

Public Libraries' Response to COVID-19 Pandemic and Expected Roles in Upcoming Disasters: A Case Study of South Korea

국내 공공도서관의 코로나19 팬데믹 관련 대응 및 재난발생시 기대되는 역할 연구

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ABSTRACT : In 2020, the novel coronavirus disease (COVID-19) struck the world. This study examined Korean public libraries' responses during the COVID-19 pandemic to determine their working practices, service patterns, applied strategies, and roles played. The study administered an online survey to 317 public librarians in South Korea. The results indicated that librarians reported significant transitions regarding the services provided. However, only 15.5% of the survey respondents reported that they had experienced trainings / workshops for library staff members. Survey participants also identified challenges such as the limitations of non-face-to-face services, complaints from library patrons, and overwork due to epidemic prevention. When it comes to the expected roles of public libraries in upcoming disasters, the study contends that information providers, who guide the public through various information resources, would play the most critical role. An analysis of a few open-ended questions' answers proliferated the highlighted findings. Based on the key findings, this paper also discussed implications for information professionals and future research.

KEYWORDS : COVID-19, Public Library, Disaster Response, Pandemic, Roles of Libraries

요 약 : 2020년, 신종 코로나바이러스 감염증(COVID-19)은 전 세계를 강타하였다. 국가를 망라하여 인류의 생명을 위협했을 뿐만 아니라 사회, 경제적 등 다방면으로 타격을 입혔다. 본 연구는 코로나19 팬데믹 상황에서 국내 공공도서관이 어떻게 대응했는지, 나아가 직면한 어려움은 무엇이었는지 이해하고, 앞으로 다가올 또 다른 재난상황에서 공공도서관은 어떠한 역할을 기대하는지를 알아보고자 진행하였다. 317명의 국내 공공도서관 사서들에게 온라인 설문응답을 확보하였고, spss를 통해 응답을 분석하였다. 또한 양적연구의 한계를 보완하기 위하여, 설문지에 주관식 질문을 추가하여 사서들의 자유로운 의견을 청취하였다. 그 결과, 팬데믹 상황에서 사서들은 다양한 새로운 서비스를 제공하고자 노력하였고, 비대면 및 온라인서비스 제공의 어려움을 보고하였다. 또한, 15.5%의 응답자만이 도서관 직원을 위한 워크숍을 경험하였으며, 53.3%의 사서들은 소득 등 방역업무 추가로 인한 업무과중을 보고하였다. 차후에 감염병으로 인한 재난상황이 닥쳤을 때에는 공공도서관의 다수의 역할들 가운데 다양한 정보자원을 제공함으로써 대중을 안내하는 정보 제공자로서의 역할이 가장 중요함을 시사하였다. 본 연구의 주요 결과를 토대로 타 국가 도서관들의 대응과 재난상황시 기대되는 역할을 비교 및 대조하며 향후 연구에 대한 시사점을 논의하였다.

주제어 : 코로나19, 공공도서관, 재난대응, 팬데믹, 도서관의 역할

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I. Introduction

Over the past few decades, outbreaks of infectious diseases have occurred repeatedly. New epidemic diseases can take place at times and intimidate human beings. For instance, Hui (2006) stressed that novel infectious diseases are becoming prevalent in society due to virus evolution, population growth, and urbanization. Moreover, the World Health Organization (2022) underlined that several countries are currently facing complicated and diverse health challenges in the 21st century.

According to the U.S. Centers for Disease Control and Prevention (2023), novel coronavirus disease 2019 (COVID-19) cases have been detected in most countries worldwide. The COVID-19 pandemic has affected almost all parts of society globally and locally. As the COVID-19 pandemic has not ended quickly, adaptation to the new normal is expected in diverse organizations and institutions, including libraries (Corpuz, 2021; Noh & Chang, 2020). As time passes by, the confusion due to COVID-19 has been reduced, however, services and expected roles of public libraries in disaster situations need to be examined.

The current study is implemented to better understand Korean public libraries' responses to the COVID-19 pandemic and identify their expected roles in upcoming disasters. This study addresses the following questions:

In 2020, what kind of services did the public libraries in Korea offer in response to COVID-19? What roles are expected in response to COVID-19 and other forthcoming disasters?

Specifically, the current study seeks to address the following three research questions:

RQ1. How did Korean public libraries respond to the COVID-19 pandemic regarding services, and what challenges did they face?

RQ2. What was the impact of COVID-19 on the services provided by Korean public libraries?

RQ3. What are the expected roles of public libraries during future disasters?

To answer these questions, data were collected using a researcher-made questionnaire; 317 public librarians in Korea responded to the survey. The data were then analyzed using SPSS 26 (IBM, Armonk, NY, USA). The study's findings would make several practical contributions. First, the study's results would fill a gap in the literature on how Korean public libraries have reacted to the COVID-19 pandemic. Also, South Korean public libraries' challenges during the first year of the pandemic were reported. Second, the expected role of public libraries during catastrophes

is discussed. Furthermore, the study's findings may help public librarians, educators, and information professionals in Korea and other countries gather new ideas on information services in public libraries during natural disasters.

II. Literature Review

1. The COVID-19 Pandemic in the Republic of Korea

Similar to other countries, COVID-19 has impacted almost all segments of Korean society. According to a report by the Ministry of Foreign Affairs of the Republic of Korea (2020), Korea was one of the first countries affected by COVID-19. The first case was confirmed in South Korea on January 20, 2020. Moreover, there have been four major spikes in the number of cases: (1) in late February 2020, (2) from late August to early September 2020, (3) from November 2020 to January 2021, and (4) from July 2021, as the pandemic is still ongoing owing to Omicron and other variants. The total number of COVID-19 cases in South Korea was 34,571,873 as of August 31, 2023 (Korea Disease Control and Prevention Agency, 2023).

Korea's COVID-19 response strategy aimed to prevent the spread of the disease, protect public health, and keep society and the economy open, allowing daily life to continue (Ministry of Foreign Affairs in the Republic of Korea, 2020). Based on its past experiences with infectious diseases such as severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS) in 2015, Korea has firmly adhered to the principles of openness, transparency, civic engagement, and innovativeness from the very beginning of the outbreak:

- *Openness: Keeping borders and society open without blanket entry bans and mandatory lockdown measures.*
- *Transparency: Full and prompt disclosure of data on global and domestic COVID-19 trends and information about government decisions and strategies.*
- *Civic engagement: Implementing policies based on clear communication and citizen participation.*
- *Innovativeness: Embracing creative problem-solving and resilient and flexible responses (Ministry of Foreign Affairs in Republic of Korea, 2020, pp. 20-21).*

Several sources around the world noted that South Korea's response strategy, early detection of the virus through diagnostic testing, and strong social distancing measures had successfully "flattened the curve" of COVID-19 (Dighe et al., 2020; Oh et al., 2020; Park & Chung, 2021; U.S. Food and Drug Administration, 2021).

Nevertheless, since the end of February 2020, almost all national and public libraries operated by the private sector and the government have closed (Han, 2020; Lee, 2020). Elementary, middle, and high schools and universities have also postponed their opening, and libraries have not fully operated. Libraries stopped providing services and closed due to insufficient preparation for crises. Unlike medical institutions, libraries that could be community centers utilized by the public were not ready to respond to an infectious disease pandemic. Otherwise, libraries could also be the epicenter of the spread of COVID-19; rapid measures were inevitable.

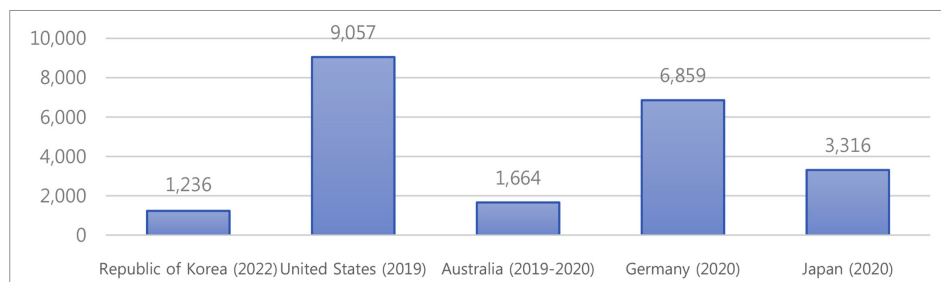
2. Korean Context

The Republic of Korea, the setting for the current study, is one of the East Asian countries, with approximately 51.8 million inhabitants in 2021 (Korean Statistical Information Service, 2021). South Korea is a developed country, and its economy ranks as the world's tenth-largest nominal GDP. Health outcomes have improved with economic progress. For example, South Korea introduced social health insurance in the 1970s, achieved universal healthcare coverage in 1989, and transitioned to a single-payer system in 2004 (WHO, 2015). South Korea's healthcare system focuses on hospital-based care. The number of hospital beds per capita, 12.4 beds per 1,000 people, is almost three times higher than the average (4.4 beds) in OECD countries (OECD, 2021).

In addition, the OECD (2022) reported that Korea (99.7%) had the highest percentage of households reporting access to the Internet. The country has the world's fastest average Internet connection speed and has ranked first or second on the UN ICT Development Index since its launch (United Nations, 2017). However, the digital divide in South Korea, caused by the unevenness of economic, physical, regional, and social opportunities, has become a severe problem. According to a report on the digital divide (National Information Society Agency in Korea, 2022), the ability of the information-vulnerable class to utilize IT devices remains far below that of the general public. In other words, although disadvantaged people, including low-income families, migrants, people with disabilities, and isolated older adults, are willing to purchase and learn about the necessary devices, information alienation continues because no one teaches them how.

Owing to the prolonged COVID-19 pandemic, the digital transformation of various companies has accelerated, and non-face-to-face services have become an irreversible trend. Companies and governments should make efforts to actively resolve information polarization. Several studies have noted that Korean public libraries can play an essential role in resolving the gap between knowledge and information (Heo, 2016; Lee & Sim, 2008; Yoon, 2022).

According to the National Library Statistics System in Korea (2022), the number of public libraries in the Republic of Korea constantly increases and has reached 1,236 units. Compared with other countries, the absolute number of Korean public libraries is low (Figure 1). However, the number of users per building in other countries is comparable (e.g., 41,617 in the Republic of Korea (2022), 36,333 in the United States (2019), 15,441 in Australia (2019-2020), 12,215 in Germany (2020), and 38,141 in Japan (2020). Public libraries in Korea strive to satisfy residents' information needs, reading activities, lifelong learning, and cultural needs through optimized library-based knowledge, information, and program services (Heo, 2016).



〈Figure 1〉 Number of public libraries

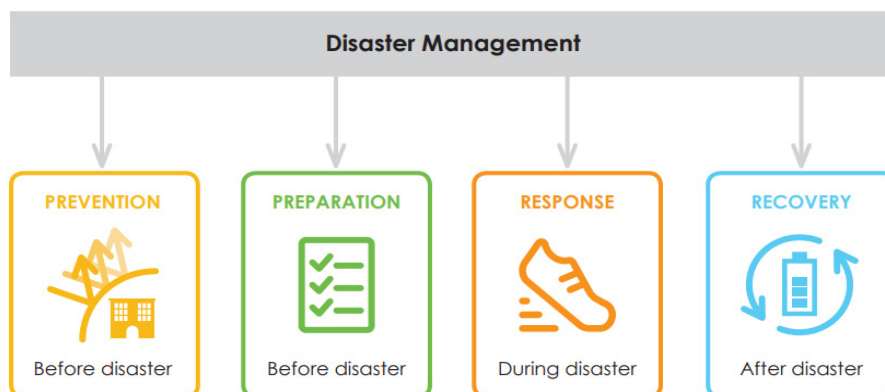
3. International Library Organizations' Responses to Potential Disasters

Over the past two decades, international library organizations have noted ways to respond to natural disasters in their libraries and archives. These strategies may help prepare for various disasters, including floods, hurricanes, typhoons, and new infectious illnesses. Examples include the International Federation of Library Associations and Institutions (IFLA)'s Disaster Preparedness and Planning: A Brief Manual (McIlwaine & Varlamoff, 2006), the Library of the American Library Association as Safe Haven: Disaster Planning, Response, and Recovery: A How-To-Do-It Manual for Librarians (Halsted et al., 2014), and Disaster Management for Libraries (Australian Library and Information Association, 2019). These manuals differ in the detailed

content or organization of information but have something in common, that is, they suggest that libraries and archives must present disaster preparedness measures at systematic stages to cope with disasters (Lee, 2019).

For instance, the IFLA manual (McIlwaine & Varlamoff, 2006) suggests five specific steps in disaster preparation: (a) risk assessment, (b) prevention and protection, (c) preparedness, (d) reaction and response, and (e) recovery. Each step consists of numerous actions. For example, the first step in a risk assessment is identifying potential disaster sources. The second step in prevention and protection is the management of disaster risks through insurance. The third step in preparedness is to train library staff members, and the fourth step describes how to behave when a disaster strikes, such as how to treat wet resources. Finally, the fifth recovery step illustrates how the services provided to library patrons return to normal levels.

In another example, the Australian Library and Information Association (2019) introduces four key stages of disaster management: Prevention, preparation, response, and recovery (Figure 2). In the prevention stage, the staff needs to evaluate the risks and likelihood of various types of disasters that may occur and implement strategies to reduce the risks. The preparation stage involves developing a disaster plan, identifying emergency contacts and supplies, and providing training, building resilience to withstand and recover from disasters. The response stage occurs during a disaster once all safety issues have been addressed. This step involves minimizing consequences, such as protecting or moving collections or controlling the shutting down of computer servers. The final step, recovery, involves minimizing the disruption and returning services to as “normal” as possible.



〈Figure 2〉 Disaster management - Key stages (ALIA, 2019)

4. Public Libraries' Response to Pandemics and Other Disasters

Before the COVID-19 pandemic, researchers had already noted the role of libraries and librarians in managing infectious diseases and other natural disasters. For instance, by conducting telephone and email interviews with twenty-three North American librarians, Featherstone et al. (2008) identified eight different libraries' roles during natural disasters as follows: institutional supporters, collection managers, information disseminators, internal planners, community supporters, government partners, educators/trainers, and information community builders. Moreover, the researchers also emphasized the value of collaborative relationships between libraries and many other local, state, and federal disaster management organizations.

Zach (2011) also argued that libraries needed to leverage their position as a primary source of credible information by providing prompt and easy access to those looking for trustworthy information regarding what to do during times of crisis. Later, by conducting semi-structured interviews of approximately thirty health librarians, Featherstone et al. (2012) found that alerting services from authoritative sources were priceless for gathering accurate information during the peak period of an infectious outbreak when information overload was a significant problem.

Since the outbreak of the COVID-19 pandemic, scholars have noted the responses of public libraries to the COVID-19 pandemic. Innumerable libraries and archives worldwide have stopped providing services to patrons and have closed (International Federation of Library Associations and Institutions, 2020). Public libraries in several countries have proactively responded to the pandemic and changed their services. For instance, some have increased their focus on digital services and social media platforms to maintain contact with patrons during crises (Begum et al., 2022; Garner et al., 2021; Skare, 2021). Haasio and Kannasto (2020) also supported that several Finnish public libraries have developed new services such as online book clubs and storytelling sessions. Parviainen et al. (2020) illustrated Finnish public library services during the shutdown, including virtual digital assistance, instructional videos on using digital services (e.g., YouTube), online reference services using chat or e-mails, library podcasts, and streamed events (storytelling sessions, discussion forums, book clubs). It should also be emphasized that librarians need to assist library patrons in facing new digital "illiteracy," confront the digital divide, and strive to fight educational poverty (Panattoni, 2021).

Tammaro (2020) identified what worked well and did not work during the pandemic in Italian libraries. The results showed that guaranteeing traditional library services, including loans,

interlibrary loans using networks, cataloging, and reference services, and quickly reorganizing their services were successful strategies. However, the COVID-19 pandemic has caused job insecurity, chronic scarcity of funds, outsourcing, and recourse to volunteering to compensate for the lack of professionally trained staff, legislation, and policies. Also, a recent study by Oh (2023) thoroughly reviewed several studies on how South Korean public libraries reacted to the pandemic in terms of services.

Other studies have focused on the use of social media in public libraries. For example, Alajmi and Albudaiwi (2020) analyzed the tweets of 38 public libraries in New York City to understand their responses to the COVID-19 pandemic. They found that 85.5% of their tweets were relevant to regular library communication, including announcements of library service updates, book recommendations, suggested reading and activities, celebrations on specific occasions or individuals, and notices of upcoming events. Only 14.5% of tweets published between January and April 2020 were directly and explicitly related to COVID-19. Wang and Lund (2020) also conducted a content analysis of New York public libraries' announcements to examine how public libraries have responded to the pandemic. The results showed that over 90% of libraries announced closures due to the pandemic, and programs were suspended in 98% of libraries. Over half of the libraries posted on COVID-19 and general hygiene practices. The authors emphasized the role of public libraries as disseminators of quality information about the pandemic for their patrons.

Several scholars have reflected on the role of librarians during the pandemic. Ali and Gatiti (2020) highlighted three aspects of librarians' roles in Pakistan during a pandemic: (a) promoting public health awareness by organizing and disseminating information related to preventive measures; (b) supporting research teams, researchers, and faculty members by providing information regarding the latest developments, research, and literature; and (c) satisfying the core information needs of library patrons. Ladan and his colleagues (2020) also suggested that libraries could be vital for providing reliable information and keeping their users abreast of up-to-date government announcements and accurate information.

To summarize, various studies have emphasized the libraries' roles in responding to disasters such as infectious diseases, terrorism, earthquakes, fires, and floods before the outbreak of the COVID-19 pandemic. Notably, global research on COVID-19 has become very rich as the COVID-19 crisis has prolonged compared to epidemic diseases that have previously threatened human beings.

III. Methods

To answer the proposed research questions, this study employed a quantitative method. It collected and analyzed data, addressing as many public librarians as possible to better understand their practices during the COVID-19 pandemic in Korea. Furthermore, to offset the weaknesses of the quantitative research method, the study included a few open-ended questions in the questionnaire to ask respondents' opinions about the critical role of public libraries during the pandemic. Finally, if necessary, several websites were reviewed and analyzed to help explain the key findings.

1. Data Collection

A web-based survey was conducted between February and March 2021. The study sample was drawn from public librarians in the Republic of Korea. Participants were recruited by e-mail from branch libraries of the Korean Public Library Association (KPLA), and librarians from various public libraries in Korea participated in the survey. Each e-mail included a description of the research and a link to an online questionnaire, so public librarians who were interested in this study voluntarily participated in the survey.

Convenience sampling, a type of non-probability sampling, was utilized. Potential participants' ages and citizenship statuses were assessed as screening questions. All participants were 18 years or older, had Korean citizenship, and worked in public libraries in South Korea. If a potential respondent satisfied the above inclusion criteria, they could participate in the research by clicking on the survey link. A total of 317 public librarians participated in the online survey. Once data collection was completed, coffee gift cards were awarded to the respondents. The Social and Behavioral Sciences Institutional Review Board of the researcher's university reviewed and approved this study.

2. Survey Instruments

The online questionnaire was developed based on previous studies (Featherston et al., 2008; Kim, 2020; Noh & Chang, 2020). In addition to screening questions, the questionnaire consisted of four parts: (a) demographic information, (b) the impact of COVID-19 on library services,

(c) responses of public libraries in the COVID-19 era, and (d) the direction and role of public libraries in the post-COVID19 era.

Regarding demographic information, the survey included questions related to respondents' age, sex, work position, and years of working at libraries. To comprehend the impact of COVID-19 on library services, the results of Kim (2020) and Noh and Chang (2020) were customized for this study. Participants were asked about the length of the closures in their library building in 2020. They were also asked questions about 12 specific reactions to the COVID-19 pandemic (yes or no). To understand their challenges, questions regarding their difficulties during the pandemic were also included in the survey. Moreover, to precisely evaluate the impact of COVID-19 on library services, participants were asked to rate the extent to which they agreed with each statement (on a 5-point Likert scale: "5" = strongly agree; "1" = strongly disagree). Finally, to investigate the expected roles of Korean public libraries in future disasters, the results of Featherstone et al. (2008) were referred to and customized for the present study. Librarians were asked to rate the importance of each role during disasters (on a 5-point Likert scale: "5" = very important; "1" = not important at all). They also freely commented on the most critical roles and answers to the open-ended questions.

3. Data Analysis

A total of 317 complete responses were analyzed. The quantitative data collected from the web-based questionnaire were coded and processed using SPSS 26 (IBM, Armonk, NY, USA). Descriptive statistics were used to address RQ1, RQ2, and RQ3. Specifically, a descriptive statistical analysis was conducted to understand the following aspects: (a) the sample's demographic characteristics, (b) Korean public libraries' responses to the COVID-19 pandemic in terms of services and the challenges they faced, (c) the impact of COVID-19 on their library services, and (d) the expected roles of public libraries in upcoming disasters. In addition, for RQ3 (the critical roles of public libraries during the pandemic), qualitative data collected from answers to an open-ended question were uploaded to NVivo 12 (QSR International, Melbourne, Australia) for coding and analysis. Along with the quantitative data, the qualitative data provided a deeper understanding of the study's key findings.

IV. Results

1. Demographics of the Survey Participants

Characteristics of research participants are reported in Table 1. The study's results represent the aggregated responses from seven metropolitan cities and nine provinces in South Korea. Most survey participants were female (259, 81.7%). In addition, the survey participants ranged in age from 20 to 50 or above, and the 30-year-old age group had the greatest number of participants (135; 42.6%). In terms of staff by position, 14 (4.4%) were library directors, 51 (16.1%) were supervisors/managers, 214 (67.5%) were full-time librarians, and 33 (10.4%) respondents were part-time librarians. The participants' tenures at libraries also varied. A total of 132 (41.6%) participants stated that they had worked at libraries for less than five years, and 86 (27.1%) for five to ten years. In addition, 45 librarians (14.2 %) had worked at libraries for over 20 years.

〈Table 1〉 Characteristics of Research Participants (N=317)

		Frequency (%)
Gender	Male	58 (18.3%)
	Female	259 (81.7%)
Age	20s	67 (21.1%)
	30s	135 (42.6%)
	40s	67 (21.1%)
	50s or above	48 (15.1%)
Staff by type	Library director	14 (4.4%)
	Supervisor / Manager	51 (16.1%)
	Full-time librarian	214 (67.5%)
	Part-time librarian	33 (10.4%)
	Other	5 (1.6%)
Tenure at libraries	Less than five years	132 (41.6%)
	Five to less than 10 years	86 (27.1%)
	10 to less than 15 years	38 (12.0%)
	15 to less than 20 years	16 (5%)
	20 or more years	45 (14.2%)

RQ1. Korean public libraries' responses to the COVID-19 pandemic regarding services and challenges they faced.

Regarding the closure of library buildings, all respondents reported that their libraries closed

at least once in 2020 (see Table 2). The closure lengths varied. For instance, only 28 librarians (8.8%) mentioned that their libraries were closed for less than eight weeks, 101 participants (31.9%) stated that their libraries were closed for eight to 16 weeks, and 87 librarians (27.4%) indicated their length of library closure at 24 or more weeks.

〈Table 2〉 Closures of the Korean Public Libraries in 2020 (N=317)

		Frequency (%)
Closures of the library building	Yes	317 (100%)
	No	0 (0%)
Length of closures in the year 2020	Less than eight weeks	28 (8.8%)
	Eight to less than 16 weeks	101 (31.9%)
	16 to less than 24 weeks	101 (31.9%)
	24 or more weeks	87 (27.4%)

The specific reactions of Korean public libraries to COVID-19 are shown in Table 3. Respondents were asked to select all the services they provided in their libraries in 2020. Of the 12 services, more than 70% indicated six different services. The results showed that 95.9% of the libraries provided pickup services for items requested by appointment, and 94.3% notified their patrons of their library building closures. Moreover, 94.3% of librarians reported sanitizing their library materials. In addition, 88.3% of the participants stated that they checked and organized their physical collections during closure. In addition, 77% of the librarians mentioned offering online cultural programs, and 73.5% provided interactive online services using Zoom or Webex. When librarians were asked about their preferred interactive platforms, most respondents preferred Zoom (n=304, 95.9%), followed by YouTube Live (n=99, 31.2%), Instagram Live (n=23, 7.3%), and Google Meet (n=23, 7.3%).

The remaining six services were offered less often. For instance, 39.1% of libraries provided book delivery services, 36.9% checked or replaced their equipment for online services, and 34.7% created reading kits for library patrons. Surprisingly, only 28.7% of libraries digitized their items and provided them to users. The two least common services provided by Korean public libraries were training library staff (15.5%) and non-video online reference services using e-mail (14.5%).

〈Table 3〉 Korean Public Libraries' Reaction to COVID-19 (N=317)

	Yes	No
Request items for pickup by appointment	304 (95.9%)	13 (4.1%)
Notify library closure to library patrons	299 (94.3%)	18 (5.7%)
Sanitize library materials	299 (94.3%)	18 (5.7%)
Check and organize the physical collections	280 (88.3%)	37 (11.7%)
Offer online cultural programs	244 (77.0%)	73 (23.0%)
Offer interactive online services using Zoom or Webex	233 (73.5%)	84 (26.5%)
Book delivery services	124 (39.1%)	193 (60.9%)
Check or replace equipment for online services	117 (36.9%)	200 (63.1%)
Create reading kits	110 (34.7%)	207 (65.3%)
Digitize items on request	91 (28.7%)	226 (71.3%)
Training for library staff members	49 (15.5%)	268 (84.5%)
Non-video online reference services using e-mail	46 (14.5%)	271 (85.5%)

Note. Multiple responses were possible if needed.

Four types of challenges faced by Korean public librarians during the pandemic were identified (see Table 4). These difficulties were described as follows: (a) limitations of non-face-to-face services (n=251, 79.2%), (b) complaints from library patrons (n=181, 57.1%), (c) confusion due to the demand for new services (n=169, 53.3%), and (d) overworking to prevent further spread of the epidemics (n=169, 53.3%).

〈Table 4〉 Challenges that Public Libraries Faced in South Korea (N=317)

	Yes	No
Limitations of non-face-to-face services	251 (79.2%)	66 (20.8%)
Complaints from the library patrons	181 (57.1%)	136 (42.9%)
Confusion due to the demands of new services	169 (53.3%)	148 (46.7%)
Overwork due to the prevention of epidemics	169 (53.3%)	148 (46.7%)

Note. Multiple responses were possible if needed.

RQ2. Impact of COVID-19 on the services of Korean public libraries.

To determine the impact of COVID-19 on the services of Korean public libraries, public librarians were asked whether they agreed with 11 statements. Results are shown in Table 5. Of the 11 statements, the top-seven strongly agreed upon were relevant to changes in library services during the pandemic. The results revealed that librarians strongly agreed that the COVID-19 pandemic influenced the cultural programs of their libraries the most ($M=4.61$, $SD=.64$). They

also stated that COVID-19 impacted the opening and closing of libraries ($M=4.56$, $SD=.70$) and greatly affected overall library services ($M=4.52$, $SD=.71$). Librarians tended to believe that COVID-19 influenced the increase in non-face-to-face library services ($M=4.46$, $SD=.75$). However, respondents were inclined to strongly disagree with the increased number of library users during the pandemic ($M=2.22$, $SD=.96$), and the increased number of book checkouts in printed formats ($M=2.54$, $SD=.90$). It is notable that the librarians who strongly agreed that book checkouts in digital formats increased ($M=3.80$, $SD=.96$). In addition, librarians stated that COVID-19 moderately affected the collection and management of library materials ($M=3.43$, $SD=1.06$).

〈Table 5〉 Impact of COVID-19 on the Services of Korean Public Libraries

Rank	Statement	M (SD)
1	It had a great impact on cultural programs in the library.	4.61 (.64)
2	It had a great impact on the opening/closing of the library.	4.56 (.70)
3	It had a great impact on the overall library services.	4.52 (.71)
4	The non-face-to-face service of the library where I worked increased.	4.46 (.75)
5	It had a great impact on the educational services of the library.	4.39 (.76)
6	It had a great impact on the library's reference services.	4.06 (.87)
7	The number of online service users increased.	3.98 (.80)
8	Book checkouts in digital formats increased.	3.80 (.96)
9	It had a great impact on the collection and management of library materials.	3.43 (1.06)
10	Book checkouts in printed formats increased.	2.54 (.90)
11	The number of offline (on-site) users increased.	2.22 (.96)

Note. Mean scores were based on a 5-point Likert scale: "5"=Strongly Agree; "1"=Strongly Disagree.

RQ3. Expectant roles of public libraries in upcoming disasters.

The expected role of public libraries in future disasters was assessed using a 5-point Likert scale ("5" = very important to "1" = not important at all). Table 6 presents the results. Librarians tended to emphasize the role of an information provider to guide people through various types of information ($M=4.46$, $SD=.64$). The results also indicated that survey participants valued libraries as various cultural program providers during disasters ($M=4.21$, $SD=.79$). Librarians were inclined to appreciate public libraries as educational institutions that reduced the information divide ($M=4.19$, $SD=.67$) and book managers who collected and managed various materials ($M=4.10$, $SD=.67$). In contrast, the role of libraries as community centers that consolidated society ($M=3.92$, $SD=.85$) or as information centers that led people's activities was less stressed

($M=3.63$, $SD=1.02$). Respondents' answers to an open-ended question regarding the reasons for public libraries' essential role will expand and clarify these key findings in the Discussion section.

〈Table 6〉 Expected Roles of Public Libraries in Disasters (N=317)

Rank	Role	M (SD)
1	Information providers that guide the public through various types of information	4.46 (.64)
2	Various cultural program providers	4.21 (.79)
3	Educators who reduce the information divide through learning and education	4.19 (.82)
4	Collection managers who collect and manage data	4.10 (.67)
5	Community centers that contribute to the integration of society	3.92 (.85)
6	In the event of a disaster, such as an infectious disease, information centers that guide people's activities	3.63 (1.02)

Note. The mean scores were on a 5-point Likert scale: "5" = very important; "1" = Not important at all.

V. Discussion

In this study, all survey participants stated that their libraries closed at least once in 2020. This finding is consistent with previous studies conducted in other countries (Begum et al., 2022; International Federation of Library Associations and Institutions, 2020; Tammara, 2020). This result may be explained by the reminders of the early stages of the COVID-19 pandemic. In December 2019, several cases of pneumonia of unknown cause, with symptoms including shortness of breath and fever, were reported in Wuhan, China (U.S. CDC, 2023). The virus has spread worldwide, with many confirmed cases and deaths in early 2020. On March 11, 2020, after more than 118,000 confirmed cases in 114 countries and 4,291 deaths, the WHO declared COVID-19 a pandemic (U.S. CDC, 2023). Countries began implementing shutdowns to prevent the spread of COVID-19. Although Korea tried to adhere to the principles of openness, transparency, civic engagement, and innovativeness, its aggressive reactions to COVID-19 in the early phase successfully controlled the initial peak (Kang et al., 2020). Almost all national and public libraries were closed (Han, 2020; Lee, 2020).

However, the lengths of the library building closures varied. For instance, 8.8% of the libraries closed their buildings for less than eight weeks, whereas 27.4% closed for 24 or more weeks. This finding may be partly attributed to local governments' different responses and policies regarding COVID-19 in South Korea. The number of confirmed cases differed in

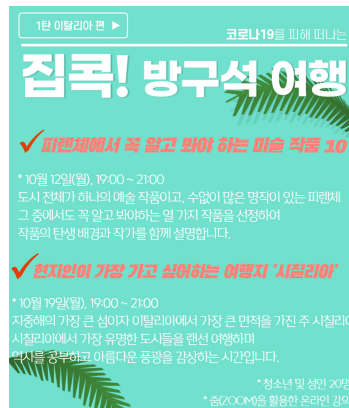
each region; therefore, social distancing policies were applied differently (Ministry of Health and Welfare, 2021).

Notably, Korea's social circumstances may help explain the above results. In the first half of 2020, Korea's rapid and systematic defense capabilities against COVID-19 were praised worldwide (Lee & Lee, 2021). They argued that Korea developed and distributed COVID-19 diagnostic testing kits faster than any other country, strengthening national control over face mask production, supply, and consumption. South Korea succeeded in protecting against the spread of the virus by using advanced technology to develop a warning-diagnosis-tracking-treatment system.

Under these social circumstances, Korean public librarians developed new services for library users. Of the 12 services addressed by this study, 95.9% of survey participants mentioned requesting item services for pickups during appointments. Furthermore, 94.3% of the respondents notified their patrons of their library building closures, and 94.3% sanitized their library resources. These results corroborate those of previous studies (Alajmi & Albudaiwi, 2020; Noh & Chang, 2020), confirming that Korean librarians made efforts to develop and promote novel services during the pandemic circumstances. For example, Alajmi and Albudaiwi (2020) emphasized that 85.5% of their libraries' tweets were related to library communication, including announcements of library service updates. In line with these results, this study also confirmed that 94.3% of Korean public libraries were informed about their building closures through various channels (e.g., websites, social media platforms including Instagram/Naver Band/YouTube, and text messages).

Notably, 88.3% of librarians checked and organized the physical collections, and 77% offered online cultural programs. Moreover, 73.5% of librarians provided interactive online services using Zoom or Webex in public libraries. Although several library buildings were closed during the pandemic's peak, librarians needed to reorganize their physical collections and spaces for future use. This result is consistent with previous literature (e.g., Tammaro, 2020).

Several instances of online cultural programs may be easily found on public libraries' websites. For example, an online stay-at-home travel to Italy was conducted at a library in Incheon (M Library, 2020). This class included approximately 10 must-see artworks in Florence. Florence is an entire city of art, with countless masterpieces. Among them, 10 artworks were selected to explain their backgrounds and artists. At the time, people could not travel freely because of the pandemic. The M Library has provided this online travel class 27 times until 2022 (M Library, 2023). These types of online courses were attractive to the public and easily accessible.



〈Figure 3〉 M Library (2020)'s one of the online cultural programs

Similar to the results of Parviainen et al. (2020), several streamed events, such as book clubs, were provided by Korean public libraries. Interestingly, an online class on scientific magic for 1st to 3rd graders was also offered (M Library, 2020). It was an interactive Zoom class, and students had to pick up science kits from the libraries beforehand. Kim (2021) emphasized that Korean public libraries played an essential role as cultural experience centers by providing various online programs, including discussions, many different travels with specific themes, and career education.

Notably, the results of the present study showed that only 15.5% of librarians had training sessions at their workplace, and only 14.5% provided non-video online reference services using e-mail. During the pandemic, social distancing stages and policies were changing every two to three weeks in Korea in accordance with the number of COVID-19 confirmed cases (Ministry of Health and Welfare, 2021). Public librarians likely spent time developing and offering prompt information services to library patrons rather than conducting training workshops for their staff members.

Regarding Korean public libraries' challenges, the study's findings showed that 79.2% of librarians reported limitations of non-face-to-face services. This result may be attributed to unfamiliarity with the online services of Korean public libraries. Before the pandemic, most information services offered by public libraries were provided in library buildings. However, when libraries closed, public libraries worldwide had to transform their in-person services into online services. One of the survey respondents (L33) commented on their questionnaire, "Since non-face-to-face information services are recommended, it is crucial to provide various types of information resources in a timely manner." Other issues, such as complaints from library users

(57.1%), confusion due to the demand for new services (53.3%), and overwork to help prevent epidemics (53.3%), were also reported as challenges for librarians. Notably, over half of librarians (53.3%) said they were overwhelmed by epidemic prevention. This result was because several public officials, including librarians, were asked to offer support work during the quarantine of COVID-19. For example, one of the survey participants (L304) commented, “I went to quarantine support work to ensure that religious institutions and sports facilities were complying with quarantine guidelines such as wearing a mask or observing social distancing policies.” Another participant (L116) echoed this statement by mentioning, “I believe that it is also important for library users to maintain their health and not to get infected in the library.”

When the impact of COVID-19 on public library services was examined, using a 5-point Likert scale (“5” = Strongly Agree; “1” = Strongly Disagree), most survey respondents agreed that it influenced cultural programs the most ($M=4.61$, $SD=.64$). Song (2022) may help explain this finding. Song (2022) analyzed 1,317 library programs offered by Korean public libraries in terms of subjects, targeted users, and operation types (online or offline). The study highlighted that all library programs were provided offline in 2019, whereas 27% and 73% were online and offline in 2020, respectively. Among the programs provided online, Song (2022) found that 81.5% were online classes using Zoom, and 8% were live broadcasting programs using YouTube Live. Hence, the results of this study confirm that the emergence of COVID-19 has significantly affected library services.

Moreover, this study showed that COVID-19 significantly influenced library opening/closing ($M=4.56$, $SD=.70$). All libraries closed at least once in 2020, but the length of building closures varied significantly. In addition, librarians strongly agreed with the increase in the number of non-face-to-face services ($M=4.46$, $SD=.75$), online service users ($M=3.98$, $SD=.80$), and digital book checkouts ($M=3.80$, $SD=.96$). Similarly, it was also confirmed that respondents were likely to disagree with increases in the number of book checkouts in print formats ($M=2.54$, $SD=.90$) and offline users ($M=2.22$, $SD=.96$).

A 5-point Likert scale (“5” = very important to “1” = not important at all) was employed to examine the expected role of public libraries in forthcoming disasters. The results revealed that the role of information providers in guiding the public through various types of information ($M=4.46$, $SD=.64$) was considered the most critical role of public libraries among six different roles. Featherstone et al. (2008) identified eight libraries’ roles in disaster circumstances by conducting interviews with librarians but did not prioritize them. After the researchers interviewed librarians from many different institutes, Featherstone et al. (2008) emphasized that the role of institutional

supporters was most frequently cited. However, the results of the present study showed that public librarians in South Korea valued the role of information providers in leading the public through various information sources. For example, one of the survey participants (L74) commented, “I think this is the reason why public libraries exist.” Another respondent (L7) echoed the above description by saying, “I think the most necessary service for library patrons is to select various information, organize it so that they can have selective access, and identify the accurate information.”

In this study, other roles such as “diverse cultural program providers ($M=4.21$, $SD=.79$)” and “educational institutions that reduce the information divide through learning and education ($M=4.19$, $SD=.82$)” were also considered critical roles by public librarians in Korea. For example, one of the librarians (L107) mentioned, “Although offline events are difficult to offer because of COVID-19, many libraries are conducting online courses because users want various cultural programs. It seems that libraries need more staff members to cope with the programs. In reality, however, a lot of librarians seem to be suffering from program-related work. I thought it would be ideal to have a lifelong educator in charge of each library.” Another librarian (L152) described the role of educational organizations, which would contribute to reducing the information gap in society. The librarian (L152) underlined, “In the era of COVID-19, I think that access to information has become more difficult for the information-vulnerable class. In particular, the use of library services for elderly people who have difficulty accessing online services, has declined rapidly. I think we, as librarians, should organize educational programs such as information literacy because it is a convenient alternative for some, but it has become difficult for others.”

Overall, the survey results indicate that the pandemic has affected Korean public libraries in several ways. Librarians had to adopt new working practices, change their service patterns, and consider their roles during disasters. It is essential to note the changes observed during this pandemic may occur again due to similar disasters. Furthermore, when it comes to the expectant roles of public libraries in upcoming disasters, the study contends that information providers, who guide the public through various information resources, would play the most significant role.

Although the current study reveals meaningful findings, it has some limitations. First, since the data was collected between February and March 2021, this study cannot cover the entire pandemic period. It only describes libraries' responses to COVID-19 in the first year of the pandemic period. Therefore, some of the results such as public libraries' services during the pandemic and challenges may have been changed in the following years. Second, the results

may not be generalizable to the entire sample. Although survey responses were collected from seven metropolitan cities and nine provinces in the Republic of Korea, responses from rural public libraries were limited (18.3%). This limitation was unavoidable because the study used an online survey method with non-probability sampling. Therefore, the key findings should be generalized with caution. Third, no in-depth statistical analyses were conducted. However, by adding a few open-ended questions to the questionnaire, the study explored what librarians thought about public libraries' challenges and invaluable roles during the pandemic. To offset the limitations of the quantitative analysis, the researcher reviewed several library websites to help better explain the study's findings.

Future research should compare and contrast public librarians' perceptions of their reactions, challenges, and roles during emergencies in other countries. Different findings may be observed because of other countries' intrinsic policies regarding new infectious diseases or other disasters. Furthermore, more in-depth qualitative studies, such as detailed interviews or focus groups targeting librarians, would help elucidate the reasons for each key finding. Finally, future research should consider library users' perspectives. For example, there may be differences between library patrons and librarians regarding the expected roles of public libraries in society under urgent circumstances.

VI. Conclusion

This study contributes to a better understanding of Korean public libraries' reactions, challenges, influences, and roles during disasters, including the COVID-19 pandemic. The survey results of 317 public librarians showed that all public libraries in the sample closed at least once in 2020. However, the duration of library building closures varied significantly, from less than eight weeks to 24 or more weeks. Many service transitions have been reported, such as picking up items by appointment, sanitizing library materials, and offering online cultural programs. The study's results also indicated that librarians strongly agreed that COVID-19 had the greatest impact on cultural programs in libraries. The librarians' responses to a few open-ended questions led to several key findings. Based on these findings, expanding the current research by comparing other countries' public librarians' perceptions of their reactions, challenges, and expectant roles in forthcoming disasters would be necessary.

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