of the research were not supported by the cross-sectional and lagged analyses, this study attempted to incorporate different approaches to the data by modifying the original research model. First, moderation effects of reflective integration and social capital on the relationship between information acquisition and stomach cancer knowledge were tested. Next, information acquisition variable was divided into source-specific variables (print media, TV, internet, and interpersonal relationship) to see whether main effects of those variables and moderation effects of income and education are observed when the independent variable is specified.

3.1 Moderation Effects of Reflective Integration and Social Capital: Cross-sectional and Lagged Analysis

Without examining a stepwise moderation effect of SES, reflective integration, and social capital, this study investigated the sole effects of reflective integration and social capital as moderators by employing OLS regression analysis. Even though the theoretical foundation of the study stands on the idea that individuals' income and education are strongly associated with their cognitive and social factors, which conjointly moderate

the relationship between information acquisition and knowledge, the findings did not accord with the predictions. Notwithstanding the results, moderation effects of reflective integration and social capital need to be examined in an attempt to advance the theory in the stomach cancer context. According to the cross-sectional analysis of Wave 2, no significant effects were found in both independent variable and moderators across the models (see Table 4A). Among control variables, gender, employment status, doctor visit, and family cancer history were negatively associated with the models.

This study also conducted a lagged analysis to see how information acquisition, reflective integration, and social capital at Wave 2 are associated with stomach cancer knowledge at Wave 3. In a similar vein with the original hypothesis testing in the lagged analysis, knowledge at Wave 2 was controlled. Information acquisition was found insignificant in the main effect as well as in the interaction models (see Table 4B). The moderation effects of reflective integration and social capital were not significant. Among control variables, only stomach cancer knowledge at a prior round was significant.

Table 4A. Testing the Effects of Information Acquisition, Reflective Integration, and Social Capital at Wave 2: Cross-sectional Analysis

| | Model 1: Main Effect | Model 2: Reflective Int. × Info.acq. | Model 3: Social Capital × Info.acq. |
|--------------------------------|-------------------------|--|---|
| <i>Step 1</i> | | | |
| Age | .081 | .081 | .081 |
| Gender (male=0, female =1) | -.121** | -.121** | -.121** |
| Marital status | -.058 | -.058 | -.058 |
| Employment status | -.159** | -.159** | -.159** |
| Doctor visit | -.139** | -.139** | -.139** |
| Personal cancer history | .001 | .001 | .001 |
| Family cancer history | -.158*** | -.158*** | -.158*** |
| Incremental R ² (%) | 7.4*** | – | – |
| <i>Step 2</i> | | | |
| Information acquisition | -.068 | -.027 | .003 |
| Incremental R ² (%) | .4 | – | – |
| <i>Step 3</i> | | | |
| Info.acq. × Reflective Int. | – | .029 | – |
| Info.acq. × Social Capital | – | – | .021 |
| Incremental R ² (%) | – | .1 | .0 |
| Total R ² (%) | 7.8 | 7.9 | 7.8 |
| N | 582 | 582 | 582 |

Notes: * $p < .05$; ** $p < .01$; *** $p < .001$. Displayed values are weighted standardized regression coefficients and explained variances.

Table 4B. Testing the Effects of Information Acquisition, Reflective Integration, and Social Capital at Wave 2 on Stomach Cancer Knowledge at Wave 3: Lagged Analysis

| | Model 1: Main Effect | Model 2: Reflective Int. × Info.acq. | Model 3: Social Capital × Info.acq. |
|--------------------------------------|----------------------------|--|---|
| <i>Step 1</i> | | | |
| Age | .002 | .002 | .002 |
| Gender (male=0, female =1) | .068 | .068 | .068 |
| Marital status | .031 | .031 | .031 |
| Employment status | .000 | .000 | .000 |
| Doctor visit | -.036 | -.036 | -.036 |
| Personal cancer history | -.026 | -.026 | -.026 |
| Family cancer history | -.061 | -.061 | -.061 |
| Stomach cancer knowledge (Wave 2) | .381*** | .381*** | .381*** |
| Incremental R ² (%) | 16.5*** | – | – |
| <i>Step 2</i> | | | |
| Information acquisition | -.074 | .028 | -.065 |
| Incremental R ² (%) | .5 | – | – |
| <i>Step 3</i> | | | |
| Info.acq. × Reflective Int. | – | .053 | – |
| Info.acq. × Social Capital | – | – | -.027 |
| Incremental R ² (%) | – | .2 | .1 |
| Total R ² (%) | 17.0 | 17.2 | 17.1 |
| <i>N</i> | 582 | 582 | 582 |

Notes: * $p < .05$; ** $p < .01$; *** $p < .001$. Displayed values are weighted standardized regression coefficients and explained variances.

3.2 Testing Effects of Source-specific Information Acquisition: Cross-sectional and Lagged Analysis

Measurement

The information acquisition measures are sorted by the sources. As seeking and scanning were measured through nine different sources (newspapers, magazines, television news, health-related television programs, online news, health-specialized internet websites, social network sites or online communities, family and friends, and healthcare professionals), seeking and scanning were first averaged in each source. Again, seeking and scanning measures have been combined into a single variable due to a multicollinearity issue. The nine source variables were then grouped into four different kinds: print media, TV, Internet, and interpersonal source. For print media variable, items of newspaper and magazine use were averaged. Similarly, measures on television news and health-related television program consumption were averaged for the TV variable. Also, items regarding the use of online news, health-specialized Internet websites, social network sites, and online communities were averaged to create the Internet variable. Last, family and friends measure and healthcare professionals measure were averaged for the interpersonal source variable. The effects of four variables on stomach cancer knowledge were analyzed with an OLS regression; both cross-sectional and lagged analyses were examined.

Table 5. Descriptive Statistics of Source-specific Variables

| | Wave 2 (n=813) | Wave 3 (n=582) |
|-----------------------|-----------------------|-----------------------|
| | M (SD) | M (SD) |
| Print media | .79 (1.06) | .82 (1.10) |
| TV | 2.03 (1.56) | 2.24 (1.63) |
| Internet | 1.27 (1.36) | 1.36 (1.42) |
| Interpersonal sources | 1.36 (1.31) | 1.42 (1.39) |

Result

As for Pearson’s correlations, age (only in Wave 2), employment status, doctor visit, family cancer history, and stomach cancer knowledge (in the lagged analysis) were significant control variables in the models (see Table 6A). In the baseline analysis, only TV information acquisition was strongly and negatively correlated with stomach cancer knowledge. In the lagged analysis, all of the source-specific information acquisition variables were significantly and negatively related to knowledge at a later wave. The results of the regression analyses are reported below.

Print Media

First, main effect of print media information acquisition was not significant in the interaction terms of Wave 2 cross-sectional analysis (see

Table 6B). Also, moderation effects of income and education were not significant. Among control variables, gender, employment status, doctor visit, and family cancer history were found significant in the baseline. In the lagged analysis, print media information acquisition was significantly, but negatively associated with knowledge at Wave 3 ($\beta = -.088, p < .05$). However, no major findings on interaction terms were identified. Only stomach cancer knowledge at Wave 2 was a significant control variable.

TV

In the cross-sectional analysis of Wave 2, TV information acquisition showed a strong negative relationship with knowledge ($\beta = -.086, p < .05$), but moderation effects of income and education were not significant in the models. According to the result of a lagged analysis, main effects of TV information acquisition and moderation effects of income and education were not found across the models.

Internet

The main effects of Internet information acquisition were not significant in both cross-sectional and lagged analyses. Also, the moderation effects of income and education were not significant in both cross-sectional and lagged analyses.

Interpersonal Source

The main effects of interpersonal information acquisition and the moderation effects of income and education in the interaction terms were not significant in both cross-sectional and lagged analyses. Since all of the source-specific information acquisition variables were negatively associated with knowledge, contrary to the original speculation, this study elaborates on the limitations of the study in the discussion section.

Table 6A. Correlation Coefficients between Key Variables (source-specific independent variables) and Stomach Cancer Knowledge

| | Stomach cancer knowledge | |
|-----------------------------------|--------------------------|---------|
| | Wave 2 | Wave 3 |
| Block 1: Control variables | | |
| Age | .082* | .024 |
| Gender (male=0, female=1) | -.041 | .051 |
| Marital status | -.023 | .016 |
| Employment status | .118** | -.078* |
| Doctor visit | -.125** | -.088* |
| Personal cancer history | .002 | -.021 |
| Family cancer history | -.156*** | -.122** |
| Stomach cancer knowledge (W2) | – | .392*** |
| Block 2 | | |
| Print media | -.049 | -.114* |
| TV | -.094* | -.104** |
| Internet | -.033 | -.093* |
| Interpersonal sources | -.070 | -.105** |
| <i>N</i> | 582 | 582 |

Notes: * $p < .05$; ** $p < .01$; *** $p < .001$.

Table 6B. Hierarchical Multiple Regression Predicting Stomach Cancer Knowledge

| | Stomach cancer knowledge | |
|-----------------------------------|--------------------------|---------|
| | Wave 2 | Wave 3 |
| Block 1: Control variables | | |
| Age | .081 | .002 |
| Gender (male=0, female=1) | -.121** | .068 |
| Marital status | -.058 | .031 |
| Employment status | -.159** | .000 |
| Doctor visit | -.139** | -.036 |
| Personal cancer history | .001 | -.026 |
| Family cancer history | -.158*** | -.061 |
| Stomach cancer knowledge (W2) | – | .381*** |
| Block 2 | | |
| Print media | -.012 | -.088* |
| TV | -.086* | -.064 |
| Internet | -.069 | -.047 |
| Interpersonal sources | -.046 | -.068 |
| <i>N</i> | 582 | 582 |

Notes: * $p < .05$; ** $p < .01$; *** $p < .001$. Displayed values are weighted standardized regression coefficients.

DISCUSSION

This study examined how information acquisition behaviors lead to stomach cancer knowledge with the moderation effects of income, education, reflective integration, and social capital. Information acquisition at Wave 2 did not predict knowledge at Wave 2 and 3. In addition, even though the study initially postulated that the knowledge gap would occur among populations depending on their SES, reflective integration, and social capital, none of the interaction terms were supported in both cross-sectional and lagged analyses. Alternatively, as the original hypotheses were not supported, additional analyses were conducted to observe whether the moderation effects of cognitive and social factors (without the influence of SES) are verified. The effects were not identified in both cross-sectional and lagged analyses. Last, this study attempted to investigate whether the hypotheses are supported if the independent variable is specified by the information sources. The differentiation of media sources is also mentioned in the knowledge gap hypothesis (Tichenor et al., 1970), describing that the gap in knowledge is more observable in the print media, as high SES populations are prone to consume more printed materials than the counterparts. Moreover, the interpersonal source may also affect the model in a way that individuals may broaden the scope of knowledge obtainment

through conversations about relevant topics. By sharing information about stomach cancer in their interpersonal interactions, people may acquire knowledge, and one's cognitive activities and social networks can influence the process of knowledge obtainment. However, the findings were not consistent with the speculation that SES, reflective integration, and social capital would moderate the relationship between information acquisition and knowledge when information acquisition is specified by the media sources. Splitting information acquisition may have not been appropriate in this data as Cronbach alpha of the four source variables was .89. This paper addresses several limitations of the study to fathom the analysis results and provide guidance for future research.

Study Limitations: Population and Survey

Since most of the findings were inconsistent with the theoretical reasoning underpinned by the study, several limitation points should be discussed. As the survey was conducted online, it is based on non-probability sampling; the sample is not nationally representative. Although the survey company implemented a quota sampling that captures population characteristics such as age and gender ratio, the sample is still apart from the Korean population characteristics, as the participant rate of those aged over 60 was low. The limitation on sampling is largely due to the nature of online survey, characterizing a low rate of Internet use in the older populations.

Thus, future research should test the model of the study by employing a random sampling that reflects Korean population characteristics.

Study Limitations: Measurement

Limitations on measurement should also be noted. First, the measure of stomach cancer knowledge does not include multi-dimensions of knowledge. Previous studies have identified the multi-dimensional nature of learning, and the attempt broadened the understanding of human capacity of utilizing information to achieve knowledge (Eveland, Marton, & Seo, 2004; Findahl & Höijer, 1985; Graber, 1988; Graber, 2001; Jensen, 2011; Jonassen, Beissner, & Yacci, 1993) Eveland et al. (2004) measured structural knowledge (e.g. density or number of interconnections within a memory system) moving beyond the recall or recognition of simple contents. Jensen (2011) also measured knowledge by capturing two dimensions: recognition (correctly remembering acquired information) and comprehension (applying acquired information to new situations). The present study only measured factual information of stomach cancer; therefore, it could not identify whether correct answers of the knowledge measure represent pure knowledge that is developed in one's cognitive activities (e.g. comprehension). Moreover, as the mean of knowledge in the data was relatively high (5.68 in Wave 2, 7.20 in Wave3), there were no variations in the variable. The analysis results would have been considerably affected by

the skewed dependent variable. Refining the measure by including multiple dimensions of knowledge would improve the general assessment of the model.

Next, as mentioned earlier, this study combined the seeking and scanning measures into *information acquisition* because correlation of the two measures was high enough to consider them as a single variable (.87 at Wave 2; .85 at Wave 3). However, differentiation of information acquisition modes has been empirically proven by a number of studies (Kelly et al., 2009, 2010; Niederdeppe et al., 2007; Shim et al., 2006). The aforementioned studies have conceptualized information seeking and scanning in various contexts such as cancer screening and diet, but admittedly, the concepts of seeking and scanning have not been fully validated in Korea yet. As this study employed seeking and scanning measures developed in the U.S., they need to be developed and refined in the Korean context to promote the understanding of how different information acquisition modes affect health knowledge and behaviors. Further, the information acquisition variable itself did not show much variation in both of the waves (1.35 at Wave 2; 1.38 at Wave 3). The positively skewed independent variable would have markedly affected the data results. This study posits that little variations in both independent and dependent variables largely contributed to having negative directions in some of the main effects, especially in the analysis of source-specific

information acquisition. For that reason, more elaborate measurement of variables is necessary in future studies.

Third, the reflective integration measure is slightly limited in that it does not differentiate sub-dimensions of the concept. The measure in this study included both intrapersonal and interpersonal cognitive activities without dividing those two. Eveland (2004) explained that one's reasoning process can be influenced by his or her interpersonal contacts. Engaging in conversation with people within their social networks, individuals may have an opportunity to facilitate their thoughts and reasoning processes based on information acquired from the interpersonal contacts. Moreover, intrapersonally processed information can further be processed during and after the conversations with others. Even though intrapersonal reasoning process and interpersonal communication are complementary, not alternative, differentiating the dimensions of the reflective integration measure could better account for the effects of cognitive factors on the knowledge gap.

Last, as several key variables (knowledge, reflective integration, and social capital) were not measured at Wave 1, this study excluded the analysis of the data of Wave 1. In result, identifying a time trend in knowledge was restrained. In spite of the attempt to analyze the data in multiple steps through a lagged analysis, using two-wave data prevented this study from identifying a temporal trend of fluctuations in stomach cancer knowledge. As the analysis of the current study depends on the secondary

data, employing a time-series data suited for the model of the study was limited. As such, future studies need to incorporate a time-series design to better examine the gap in knowledge.

CONCLUSION

The burden of cancer continues to increase over the past century. As the pressure of cancer incidence and deaths expands its scope to global level, it has been increasingly important to seek for a collective action to reduce the worldwide cancer burden. Despite the fact that cancer is considered preventable and treatable disease if accompanied with healthy diet, cancer screening, and exercise, cancer has been a leading cause of death; world populations are not free of the disease, as they adopt more cancer-associated behaviors (Jemal et al., 2001). Stomach cancer is no exception in that regard. Although stomach cancer incidence rates tend to decrease in most parts of the world due to the advancement of food preservation techniques and improvement of hygiene and dietary intake (Jemal et al., 2011; Siegel, Miller, & Jemal, 2016), it is unequivocally more common in Eastern Asia, East Europe, and South America (Jemal et al., 2011; Siegel, Miller, & Jemal, 2016). According to recent cancer statistics in Korea, stomach cancer was

the second most prevalent cancer case following thyroid cancer. However, it was not ranked in the ten most prevalent cancer cases in the United States and England (National Cancer Information Center, 2015). Gender differences were also identified, as stomach cancer is the most prevalent cancer case in Korean males, and the fourth common in females (National Cancer Information Center, 2015). In this sense, stomach cancer should be discussed beyond the clinical context; given the striking prevalence of stomach cancer in South Korea, social implications that the disease entails should be unraveled.

In the face of health disparities, where the onset of disease and death rates are unequally distributed among populations, the role of health communication should be manifested in the effort of reducing such phenomenon. As stomach cancer can be prevented if one maintains healthy diet, regular gastroscopy, and exercise, distributing proper health messages to people to promote health behaviors may result in the reduction of the cancer burden. As such, increasing knowledge of stomach cancer can be a key communicative act to decrease issues related to health disparities. In an effort to reveal a phenomenon of the knowledge gap in the context of stomach cancer in Korea, this study highlights a way of refining a communication theory in the health domain. Although this study is not free of limitations, it paves a way for future studies to elaborate on the model and advance the original theory in the realm of public health research.

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국문초록

위암 상황에서의 지식격차가설

: 이론의 인지, 사회적 매커니즘의 고찰을 중심으로

암은 전 세계적으로 한 해 1억 4천만 건의 발병과 8백만 건의 사망 원인이 되며 현대사회가 직면한 가장 위협적인 질병으로 여겨져 왔다. 암 이환율은 지난 세기에 걸쳐 꾸준히 증가해 왔으며, 전문가들은 향후 20년의 발병률도 70% 이상 늘어날 것으로 전망한다. 특히, 사회 경제적 수준 등 개인적 요소에 의해 발생하는 건강 불평등, 혹은 건강 격차는 거시적인 측면에서 사회 통합의 큰 장애물로 작용해 왔다. 이처럼, 암의 부담은 더 이상 해당 개인에게만 국한되지 않으며, 사회문제의 일환으로 공동체적 노력을 통해 해결해 나가야 한다. 그렇기 때문에, 질병을 포함한 모든 건강 문제는 임상적 수준에서의 논의를 뛰어넘어, 사회 구조 내에서 특정 질병이 갖는 사회 문화적 특수성, 제도적 현황, 그리고 그를 둘러싼 건강 담론 과정의 탐색을 모두 고려한 학제적 접근이 강조되어야 한다. 특히, 암은 조기 검진, 건강한 식습관, 운동, 금연 등 생활 습관의 개선으로 예방되고 치료될 수 있다는 점을 미루어, 병을 예방하기 위한 개인의 노력을 촉진시킬 사회적 노력이 요구된다. 보건 커뮤니케이션 학자들은 대중이 마주하는 수많은 건강 정보들이 그들의 건강 결정에 영향을 미치는 과정에 집중하며, 건강 지식, 태도, 믿음, 오해 등의 커뮤니케이션 요소들을 다양한 건강 맥락에서 연구해 왔다.

본 연구는 암이라는 사회문제를 해결하기 위한 커뮤니케이션학적 시도로서, 한국에서 높은 발병률을 보이는 위암에 초점을 맞추어 이에

대한 커뮤니케이션 적 해결책을 제시하고자 하였다. 한국에서의 위암은 모든 암 가운데 남성에서 1위, 여성에서 4위 발병률을 보이는 사회적 위협이 되어왔다. 하지만, 미국이나 유럽 국가들에서 위암은 10위안에 들지 않는 위험부담이 매우 적은 암에 분류된다는 점을 생각해 본다면, 위암은 분명 한국에서 특수성을 띄고 있다. 그렇다면 위암의 높은 발병률에 기여하는 요소에는 어떤 것들이 있는가? 위암 맥락을 구성하는 커뮤니케이션적 요소들은 우리 사회 건강 격차 현상에 어떤 의미를 가지는가? 본 연구는 이에 대한 해답의 가능성을 제공하기 위해 위암 지식과 그에 영향을 미치는 요인들을 관찰하였다. 구체적으로, 위암 맥락에 지식 격차 이론을 적용하여 경험적으로 테스트하고, 기존 이론에 인지, 사회적 매커니즘을 통합한 모델을 제시하며 추후 건강 격차 연구에서 이론을 폭넓게 적용시킬 수 있는 발판을 만들하고자 하였다.

2014년 2월부터 8월까지 세 달의 간격마다 온라인으로 수집된 종단 패널 자료를 바탕으로 분석을 실시했다 (N = 1,130; N = 813; N = 582). 위암에 대한 경각심과 주의가 높을 것으로 판단된 40세 이상의 성인들이 연구에 참여하였다. 최소 자승 회귀분석 (OLS regression)을 통해 두 번째 시점의 횡단 분석과, 두 번째와 세 번째 시점 차를 둔 분석 (lagged analysis)을 실시하여 시간 차에 따라 위암 지식이 격차 현상을 보이는지 살펴보았다. 최초 수집된 시점의 자료는 위암 지식 등의 주요 변수들이 측정되지 않았기 때문에 분석에서 제외되었다. 분석 결과에 따르면, 정보 획득 (information acquisition)과 위암 지식 간의 관계가 개인의 사회 경제적 지위, 통합적 사고 (reflective integration), 사회 자본 (social capital)에 의해 조절될 것이라는 연구의 가설들이 입증되지 않았다. 기존 연구 모델이 성립되지 않음에 따라, 두 가지의 추가적 분석이 시행되었다. 첫째로, 사회 경제적 지위가 통합적 사고와 사회 자본에 영향을 미치고, 통합적 사고와 사회 자본이 정보 획득과 위암 지식의 관계를 조절할 것임을 가정한 기존 모델에서 사회 경제적 지위를 제외한 분석을 수행했다. 그 결과, 통합적 사고와 사회 자본의 조절 효

과가 발견되지 않았다. 둘째, 정보 획득 변수를 네 가지 정보원으로 나누어, 변수가 각 정보원으로 구체화될 때 기존 가설들이 지지되는지 살펴보았다. 그 결과, 인쇄매체와 텔레비전이 위암 지식에 부적 영향을 미치는 주효과가 발견되었으며, 사회 경제적 지위에 의한 조절 효과는 확인되지 않았다.

연구는 기존 분석과 추가적 분석에서 가설들이 성립되지 않은 결과를 바탕으로 연구가 가지는 한계점들을 제시하고 추후 연구에서 보완되어야 할 점들을 논의하였다. 분석 결과는 우리 사회 위암 현상의 진단을 내리기에 다소 제한적 시각을 제공하였지만, 본 연구는 오래된 커뮤니케이션 이론인 지식 격차 가설을 건강 현상에 적용하여 인지, 사회적 매커니즘의 결합으로 이론을 정교화했다는 점에서 의미를 가진다. 또한, 연구는 보건학과 커뮤니케이션학의 통합적 시도가 건강 문제의 해결책을 제시하는 중요한 기준점이 될 수 있음을 시사한다. 본 연구의 표본 추출, 측정 방식 등을 보완한 추후 연구가 연구 모델을 다양한 건강 상황에 적용하여 검증해본다면, 대중의 건강 지식과 행동 개선을 통한 사회 내 건강 격차 감소를 가시화 할 제도의 구축에 기여할 것으로 기대된다.

주요어: 헬스 커뮤니케이션, 지식 격차 가설, 위암, 커뮤니케이션 이론, 건강 지식, 공중 보건

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