

An Analysis of the Relationship between Public Cancer Screenings and Media Coverage of Cancer in South Korea 2009-2017

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Abstract

With the increasing necessity of cancer screenings, this research intended to confirm the importance of online media's role in promoting public cancer screenings in South Korea where cancer screenings are conducted as a part of an organized, population-based program. Agenda-setting theory, which is significant in investigating the relationship between media and the public as well as in monitoring fluctuation of media coverage and people's health behavior, was used in order to analyze (a) the trends of public cancer screenings (the number of cancer screenings) and cancer coverage (the amount of cancer coverage), and (b) the relationship between media coverage and cancer screenings. Significant correlations were found both in general cancer issues and with the five main types of cancer issues: gastric, colorectal, liver, breast and cervical cancers. Furthermore, there was a notable difference according to the examinees' economic status; the correlations for the upper 50% of the examinees were stronger than for the lower 50%. The difference in the public's decisions regarding health behavior based on media indicates the importance of strategies tailored to individual economic conditions.

Keywords: Cancer Coverage, Cancer Screening, Agenda-Setting Theory, Information Accessibility

알기 쉬운 요약

이 연구는 왜 했을까? 그동안 미디어의 암 보도가 대중의 암 검진 실천에 영향을 미친다는 점은 많은 연구에서 다뤄왔지만 암 보도량과 암 검진자 수 간의 관계를 비교한 연구는 많지 않았다. 더불어 한국의 경우 일본, 영국, 독일과 같이 국민의 암 검진을 지원하고 장려하기에, 암 검진 실천에 미치는 미디어의 영향력을 확인하는 것은 국가 주요 보건사업의 효과적인 운영에 연관될 수 있다고 여겨진다.

새롭게 밝혀진 내용은? 2009년부터 2017년까지 9년 동안 암 보도량과 암 검진자 수의 추이를 검토한 결과, 두 경향 모두에서 지속적인 증가 양상이 나타났다. 더불어 미디어의 암 보도량 증가와 대중의 암 검진자 수 증가 간의 통계적 상관관계가 확인됐다. 특히 경제적 수준이 상위 50%인 사람들의 경우 하위 50%인 사람들보다 암 보도를 통해 암 검진 실천을 더 많이 하는 것으로 조사됐다.

앞으로 무엇을 해야 하나? 경제적 수준이 낮은 계층의 암 검진 실천을 높이기 위해서는 미디어의 지속적인 암 보도도 중요하지만, 정부 역시 전략적 차원에서 정책 목표에 담은 암 종류, 검진 대상자의 성별, 나이, 건강 정보 등에 대한 동기, 암에 대한 일반적 지식수준 등에 따라 맞춤형 캠페인을 추진해야 한다.

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I. Introduction

The primary cause of death in South Korea has been cancer since 1983 (Korean Ministry of Health and Welfare, 2020). About 23,200 people were newly diagnosed with cancer in 2018 and 79,000 people died because of cancer (26.5% of total deaths). Cancer screenings have become crucial to decrease the mortality rate by detecting cancer early (Mausner & Bahn, 1974). The WHO (2020) reported that about one-third of the population who are diagnosed with cancer can be completely cured if it is detected early, and it recommended organized, population-based screening programs in lieu of opportunistic programs.

In South Korea, the public healthcare system is universal and population-based, and cancer screenings, along with several other health services, have been conducted under the guidance of the government since 1998. It is mandatory for all residents of South Korea to have National Health Insurance, and it is possible to subscribe to privatized health care providers for additional coverage. All residents who subscribe to National Health Insurance and meet the criteria found in the guidelines for cancer screenings can get screened regularly, even if they do not have additional coverage. These screenings are provided to those who meet the criteria for free or at about a 90% discount, depending on the income bracket of the subscriber. Through this policy benefit, the survival rate over a 5-year period of gastric, colon/rectal, liver, and cervical cancers in South Korea was higher than in the U.S where screenings are conducted on an opportunistic basis. This can be seen in the 5-year period from 2010 to 2014, where the survival rates were as follows: gastric cancer (Korea: 68.9% / U.S.: 33.1%), colon cancer/rectal cancer (Korea: 71.8% / 71.1% / U.S.: 64.9% / 64.1%), liver cancer (Korea: 27.2% / U.S.: 17.4%), and cervical cancer (Korea: 77.3% / U.S.: 62.6%) (Allemani et al., 2018). The reason for these differences cannot be limited to the effects of government screening programs because the different population sizes, cultures and racial makeup of these two countries are also

contributing factors. However, it is worth noting that South Korean's survival rate has been steadily increasing since the implementation of the public cancer screening program.

While the results of this research were identified considering the specific circumstances in South Korea, the aim was not only to identify the relationship between cancer coverage and public cancer screenings, but also to demonstrate the importance of media's role in the implementation of public health programs where the government is constantly allocating a part of their budget to cancer control. The method of raising public awareness about the importance of cancer screenings that media uses has revealed media's impact on the public's cognitive and attitudinal changes regarding health issues (Leask, Hooker, & King, 2010; Schwitzer et al., 2005).

Specifically, in the fields of communication, agenda-setting theory has been utilized when explaining media effects on the public's cognition and attitude related to health issues through the concept of accessibility (Moon, 2011). Among the health issues in the agenda-setting studies reviewed, many of the issues were cancer issues (i.e. Dixon, Warne, Scully, Dobbinson, & Wakefield, 2014; Fortunato, 2014; Hurley, Riles, & Sangalang, 2014; Ogata Jones, Denham, & Springston, 2006; Tang & Park, 2017; Yanovitzky & Blitz, 2000), but there were no studies confirming the relationship between cancer screening behavior and cancer coverage. All studies were focused on analyzing the partial relationship between media and public agendas.

Although these previous studies in agenda-setting theory did not investigate the relationship between media health coverage and public health behavior, many other studies in the field of health communication have confirmed a close relationship between media health coverage and public health behavior (i.e. Brown & Potosky, 1990; Soumerai, Ross-Degnan, & Kahn, 1992; Yanovitzky & Blitz, 2000). Particularly, in cancer issues, media's role is important in promoting the necessity of cancer screenings which need to occur regularly in accordance with cycles specific to each

type of cancer (Guo & Vu, 2018; Yanovitzky & Blitz, 2000). For instance, it has been confirmed that coverage on a celebrity diagnosed with cancer has directly increased the rate of public screening for that specific type of cancer (Fink et al., 1978; Cram et al., 2003). Beyond these temporary effects, media can affect long-term trends of cancer prevention behavior (i.e. quitting smoking and getting mammograms) by placing general media attention on an issue over time (Stryker, Moriarty, & Jensen, 2008). Additionally, the underlying foundation of these studies is that the quantity of information in news media affects the number of people who will adopt a healthier lifestyle. In other words, higher frequency of information increases its accessibility, which, in turn, has an effect on behavior (Iyengar & Kinder, 1987, p.64). Therefore, this research analyzed cancer coverage in South Korea and the entire nation's cancer screening data for cancer examinations over 9 years, and it identified the correlation between media and the public through information accessibility.

II. Agenda-Setting Theory as the Underlying Mechanism of the Relationship between Cancer Coverage and Cancer Screenings

Of the mass communication theories, agenda-setting theory is one of the most studied (Bryant & Miron, 2004), and it has shown that the media has a strong influence on determining what the public thinks about (Weaver, 2007). The media effects in this theory are explained through the accessibility of information (Kim, Scheufele, & Shanahan, 2002). When media frequently reports on a particular issue more than other issues, the accessibility of information on that frequently mentioned issue increases, thereby making the public perceive that issue as highly important. This is the core of agenda-setting theory (McCombs & Valenzuela, 2020).

These accessibility-based media effects, or agenda-setting

effects, are explained through the concept of salience. This concept refers to media emphasizing only certain topics, since media reporting on all the information in the world would result in oversaturation of the news (Weaver, 2007), and is classified according to the level of agenda setting effects as issue in the first level and attributes in the second level. It follows that cognitive and attitudinal agenda-setting effects are created by transferring salience from media to public; cognitive effects as the first-level agenda-setting effects and attitudinal effects as the second-level agenda setting effects (McCombs & Valenzuela, 2020). Furthermore, by opening new theoretical possibilities of agenda setting theory beyond cognition and opinion, behavior has become regarded as one of the outcomes of agenda-setting effects (McCombs, Shaw, & Weaver, 2014).

This expansion of agenda setting effects scope through priming theory has allowed behavior to become examined as a third outcome in agenda setting theory (McCombs, 2010). Schank & Abelson (2013) found that priming directly influenced public behavior according to information's accessibility. Other agenda-setting research also identified that behavior has a significant correlation with second level of agenda-setting effects (attitude) based on the hierarchy of effects model, where cognition, attitude, and behavior as media effects are sequentially linked, making behavior agenda-setting effects come from attitude effects (Camaj, 2014; Moon, 2011). Therefore, this article conducted a study focused on the public's health behavior change impacted by second level of agenda-setting effects. However, the previous studies (i.e. Camaj, 2014; Moon, 2011) were usually focused on political action, not health action, so this research is expected to have implications not seen before.

Additionally, public health behavior, which is the dependent variable in this research, has been formed through constant media exposure. Through repetitive media coverage, the public can recognize the symptoms, test cycles, and appropriate treatment of diseases, especially in cases such as cancer where regular examinations are

required (Hornik et al., 2013). Users who can easily access cancer coverage, giving them a higher level of accessibility to cancer information. The higher level of information accessibility leads to users' periodic recollection of media that serves as a reminder to not forget cancer screenings and prompts users to undergo cancer screenings.

Agenda-setting research on health issues also has important implications in relation to the background of agenda-setting theory itself, cognitive utilitarian theory. This theory sees humans as problem solvers seeking useful information or skills to cope with surrounding difficulties (McGuire, 1974). People now accept media information for their survival and prosperity, resulting in the creation of media effects (Camaj, 2014). In agenda-setting theory, therefore, health issues can be considered directly related to users' survival motivation. Whether or not media effectively delivers information beneficial to the survival of members of the public can be confirmed by measuring the close relationship of health issues between media salience and public salience.

In order to identify the relationship between cancer coverage and public health behavior, specifically for prevention and early detection through cancer screenings, this research analyzed the trends of media and the public through the concept of accessibility in the context of agenda-setting. This is because analyzing based on accessibility can allow for a more effective investigation into the relationship between media and the public as well as for more effective monitoring of the fluctuation of media coverage and people's health behavior. Therefore, this research aimed to demonstrate the trends of public cancer screenings and cancer coverage (RQ1-1&1-2), and to confirm the relationship between media coverage and cancer screenings (RQ2).

RQ1-1. How did public cancer screenings (the number of cancer screenings in South Korea) trend over a 9-year period?

RQ1-2. How did cancer coverage (the amount of cancer coverage in South Korea) trend over a 9-year period?

RQ2. How did the amount of cancer coverage correlate to the number of cancer screenings over a 9-year period?

III. Methods

For analyzing the change of media and the public over time based on the concept of accessibility, the data of cancer coverage can be analyzed as media salience about cancer issues and the public data of cancer screenings can be analyzed as public salience. Furthermore, the public and media data collected was in general cancer issues and issues related to specific types of cancer. This distinction between general cancer issues and specific types of cancer issues was made because general cancer issues can be used to find general trends whereas specific cancer issues take into account the differences in methods of cancer screenings and characteristics of screening subjects. Therefore, this research analyzed media and public data and extracted results through two means of analysis: (a) primary analysis of media and the public for general cancer issues, and (b) secondary analysis of media and the public for specific types of cancer issues. Simple linear regression and Pearson's correlation analysis were utilized as the statistical method for confirming the results.

1. Collecting Cancer Coverage Data

The process of collecting and coding media data was taken from a previous study that analyzed cancer coverage (Cohen, Caburnay, Luke, Rodgers, & Cameron, 2008). The physical data collection in this research, however, utilized the Selenium package in Python to find all online news articles in 5 major South Korean newspapers¹⁾ (i.e. Kyunghyang, Dong-A, Chosun, JoongAng, and Hankyoreh) related to the keyword "health + cancer". Researchers selected these news agencies by considering the amount of articles on cancer published online and the quality of articles on cancer through the preliminary survey. Article

collection was conducted from June 1 to 22 in 2019. As a result, 18,533 news articles published online from January 1, 2009 to December 31, 2017²⁾ were collected. Researchers reviewed the articles found and excluded repeats of articles already published, articles completely unrelated to cancer (general cancer and the five specific types of cancer used in this study), personnel articles from institutions, obituary articles, and advertising articles sponsored by companies. After completing this review, 16,813 articles remained. In order to conduct content analysis for media salience, these articles were then classified using the Python program according to the type of cancer.

2. Collecting Cancer Screening Data

This research was conducted in South Korea where cancer screenings are conducted under the guidance of the government. As of 2018, the government subsidized five types of cancer screenings: gastric, colon, liver, breast, and cervical cancer (see Table 1). All subscribers of National

Health Insurance who meet the criteria found in the guidelines for cancer screenings have access to regular screenings. Therefore, the specific conditions in South Korea are effective when observing agenda-setting effects; starting from the government’s health policy agenda, that is then transferred to media agenda, and finally, public agenda based on the population data of cancer screenings.

The public data regarding cancer screenings was collected and grouped into two different economic classes because this research was subject to the South Korean public healthcare system wherein governmental agencies administer national cancer screenings in two tiers: public health centers (PHC) which cover the lower 50% of national health insurance subscribers and people who receive medical benefits from the government, and NHIS which handles the upper 50% of national health insurance subscribers. Data on PHC screenings was only available from Statistics Korea (KOSTAT), therefore data on the lower 50% was collected from KOSTAT and data on the upper 50% was collected from NHIS. All members of the public who meet the guidelines can receive cancer screenings at

Table 1. The South Korean Government Guideline of Cancer screening as of 2017

Type of cancer	Age	Frequency	Modalities
Gastric cancer	> 40	Every 2 years	Endoscopy or Gastrography
Colon cancer	> 50	Every year	Fecal occult blood testing; if abnormal finding - colonoscopy
Liver cancer	> 40-year-old subjects with liver cirrhosis, hepatitis B Ag (+), or hepatitis C Ab (+)	Every 6 months	Liver ultrasound and α-fetoprotein
Breast cancer	> 40	Every 2 years	Breast physical examination and mammography
Cervical cancer	> 20 years old or sexually active female	Every 2 years	Pap smear optional - HPV test

Source: Korean Ministry of Health and Welfare (2020)

- 1) The articles in Dong-A, Hankyoreh, and Kyunghyang could be found on Naver News so they were crawled from Naver News. However, the articles in Chosun and JoongAng, could not be found on Naver News so they were crawled from each news agency’s health section webpage.
- 2) The South Korea Government implemented a national ‘Health Screening Standard (건강검진 실시기준)’ on January 19, 2009, in order to implement and promote various health screening programs including cancer screenings. Therefore, because the government was more actively promoting cancer screenings as of 2009, that year was selected as the starting year for the data collection in this study. Furthermore, the ending year for data collection was selected as 2017 because of big news events such as the PyeongChang Olympics and the North Korea - United States summit in 2018 reducing the amount of cancer coverage that year.

the hospital for free in the former case or for 10% of the total costs in the latter case. For this reason, this research can also identify the media effects of cancer prevention based on difference in economic status.

IV. Results

1. Trends of Media Cancer Coverage (RQ1-1)

As a result of analyzing the trend of the total amount of cancer coverage through simple linear regression (IV=year, DV=number of articles), a gradual increase was shown through 2017 ($B=146.88$, $R^2=.92$, $p<.001$). Furthermore, the amount of coverage according to the type of cancer showed patterns of increase. When analyzing the

trends of each graph using simple linear regression, the incline (B) of breast cancer showed the largest increase ($B=20.35$, $R^2=.63$, $p=.011$), followed by colon ($B=17.92$, $R^2=.83$, $p=.001$), cervical ($B=12.73$, $R^2=.73$, $p=.004$), liver ($B=10.82$, $R^2=.87$, $p<.001$), and gastric ($B=10.25$, $R^2=.88$, $p<.001$). The most reported type of cancer was also breast cancer, followed by colon, gastric, cervical and liver cancer (Table 2).

Also shown in Table 2, the ranking of news agencies from the highest amount of cancer coverage to the lowest were found to be Kyunghyang, JoongAng, Chosun, Dong-A, and Hankyoreh. Chosun news agency showed the most correlated trend for the total number of articles ($r=.92$, $p=.001$), followed by Kyunghyang ($r=.81$, $p=.008$), Dong-A ($r=.73$, $p=.026$), and Joongang ($r=.72$, $p=.027$) agencies. Hankyoreh did not show significant results.

Table 2. Data of Cancer Coverage Numbers

	2009	2010	2011	2012	2013	2014	2015	2016	2017	Total
Total (Number of articles)	1,817	1,336	1,709	1,569	1,915	2,126	2,319	2,200	2,375	16,813
	$R^2=.92$, $B=146.88$, $S.E=16.00$, $t=9.18$, $p<.001$									
Type of Cancer										
Gastric Cancer	150	177	165	174	217	205	210	227	236	1,761
	$R^2=.88$, $B=10.25$, $S.E=1.46$, $t=7.02$, $p<.001$									
Colon Cancer	169	207	269	222	257	283	325	317	312	2,361
	$R^2=.83$, $B=17.92$, $S.E=3.09$, $t=5.79$, $p=.001$									
Liver Cancer	103	137	155	161	163	180	205	191	195	1,490
	$R^2=.86$, $B=10.82$, $S.E=1.64$, $t=6.61$, $p<.001$									
Breast Cancer	231	251	258	242	370	353	401	403	323	2,832
	$R^2=.63$, $B=20.35$, $S.E=5.89$, $t=3.46$, $p=.011$									
Cervical Cancer	126	150	156	124	164	213	211	237	202	1,583
	$R^2=.73$, $B=12.73$, $S.E=2.96$, $t=4.30$, $p=.004$									
Type of News Agency										
Dong-A	257	265	359	311	324	276	444	333	401	2,970
	$r=.73$, $p=.026$									
Chosun	224	332	385	350	418	452	452	554	591	3,758
	$r=.92$, $p=.001$									
JoongAng	298	353	407	397	404	388	425	538	733	3,943
	$r=.72$, $p=.027$									
Hankyoreh	167	161	194	202	196	206	216	196	157	1,695
	$r=.81$, $p=.008$									
Kyunghyang	318	225	364	309	573	804	782	579	493	4,447
	$r=.37$, $p=.323$									

2. Trends of Public Cancer Screenings (RQ1–2)

The number and rate of cancer screenings reported every year by the South Korean government are shown in Table 3. Through analyzing the simple linear regression (IV=year, DV=number of screenings), the total number of screenings has steadily increased from 2009 to 2017 ($R^2=.97$, $B=1132.40$, $p<.001$). The number of screenings provided

by PHC and NHIS also showed a general increase (PHC: $R^2=.83$, $B=431.97$, $p=.001$, NHIS: $R^2=.99$, $B=700.43$, $p<.001$), but NHIS data showed a larger increase than PHC data.

The trends of cancer screenings according to the type of cancer were confirmed using graphs (Figure 1). When confirming the scale of incline (B) of each type of cancer screening (Table 4), the order of screenings based on the degree of incline from large to small is as follows: colon

Table 3. Data of Cancer Screenings Numbers and Rates

	2009	2010	2011	2012	2013	2014	2015	2016	2017
Total Number of screenings	12457	13305	15676	16695	17866	18006	18627	20674	22113
	$R^2=.97$, $B=1132.40$, $S.E=78.65$, $t=14.40$, $p<.001$								
PHC	6793 32.5%	7120 35.7%	8619 41.2%	8802 36.7%	9525 37.4%	9122 37.3%	8878 34.7%	9868 37.7%	10702 39.7%
	$R^2=.83$, $B=431.97$, $S.E=75.19$, $t=5.75$, $p=.001$								
NHIS	5964 45.3%	6185 47.8%	7057 50.1%	7893 39.4%	8341 43.5%	8884 45.8%	9749 48.3%	10806 49.2%	11411 50.4%
	$R^2=.99$, $B=700.43$, $S.E=27.78$, $t=25.21$, $p<.001$								

Figure 1. Trends of Numbers of Cancer Screenings

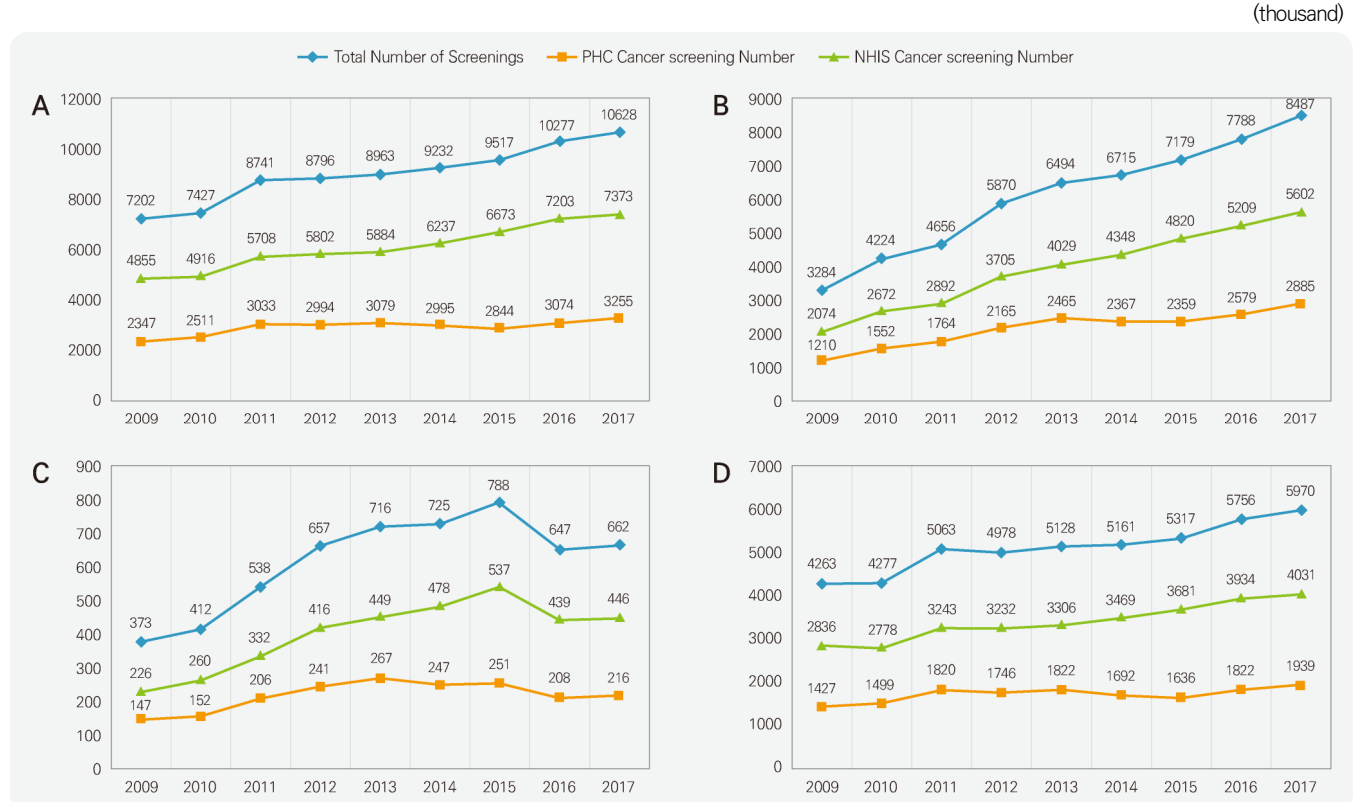
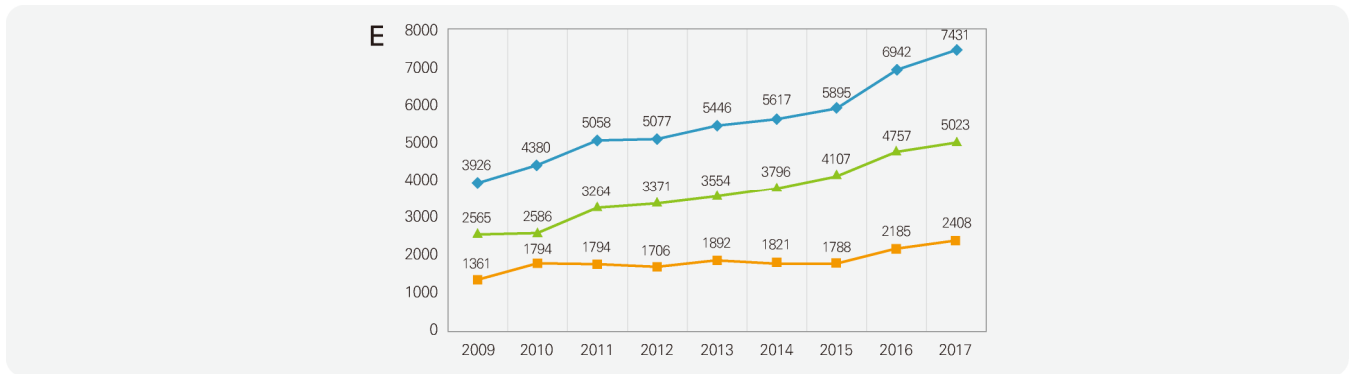


Figure 1. Trends of Numbers of Cancer Screenings (continued)



Note: A gastric cancer, B colon cancer, C liver cancer, D breast cancer, and E cervical cancer

(Total: 623.25, $R^2=.98$, $p<.001$; NHIS: 437.03, $R^2=.99$, $p<.001$; PHC: 186.22, $R^2=.90$, $p<.001$), cervical (Total: 398.67, $R^2=.95$, $p<.001$; NHIS: 307.60, $R^2=.97$, $p<.001$; PHC: 81.07, $R^2=.72$, $p=.004$), gastric (Total: 404.03, $R^2=.94$, $p<.001$; NHIS: 321.63, $R^2=.97$, $p<.001$; PHC: 82.40, $R^2=.60$, $p=.015$), breast (Total: 199.27, $R^2=.91$, $p<.001$; NHIS: 156.02, $R^2=.95$, $p<.001$; PHC: 43.25, $R^2=.90$, $p=.031$), and liver (Total: 40.48, $R^2=.60$, $p=.014$; NHIS: 31.48, $R^2=.70$, $p=.005$; PHC: 9.00, $R^2=.34$, $p=.101$). All graphs showed that the increase in screenings from NHIS is greater than the increase in screenings provided by PHC.

3. Relationship between Media Cancer Coverage and Public Cancer Screenings (RQ2)

In order to investigate between media and the public over a continuous period of time, this study confirmed the correlation between media and public data as shown in Table 5. Once confirmed, the correlation result from primary analysis (general cancer issues) was shown to be statistically high ($r=.93$, $p<.001$). When dividing the public into the two types, both correlations showed significance

Table 4. Simple Linear Regression Analysis of Cancer Screenings Data

Type of Cancer	Data	Result
Gastric Cancer	Total	$R^2=.94$, $B=404.03$, $S.E=38.41$, $t=10.52$, $p<.001$
	PHC	$R^2=.60$, $B=82.40$, $S.E=25.67$, $t=3.21$, $p=.015$
	NHIS	$R^2=.97$, $B=321.63$, $S.E=22.44$, $t=14.33$, $p<.001$
Colon Cancer	Total	$R^2=.98$, $B=623.25$, $S.E=35.22$, $t=17.70$, $p<.001$
	PHC	$R^2=.90$, $B=186.22$, $S.E=23.10$, $t=8.06$, $p<.001$
	NHIS	$R^2=.99$, $B=437.03$, $S.E=15.70$, $t=27.84$, $p<.001$
Liver Cancer	Total	$R^2=.60$, $B=40.48$, $S.E=12.40$, $t=3.27$, $p=.014$
	PHC	$R^2=.34$, $B=9.00$, $S.E=4.77$, $t=1.89$, $p=.101$
	NHIS	$R^2=.70$, $B=31.48$, $S.E=7.89$, $t=3.99$, $p=.005$
Breast Cancer	Total	$R^2=.91$, $B=199.27$, $S.E=24.42$, $t=8.16$, $p<.001$
	PHC	$R^2=.51$, $B=43.25$, $S.E=16.12$, $t=2.68$, $p=.031$
	NHIS	$R^2=.95$, $B=156.02$, $S.E=13.13$, $t=11.89$, $p<.001$
Cervical Cancer	Total	$R^2=.95$, $B=398.67$, $S.E=35.94$, $t=11.39$, $p<.001$
	PHC	$R^2=.72$, $B=91.07$, $S.E=21.68$, $t=4.20$, $p=.004$
	NHIS	$R^2=.97$, $B=307.60$, $S.E=22.13$, $t=13.90$, $p<.001$

between media and the public: the correlation for PHC ($r=.87, p=.002$) and the correlation for NHIS ($r=.94, p<.001$). The correlations from secondary analysis (specific type of cancer issues) were significant for all types of cancer: gastric ($r=.87, p=.002$), colon ($r=.88, p=.002$), liver ($r=.88, p=.002$), breast ($r=.69, p=.041$), and cervical ($r=.80, p=.009$). In terms of the examinees' economic status, significant correlations were found in all types of cancer excluding breast cancer, and all types of correlations from PHC were lower than those from NHIS: gastric (PHC: $r=.71, p=.031$, NHIS: $r=.88, p=.002$), colon (PHC: $r=.84, p=.005$, NHIS: $r=.89, p=.001$), liver (PHC: $r=.70, p=.034$, NHIS: $r=.92, p<.001$), breast (PHC: $r=.42, p=.261$, NHIS: $r=.74, p=.022$), and cervical (PHC: $r=.68, p=.044$, NHIS: $r=.82, p=.007$).

V. Conclusions and Discussion

This research elucidated the degree to which cancer coverage affected public cancer screenings by utilizing data

on the amount of cancer coverage and on the number of cancer screenings. This study does not assert that media reports on cancer are the most powerful factor of influence on the public's practice regarding cancer screenings. However, by confirming the relationship between media and reality, this research aimed to identify the extent of media's role in the construction of society. The results illustrated high correlations between media and the public for cancer issues. Specifically, the correlations varied by economic status; it was shown that individuals with higher economic status had a stronger relationship with media.

With the increasing demand for public health systems organized by the government, several significant implications stem from the results of this study. The increase in the number of patients diagnosed with cancer around the world cause the financial burden of treatment costs affecting individuals within the public to grow (WHO, 2020). For these reasons, WHO suggests that the government provides cancer screening programs as an effective means to minimize the burden on both individuals and governments. In many countries including South

Table 5. Pearson's Correlation Analysis of the Relationship between Cancer Coverage and Cancer Screenings

Type of Cancer	Data	Result
General Cancer	Total	$r=.93, p<.001$
	PHC	$r=.87, p=.002$
	NHIS	$r=.94, p<.001$
Gastric Cancer	Total	$r=.87, p=.002$
	PHC	$r=.80, p=.009$
	NHIS	$r=.88, p=.002$
Colon Cancer	Total	$r=.88, p=.002$
	PHC	$r=.84, p=.005$
	NHIS	$r=.89, p=.001$
Liver Cancer	Total	$r=.88, p=.002$
	PHC	$r=.70, p=.034$
	NHIS	$r=.92, p<.001$
Breast Cancer	Total	$r=.69, p=.041$
	PHC	$r=.42, p=.261$
	NHIS	$r=.74, p=.022$
Cervical Cancer	Total	$r=.80, p=.009$
	PHC	$r=.68, p=.044$
	NHIS	$r=.82, p=.007$

Korea, Japan, United Kingdom, and Germany, cancer screenings are conducted as organized, population-based programs, and it is expected that more countries will transition opportunistic programs to this system. Therefore, the results from this research can become the basis for a stable foundation that shows the necessity of media's role in increasing participation in governmental programs. Furthermore, governments and institutions organizing public health programs can utilize the results of this research when designing strategies for the utilization of media in the future.

In addition to the implications of these results helping to inform the media aspect of government programs, the media effects showed different patterns depending on economic status as well. These results support the results from previous studies that showed the differences in ability to acquire new information according to economic status (O'Malley et al., 2001). Viswanath et al. (2006) identified that people with higher economic status accepted new information at a faster rate than people with lower economic status, and they related their results to a study (Hornik, 2002) that stated that the public's knowledge of health risks directly influences health behavior. The interpretation of the results in our study can also be related to these previous studies. Therefore, the relationship between media and NHIS's examinees (higher economic status) being stronger than the relationship between media and PHC's examinees (lower economic status), could be caused by the difference of the examinee's receptive capacity for media information, in addition to the difference of economic status. These results give empirical support to the assertions of previous studies and allow for future studies in media effects to investigate the influence of economic status on health behavior.

In terms of breast cancer, specifically, further research must be conducted to identify the reason from the content of breast cancer coverage, because the results for breast cancer are not as straightforward as those for other cancers. The relationship for breast cancer in the total and upper

50% of examinees was lower than for other cancers despite having the highest amount of media coverage. In order to interpret these results, further studies should be conducted. Specifically, considering the results of the previous study (Lee, Nagler, & Wang, 2018), it is necessary to identify whether the number of breast cancer screenings were lower due to the emergence of conflicting news causing public confusion about breast cancer.

Breast cancer was also the only cancer to have no relationship confirmed in the lower 50% of examinees. The graph of breast cancer coverage showed the largest increment, while the graph of breast cancer screenings showed the second-lowest increment. In other words, it can be interpreted that the increase in media coverage did not lead to the increase in the number of examinees. These results demonstrate a need for campaign strategies to be tailored to the type of cancer as well as the economic status of examinees. In addition to projects to raise breast cancer awareness, such as the pink ribbon campaign, campaigns targeting women with low incomes should be designed and conducted. Additionally, among women with low incomes, a customized campaign for migrant women in particular will be needed to combat obstacles such as language barriers and cultural differences.

Despite the possibility for advancement in this field presented in this study, there are limitations that need to be overcome through further research. This study's use of governmental data is the reason that it was not able to identify various individual factors that can affect agenda-setting effects on health behaviors, such as demographic variables, psychological factors, motivation, patterns of media use, and social capital. Additionally, the effects of factors such as amount of health education, cancer-related knowledge and individual screening efficacy could not be considered when discussing the increase in the number of cancer screening demonstrated by this study. Therefore, studies aiming to find the primary factors that increase public cancer screenings are needed to address the detailed aspects of government or related institutions' media

campaign designs. Furthermore, this research only considered online articles, so the results of this research should not be generalized. Future studies should be conducted regarding other media sources (i.e. television, YouTube, twitter and so on).

Finally, the study of agenda-setting effects on health issues can better explain the legislative process developing media agenda into policy agenda. One of the media's most powerful roles is to galvanize the public into taking action on what is not easily changed and to create an environment where such public opinion should be discussed as policy agenda in legislative or administrative agencies (Dearing,

1989; Sato, 2003). Ultimately, future research for agenda-building must be conducted to track what changes have been made in society by policy agenda.

안서현은 이화여자대학교에서 커뮤니케이션·미디어학과 박사과정을 수료했다. 주요 관심분야는 헬스 커뮤니케이션, 매스 커뮤니케이션 이론, 미디어 심리이며, 현재 매체 효과를 설명하는 심리 변인과 관련해 연구하고 있다. (E-mail: seohyun8464@naver.com)

이건호는 University of Missouri-Columbia(석사), University of Texas-Austin(박사)에서 Journalism 학위를 받았으며, 이화여자대학교에서 교수로 재직 중이다. 주요 관심분야는 취재와 보도, 정치 커뮤니케이션, 언론 사상 등이며, 현재 매체 효과론, 취재원 인용 방식, 보도 공정성 등을 연구하고 있다. (E-mail: buildsky@ewha.ac.kr)

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미디어의 암 보도와 대중의 암 검진 실천 간의 관계: 의제설정 이론을 바탕으로

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| 초 록 |

암은 1983년부터 국민 사망원인 1위를 차지하고 있으며, 이로 인한 사망자 수는 꾸준히 증가하고 있다. 그러나 국가사업으로서 암 검진을 지속적으로 장려한 까닭에 암으로 인한 5년 생존율은 증가해, 암 검진에 대한 중요성은 더욱 높아지고 있다. 이에 본 연구는 매체가 암 보도를 얼마만큼 많이 하는지에 따라 암 검진자 수에 어떠한 변화가 있었는지 확인하고자 했다. 2009년부터 2017년까지 총 9년간 미디어의 암 보도량과 대중의 암 검진자 수 간의 상관관계를 확인한 결과, 정적 상관관계가 확인되었으며, 다섯 가지 암종(위암, 대장암, 간암, 유방암, 자궁경부암)별 상관관계를 확인했을 때에도 정적 상관관계가 확인되었다. 더불어 경제적 수준이 높은 검진자(상위 50%)의 경우 경제적 수준이 낮은 검진자(하위 50%)보다 높은 수준의 미디어와의 상관관계를 보여, 암 검진 실천 시 암 보도의 영향을 더 많이 받는 것으로 나타났다. 이러한 결과는 대상자의 경제적 요인에 맞는 암 검진 캠페인 전략의 필요성을 뒷받침하는 자료로 활용될 수 있다.

주요 용어: 암 보도, 암 검진, 의제설정 이론, 정보 접근성