Postprint: Research on Library Emergency Management and Prevention and Control During the Pandemic

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Date: 2023-04-01T16:15:58+00:00

Abstract

[Purpose/Significance] Pandemics constitute a critical threat to the library sector. The COVID-19 outbreak in early 2020 has profoundly impacted all facets of social services. Libraries, as public spaces characterized by high population density, substantial circulation volumes, and diverse media carriers, require corresponding emergency response protocols when confronting various contingencies. More critically, there is an imperative to enhance and refine libraries' emergency management capabilities for pandemics and to establish a scientific prevention and control framework. [Methods/Process] Employing the web-based survey methodology, this study investigated the emergency management, interim measures, material preparedness, hazard identification, and online service provisions of 27 representative public libraries and 42 "Double First-Class" university libraries nationwide, analyzing and synthesizing experiences in emergency management of sudden public infectious health incidents. [Results/Conclusion] The survey findings broadly reflect the professional competence and ethical standards of the library sector in pandemic response. Emergency management of pandemics in libraries should be founded upon relatively comprehensive mechanisms for prevention, control, response, and resource assurance, together with an innovative literature service system, constituting the basis for emergency management and prevention of sudden public infectious health events in libraries.

Full Text

Preamble

Research on Emergency Management and Prevention Measures for Libraries During Epidemic Periods

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Abstract: *[Purpose/Significance]* Epidemics pose a significant threat to the library industry. The COVID-19 outbreak in early 2020 has severely affected all aspects of social services. As public areas characterized by dense personnel, high circulation volume, and complex carriers, libraries require corresponding emergency protocols for various emergencies and must enhance their emergency management capabilities for epidemics to establish a scientific prevention and control system. *[Method/Process]* This study employed network research methods to investigate emergency management measures, temporary responses, material preparation, hazard identification, and network services across 27 representative public libraries and 42 "Double First-Class" university libraries nationwide, analyzing and summarizing experiences in emergency management of public health emergencies. *[Result/Conclusion]* The findings generally reflect the professional competence and ethics of the library industry in facing epidemics. Libraries should establish relatively complete mechanisms for prevention, treatment, resource guarantee, and innovative document service systems as the foundation for emergency management and prevention of public infectious health emergencies.

Keywords: COVID-19; library emergency services; emergency plan; epidemic prevention and control

Classification Number: G251 **DOI:** 10.13266/j.issn.0252-3116.2020.15.004

Major infectious disease epidemics refer to situations where a certain infectious disease occurs within a short period, affects a wide area, and produces a large number of patients or deaths, with incidence rates far exceeding normal annual rates. Epidemic emergency management involves emergency response to major infectious disease epidemics that cause or may cause serious damage to public health during public health emergencies. Over the past two decades, public health crises such as SARS, H1N1 influenza, and avian influenza have significantly impacted public health and safety. Particularly since the outbreak of COVID-19 in January 2020, the virus has spread through airborne droplets and contact with extremely strong infectivity, prompting major public health emergency responses nationwide. As of April 24, 2020, there were 84,311 confirmed cases and 4,642 deaths [1], causing irreparable damage to the economy, social stability, and public safety. The World Health Organization classified the COVID-19 outbreak as a Public Health Emergency of International Concern (PHEIC) on January 31, 2020—the highest level in its infectious disease emergency mechanism.

As public spaces, libraries face adverse factors including complex and dense personnel, high circulation volume, and unstable indoor air circulation. Additionally, documents, seating, computers, and other equipment are repeatedly used, easily becoming vectors for infectious viruses and creating high-risk zones for epidemic transmission. According to statistics, China had 3,174 public libraries in 2017 with 705.85 million annual book circulations [2]; by 2018, higher education institutions had 38.33 million enrolled students [3] with library build-

ing areas totaling 26.18 million square meters [4]. Once an epidemic breaks out, regardless of scale or duration, it seriously threatens the vital interests of the general public—on one hand disrupting public order, hindering the healthy development of public cultural undertakings, and impeding smooth progress in school research and education; on the other hand, failing to provide corresponding document services during epidemics prevents libraries from fulfilling their important role in epidemic response. In summary, library epidemic emergency management is not only crucial but also indispensable for service construction during emergency management periods.

This study investigates domestic and international library emergency management during epidemics and proactive prevention approaches, focusing on the active measures taken by 27 representative public libraries and 42 "Double First-Class" university libraries in China in response to COVID-19 in January 2020. It analyzes and summarizes experiences in emergency management of public infectious health emergencies and proposes strategies for library epidemic emergency management, aiming to provide references for library epidemic emergency management and service plans.

2. Domestic and International Library Epidemic Emergency Management Policies

2.1 Domestic Library Policies and Research

Currently, China lacks specialized emergency plan documents for major public health events in libraries, with relatively inadequate policy formulation for library epidemic emergency management and services. Available references include the 2003 *Regulations on Emergency Response to Public Health Emergencies* and relevant provisions in the 2006 *National Emergency Plan for Public Health Emergencies*. In 2003, the state issued the *Management Measures for Monitoring and Information Reporting of Public Health Emergencies and Infectious Disease Epidemics*, which stated the purpose as "strengthening monitoring and information reporting management of public health emergencies and infectious disease epidemics, providing timely and scientific decision-making information for prevention and treatment, effectively preventing, promptly controlling, and eliminating the hazards of public health emergencies and infectious diseases, and safeguarding public health and life safety" [5]. In 2017, the *Public Library Law of the People's Republic of China* stipulated in Article 15, Item 6 that "establishing public libraries shall have safety guarantee measures, systems, and emergency plans" [6]. The *Sichuan Province Public Place Hygiene Management Measures* explicitly classified libraries as Class A public places and required that "to create good public hygiene conditions, prevent and control disease transmission and group health hazard events, and safeguard public health, public place units shall formulate emergency plans for preventing and controlling infectious disease transmission and health hazard events, and establish sound systems for public place hygiene monitoring and hygiene safety management of supplies

and utensils" [7], putting forward requirements for libraries to respond to public health emergencies.

Research on library emergency management for emergencies has primarily focused on emergency plans and mechanisms. Hu Xiao compared emergency plans of some universities and proposed improvement suggestions for their deficiencies [8]. Wei Yongli addressed problems in public library emergency mechanisms and proposed countermeasures including improving emergency management systems, establishing crisis awareness, and conducting emergency assessments [9]. Shi Huiyuan sorted out safety hazards of infectious disease transmission in university libraries and proposed overall ideas for crisis management of public health emergencies [10]. Yang Min investigated emergency management of "Double First-Class" university libraries and proposed management strategies from physical, 事理 (organizational), and 人理 (human) dimensions based on the WSR methodology [11]. Relatively speaking, current research lacks sufficient attention to library epidemic emergency management and services, making this area highly valuable during major epidemics.

2.2 International Library Industry Research

International library crisis management research began in the 1970s, with the UK and US paying relatively more attention to library disaster management. G. Matthews and J. Feather co-authored the book *Disaster Management for Libraries and Archives* in 2003, comprehensively summarizing effective measures, practical experiences, and research findings in library disaster management [12], providing detailed elaboration on developing disaster control plans, describing different development stages from disaster prevention to recovery, and offering guidance on risk assessment and management that forms the basis of disaster plans, exerting significant influence in the field. IFLA (International Federation of Library Associations and Institutions) attaches great importance to crisis management and crisis plan formulation, particularly disaster management and post-disaster recovery. In 2006, IFLA published the *IFLA Disaster Preparedness and Planning: A Brief Manual*, offering specific recommendations on how to effectively protect the life and property safety of readers, staff, and collection resources when disasters strike libraries, covering disaster assessment, disaster prevention and protection, emergency management, and post-disaster recovery [13].

Stanford University Libraries implemented the "Conservation Online" project, with a sub-project "Disaster Preparedness and Response" detailing crisis plans from over 20 libraries in Europe and America [14]. Harvard University Library's emergency management plan prioritizes the life safety of readers and staff as the foremost principle in responding to all crises and emphasizes the importance of post-disaster psychological counseling and support for librarians [15].

3. Survey of Library Epidemic Emergency Management and Prevention

After the 2003 SARS outbreak, the Party Central Committee and State Council proposed accelerating the construction of public emergency response mechanisms. Given the similarities between COVID-19 and SARS, this study reviewed emergency measures taken by major public and university libraries during the SARS period. In addition to literature review, the study also used search engines, telephone interviews, and WeChat features to investigate the official websites and WeChat public accounts of 27 representative public libraries and 42 "Double First-Class" university libraries, examining emergency management content, temporary closures, and reader services during the COVID-19 period. The survey period was from January 23 to February 4, 2020.

3.1 Library Emergency Management and Services During the SARS Period

3.1.1 Prevention and Response Measures During the SARS period, public libraries and some university libraries adopted emergency measures such as controlling entry numbers, maintaining indoor air circulation, comprehensive disinfection, and temporary closures. These preventive measures played a positive role in blocking SARS virus transmission routes. For example, Hebei University Library established a rapid response network and information feedback system during SARS to handle emergencies promptly, stabilize and guide readers, and minimize unexpected losses [16]. Hong Kong Lingnan University Library formulated four-stage crisis management measures during the two months from SARS outbreak to its resolution, anticipating various possible situations and response measures at each stage while actively maintaining coordination with relevant university departments to share experiences and exchange operational opinions [17]. Some libraries extended book loan periods and fully utilized online reference consulting services against the backdrop of less abundant digital resources.

3.1.2 Positive Role of Libraries During SARS Digital libraries played a positive role during the SARS epidemic. First, in publicity and education for SARS prevention and treatment, the National Library compiled a webpage of SARS prevention materials, provided relevant e-books, and linked related websites; the National Cultural Information Resource Sharing Project established a "SARS Knowledge Digital Resource Database" to provide services to the whole society [18]; Jinan Library purchased professional books on SARS prevention and established an "Anti-SARS Knowledge Special Topic" on its webpage, providing scientific theoretical basis for public understanding and prevention of SARS, and compiled a "Special Compilation on Fighting SARS" introducing the advanced deeds of medical staff such as Zhong Nanshan, Jiang Suchun, and Zhang Jihui who fought on the front line [19]. Second, in information services and support, Zhejiang Library presented online reading cards worth 200 yuan to

medical staff fighting SARS, committed to comforting their family members and enabling them to browse and download 520,000 e-books at home [20]; some medical libraries timely collected and organized hospital epidemic data to provide literature services for medical staff and patients in isolation wards. In summary, during the 2003 SARS period, library professionals provided abundant professional epidemic prevention knowledge to the public, playing a positive role in epidemic prevention and control and public information access.

3.2 Survey of Library Emergency Management During COVID-19

3.2.1 Emergency Management in Public Libraries Through investigating the websites and WeChat public accounts of 27 public libraries, their emergency responses during COVID-19 were identified, as detailed in Table 1 . The overall situation was positive, mainly reflected in three aspects:

(1) **Emergency Closure**: All 27 public libraries promptly adopted temporary emergency closure measures. After President Xi Jinping made important instructions on COVID-19 control on January 20, closure announcements were posted in the most prominent positions on their homepages and WeChat public accounts. Twenty-two percent of public libraries mentioned preparing corresponding emergency supplies such as disinfectant and masks to maintain the library environment and basic personal safety for readers and staff. Eighty-nine percent of public libraries released emergency plans for the epidemic, covering emergency services and prevention deployment.

(2) **Emergency Management**: The 27 public libraries all suspended all offline services and activated emergency service systems, fully leveraging the Internet to provide free digital resources such as e-books, databases, and online courses. Shanghai Library, Hubei Provincial Library, Hunan Provincial Library, Guangdong Provincial Sun Yat-sen Library, and others particularly opened special digital resources on COVID-19 for free, disseminating relevant knowledge and guiding the public to correctly understand COVID-19 and adopt effective preventive measures. Another 12 libraries released prevention and control measures including emergency supply allocation and disinfection of public environments and items to ensure relative safety in library premises.

(3) **Reader Services**: Overall, among the 27 surveyed public libraries, those with relatively comprehensive emergency management included Shanghai Library, Hubei Provincial Library, Hunan Provincial Library, and Guangdong Provincial Sun Yat-sen Library. These measures demonstrated their attention to emergency management of public health safety incidents.

3.2.2 Emergency Management in Major University Libraries Investigating the homepages and WeChat public accounts of 42 “Double First-Class” university libraries revealed their emergency responses during COVID-19, as

detailed in Table 2 , which can be divided into three aspects:

(1) **Temporary Closure**: Ninety-five percent of libraries implemented temporary closures, strictly prohibiting faculty and students from entering and leaving the library due to the severe epidemic situation to eliminate potential for group infection.

(2) **Emergency Management**: Ninety-three percent of libraries released emergency notices regarding the epidemic on their official websites and WeChat public accounts, extending closure periods. Regarding epidemic prevention supplies, 8% of university libraries mentioned preparing corresponding materials for epidemic prevention work after students return to the library post-closure.

(3) **Emergency Services**: All these university libraries maintained normal operation of digital libraries and "7$×$24" uninterrupted database resource services. Thirty-eight percent of libraries continued disciplinary services, 21% supported document delivery during closure, and 95% actively adjusted service methods by pushing emergency services on their public accounts and homepages, launching free resources and access methods from various databases and digital resource platforms to comprehensively support faculty and student research and learning during epidemic prevention and control. Wuhan University Library, Zhengzhou University Library, and others established special COVID-19 prevention columns to raise awareness among faculty and students. During the investigation, many libraries proposed slogans such as "Classes suspended but learning continues, library closed but network open," "Library closed but network open, services remain open," and "Semester postponed but learning not postponed." In the emergency plans of Peking University and Chongqing University libraries, detailed contact information was planned for various departments to adopt online services and network office work, ensuring faculty and students could obtain needed literature services during the special period of library closure due to the epidemic.

Overall, among the 42 surveyed "Double First-Class" university libraries, those with relatively comprehensive overall emergency management and reader services included Peking University Library, Zhejiang University Library, Sun Yat-sen University Library, Wuhan University Library, and Chongqing University Library. These university libraries not only emphasized epidemic prevention and control but also attached importance to continuing to provide high-quality online services for readers in difficult circumstances.

3.3 Emergency Responses in Library-Related Industries

During the epidemic fight, library-related industries also responded with proactive measures, collaborating with public and university libraries to minimize adverse effects from epidemic response. VIP (维普) opened its Chinese journal database platform for free paper downloads; CNKI provided free knowledge ser-

vices to national researchers through its cloud service model "OKMS+HuiZhi" platform, enabling online journal literature queries and research project collaboration; Wanfang Database opened free access to its "SciFund" platform for some university faculty and students to support applications for national natural science and social science funds; Elsevier, as a global information analysis service provider specializing in science and medical fields, established a free COVID-19 resource center with content on the latest information about COVID-19 and the epidemic in China, facilitating literature access for professional medical and research personnel. JD Reading responded to the national anti-epidemic call by pushing free book lists to all users to popularize scientific knowledge about COVID-19 and scientific prevention. JD Reading specially opened a "Palm Medical Kit" special topic, compiling 160 e-books on medical and health for users to popularize basic medical knowledge and raise readers' epidemic prevention awareness. Publishing industries such as China Machine Press, CITIC Press, and Tsinghua University Press also provided free e-books, audio-visual materials, and online courses for readers. As related industries of libraries, multiple companies actively responded to guarantee services, pooling resources and fulfilling responsibilities to build a good environment for free reading and digital resource access without boundaries or restrictions across the entire network.

3.4 Main Problems in Library Epidemic Emergency Management

3.4.1 Incomplete Emergency Response in Some Libraries After Wuhan implemented emergency control measures and announced lockdown on January 23, 2020, most libraries responded quickly, issuing emergency closure announcements within two days to prevent reader gatherings and group infections, and subsequently releasing emergency service plans to ensure continuous literature services. However, a few libraries responded somewhat slowly, such as Harbin Institute of Technology Library, which only released emergency notices and related service measures on February 4.

3.4.2 Incomplete Content of Epidemic-Specific Emergency Plans A complete emergency plan should include the entire process of prevention, emergency support, emergency response, and follow-up treatment. Based on a comprehensive survey of relevant columns on the homepages of 69 libraries, such as rules and regulations, library entry instructions, and reader guidelines, most emergency plans focused on emergency resource guarantee services after library closure, with only a few libraries addressing specific prevention measures for in-library and post-opening epidemic prevention and control. For example, Shanghai Library, Nanjing Library, and Guangdong Provincial Sun Yat-sen Library released COVID-19 prevention and control measures including epidemic monitoring and defense, emergency treatment, and library environment disinfection. Only a small number of university libraries released relevant notices on epidemic prevention and control deployment to ensure safe library use by faculty and students after opening.

3.4.3 General Shortage of Emergency Personnel and Supplies During the investigation, it was found that the allocation of emergency personnel and supplies was rarely publicized or reflected on various libraries' homepages, with no specific procurement information. Only 22% of public libraries and 4 university libraries mentioned emergency supplies used in epidemic prevention and deployment. The lack of masks for librarians became a common phenomenon. Insufficient emergency personnel was also reflected in delayed information release by some libraries, resulting in untimely and ineffective implementation of emergency measures. Insufficient emergency supplies cannot guarantee adequate support when emergencies occur, causing all specific measures of emergency management to become formalistic and unable to play their proper role in epidemic prevention and control, leading to rapid epidemic spread.

3.4.4 Easily Overlooked Epidemic Transmission Key Points The investigation identified some easily overlooked and less alert transmission key points in libraries. Public facilities such as elevators, corridors, sewers, and air conditioning systems may pose infection hazards. In March 2003, the Amoy Gardens incident in Hong Kong resulted in 321 infections due to virus carriers' excrements volatilizing into the air through sewage pipes [21]. After SARS, the state issued relevant floor drain standards. As libraries are multi-story buildings, if floor drain selections do not meet new national standards, viruses could spread through library sewers and ventilation facilities, requiring attention and vigilance from all libraries. Elevators and corridors are important disinfection points for COVID-19 because relatively enclosed spaces are not conducive to virus dispersion and instead facilitate close-range infection. Elevator buttons repeatedly used by different people can easily become a virus transmission source. Libraries are mostly enclosed spaces with poor ventilation. Studies show that in reading rooms and other venues, after one hour of opening, indoor airborne bacteria content exceeds outdoor levels by more than 9 times, and suspended particulate matter concentration exceeds outdoor levels by more than 9 times, with carbon dioxide concentration exceeding outdoor levels by more than 4 times [22]. Air circulation from fresh air systems in the presence of viruses significantly increases transmission speed and scope, making reader health issues in air-conditioned environments a matter requiring sufficient attention. Circulating paper books easily carry germs. Relevant surveys show that when books are borrowed once, the bacterial colony count is 36; when borrowed 5 times, it is 51; and when borrowed 10 times, it reaches as high as 73 [22]. Without timely disinfection, the risk of virus transmission increases substantially.

4. Recommendations for Library Epidemic Emergency Management and Prevention

Library epidemic emergency management should adhere to prevention-first principles combined with peacetime-wartime integration. Libraries should collaborate with local people's governments at all levels, health administrative depart-

ments, and relevant school departments to strengthen organizational construction for epidemic emergency management, organize and conduct monitoring and early warning of sudden epidemics, enhance emergency response team building and technical research, establish and improve library public health emergency prevention and control systems, and ensure smooth implementation of emergency response work for public health emergencies.

4.1 Establish Library Epidemic Emergency Management and Prevention Mechanisms

Prevention is the top priority in public health emergency management, with the highest quality measure being prevention before occurrence. Libraries must establish an epidemic emergency management and prevention mechanism, which must rely on a strong organizational system, sensitive monitoring and early warning systems, complete emergency plans, and effective daily prevention systems.

4.1.1 Build an Emergency Organization System Libraries should establish an internal emergency linkage epidemic emergency management leading group responsible for overall command and decision-making. Specific emergency work responsibilities for each division leader should be determined. Under the coordination and command of the emergency management leading group, various departments should effectively perform their duties and make judgments based on epidemic development to ensure smooth implementation of emergency plans. Libraries should also form external emergency linkages with health emergency response institutions in their administrative regions, creating an emergency linkage network with schools, hospitals, disease control centers, and public security departments to coordinate the handling of sudden epidemic events.

4.1.2 Develop Complete Emergency Plans Complete emergency plans help correctly and timely handle sudden epidemics, playing a key role in controlling epidemic development directions, minimizing harm and losses, and taking timely and effective emergency measures. Library sudden epidemic emergency plans should be formulated based on the *National Emergency Plan for Public Health Emergencies*. When the epidemic emergency management command group develops plans, content should include general principles, organizational structure and responsibilities, early warning, emergency treatment, follow-up treatment, guarantee measures, and plan management [23]. Plans must also ensure operability and practicality, meaning they are truly effective and feasible regulations rather than formalistic documents.

4.1.3 Establish Daily Prevention and Control Systems Libraries must strengthen daily hygiene management through three aspects: internal self-inspection, entry prevention monitoring, and personnel patrols, as shown in Figure 1 [Figure 1: see original paper]. Internal self-inspection requires

disinfection of the overall library environment, including indoor air, collection books, and public items, with particular attention to disinfection and sterilization of borrowed books, back issue stacks, and ancient book collections. Positions with close reader contact require basic protection, including masks, gloves, protective clothing as appropriate, frequent hand washing, and necessary self-protection. Entry personnel prevention monitoring should establish prevention monitoring points or implement emergency closures depending on epidemic severity; suspected infected individuals should be persuaded to return or controlled as infection sources and sent to hospitals for isolation to prevent cross-infection. Daily patrol work should be strengthened, with immediate reporting to the emergency management leading group for handling upon discovering environmental pollution or unusual reader symptoms. Libraries can conduct emergency drills based on actual conditions under expert supervision and guidance from aspects of organizational management, emergency response, departmental cooperation, and material reserves to enhance epidemic emergency response capabilities.

4.2 Improve Library Epidemic Emergency Management Response Mechanisms

Library epidemic emergency management response mechanisms are a series of effective measures taken by relevant departments or organizations to ensure stable and healthy library operations in response to sudden epidemics. Based on epidemic classification, libraries should quickly assess event levels, conduct risk assessments, and formulate efficient response plans under professional medical guidance.

4.2.1 Objective Analysis of Epidemics and Targeted Treatment For respiratory infectious diseases such as COVID-19, SARS, H1N1 influenza, H7N9 avian influenza, and tuberculosis, which mainly spread through droplets, droplet nuclei, and dust, once readers show suspected infection symptoms such as fever, cough, and respiratory discomfort, medical diagnosis and observation should be immediately arranged after ruling out common colds. Reader information should be collected to prevent gatherings, with library ventilation and comprehensive disinfection implemented. For intestinal infectious diseases such as bacterial dysentery, typhoid fever, hepatitis A, and cholera, which mainly spread through fecal-oral transmission, if some readers show fever, abdominal pain, diarrhea, and other symptoms in the library, water sources should be inspected for contamination and library hygiene conditions checked, with comprehensive disinfection performed. For blood-borne infectious diseases such as dengue fever and plague, which spread through blood transmission, if some readers show acute onset, high fever, and headache symptoms, “four pests” elimination work in the library should be strengthened to eradicate infection sources and block transmission routes. For the above epidemics, if large-scale sudden infections occur, emergency plans should be immediately activated, emergency closure implemented to control infection sources, rapid assessment of epidemic impact

scope, urgency, and severity conducted, higher authorities reported, disease control centers and public security departments contacted, and timely isolation measures and effective disinfection and protection implemented.

4.2.2 Timely and Objective Information Release and Effective Communication to Eliminate Misunderstandings As public service institutions, libraries may become the focus of media and reader attention once epidemic crises occur. Communication problems with the outside world may trigger speculation and trust crises. Therefore, timely and effective communication with relevant units, media, and readers, along with objective, accurate, and timely release of the latest epidemic response situations, can avoid panic caused by sudden epidemics, narrow the scope of harm, and create a relatively relaxed external environment for libraries.

4.3 Improve Library Epidemic Emergency Management Resource Guarantee Mechanisms

4.3.1 Build Library Emergency Material Supply Warehouses Adequate quantity and complete variety of emergency material preparation are basic guarantees for successfully responding to and preventing sudden epidemics. Libraries should prepare material guarantees as much as possible based on actual conditions and needs, establish emergency material warehouses, classify and store emergency materials by purpose, and ensure availability for emergency response. The author referenced medical requirements and combined them with the *Reference Catalogue of Equipment for Health Emergency Teams (Trial)* to classify materials by purpose [24]. Library emergency materials should include: individual protection (medical protective masks, disposable protective clothing, protective glasses, latex gloves, protective boots, protective shoe covers, etc.); emergency personnel preventive medicines (thymosin, gamma interferon, broad-spectrum antibiotics, repellents, etc.); "four pests" elimination (fly paper strips, cockroach traps, mouse glue boards, mosquito traps, insect nets, electric mosquito suction devices, etc.); disinfection and sterilization (ultraviolet disinfection lamps, manual disinfectors, quaternary ammonium disinfectants, 84 disinfectant, effervescent tablets, calcium hypochlorite disinfection tablets, bleaching powder, iodophor, etc.). If conditions permit, constant temperature and humidity equipment and mechanical ventilation devices are recommended.

4.3.2 Improve Library Digital Literature Resource Guarantee Systems If major epidemics require temporary closure and suspension of offline reader services, book loan periods should be appropriately extended. Libraries should actively transform service methods, improve online service capabilities, and build strong network literature resource guarantee systems to meet reader needs. Beyond resource systems, libraries should also build complete network authentication and access systems to ensure readers can utilize these resources from anywhere globally, not necessarily requiring in-library or on-campus access.

4.3.3 Timely Popularization of Epidemic-Related Literature and Information Libraries shoulder the dual tasks of serving the general public and research and teaching institutions. Therefore, they should promptly conduct online information services for epidemics, utilizing their unique information resource access channels and analysis capabilities to popularize various epidemic prevention and control knowledge, help the public correctly understand epidemics, strengthen publicity and education to guide citizens in establishing epidemic prevention awareness, and update epidemic spread dynamics in real-time during outbreaks to enhance public trust, overcome fear, and actively cooperate with epidemic control efforts. Additionally, libraries with conditions can establish emergency rescue teams for rapid response and handling during sudden epidemics, scientizing entire epidemic emergency management and services to minimize harm to readers and librarians. Emergency rescue teams should be centered on personnel with relevant medical expertise, supplemented by part-time library staff and volunteers, regularly organizing emergency training for sudden epidemics and prioritizing the protection of reader life and health safety as the primary rescue task. For example, Chongqing University Library not only equipped AEDs (Automated External Defibrillators) for defibrillation and cardiopulmonary resuscitation for readers in possible emergencies but also trained more than 10 librarians in relevant rescue procedures.

4.4 Innovative Document Service Systems During Epidemic Emergency Periods

Whether during SARS 17 years ago or the COVID-19 pandemic, libraries have always innovated service methods with the most positive and optimistic attitudes, providing humanized services to readers and users during extraordinary times, continuously warming the hearts of readers and faculty/students—isolating viruses but not care and knowledge.

4.4.1 Provide Online Consulting Services and Establish Epidemic Special Topic Websites During SARS, Tsinghua University Library promptly launched online consulting services for readers and established a "SARS Scientific Research Materials Special Topic" website, timely responding to reader inquiries and playing a positive role in stabilizing faculty/student emotions and ensuring normal teaching and research operations [25]. The special topic website "Fighting SARS, Cherishing Health" jointly produced by the National Library and the National Cultural Information Resource Sharing Project took policies and regulations on fighting SARS, abundant anti-epidemic knowledge and expert materials, and compilations of major epidemic prevention and control materials from history as main content for public science popularization. During the COVID-19 outbreak, many public and university libraries opened special digital resources on COVID-19 for free.

4.4.2 Actively Adjust Service Methods and Provide Diverse Reader Services While all libraries committed to ensuring online literature resource

services during COVID-19, Peking University Library, to meet borrowing needs of on-campus faculty and students, opened a "Book Delivery to Building" service project. Under the premise of ensuring librarian and reader safety, readers could submit borrowing requests online, and librarians organized delivery of disinfected and safely packaged books to dormitories, laboratory buildings, offices, and other locations at fixed times for safe handover. From February 3 to April 7, a total of 1,031 "Book Delivery to Building" requests were completed, serving 383 faculty/students and delivering 3,044 titles (4,142 volumes) [26].

4.4.3 "Teaching Continues Despite City Lockdown and Isolation, Learning Continues Despite Home Quarantine": Developing Online Teaching Service Models To avoid post-holiday epidemic resurgence and ensure normal academic planning for Wuhan students was not interrupted during the epidemic, Wuhan University required full utilization of network resources and technical means for online teaching in the second semester of 2019-2020. As the backbone of research and teaching support at Wuhan University, Wuhan University Library launched a series of online electronic teaching reference resources, online teaching auxiliary tools, and usage guides for faculty and students [27]. Sichuan University Library, to effectively support the "learning continues despite class suspension" online teaching work, quickly implemented and launched the "Sichuan University 2019-2020 Spring Semester Textbook Online Service Platform," providing nearly 1,200 Chinese and foreign textbook e-books. From its official launch on February 16 to March 12, the platform recorded 330,661 visits. The construction of textbook e-books provided solid literature resource support for online teaching conducted by 38 teaching units (32 colleges and 6 other teaching institutions). Shanghai Jiao Tong University Library's Electronic Teaching Reference System (ERBS) received resource demands for 3,650 volumes from 918 courses during the epidemic, covering five languages (Chinese, English, German, French, and Japanese). By March 2, when online teaching officially began, the system provided 3,273 online teaching resources, meeting 90% of textbook and teaching reference demands, with a 100% satisfaction rate for online teaching resources for undergraduate and graduate public basic courses [28].

4.5 Case Study: Chongqing University Library's Overall Emergency Measures

After Wuhan announced lockdown on January 23, 2020, Chongqing University Library announced emergency closure on January 25, simultaneously establishing an emergency service working group to promptly launch online "zero-distance" services, formulated an emergency service plan for this epidemic period, and set up seven working groups including digital resources and network guarantee, information services, new media publicity, reference consulting, and document delivery to meet reader needs. The library also fully understood staff conditions, strengthened prevention and self-protection awareness among branch library duty personnel, and purchased masks and other protective equip-

ment through alumni.

During the epidemic control period, the main body of library literature services was the network. Two years prior, the library had jointly built a new VPN system with university informatization departments, ensuring stable remote access to digital literature resources during this period. Statistics show that in February 2020, digital literature was updated in 53 batches with 3,731,922 new assets, reaching a total of 2,123,516,10 articles, with 136,658 total digital literature clicks (downloads), averaging 11.51 articles per person, basically consistent with previous winter vacations. Meanwhile, the library strengthened online reference consulting and document delivery, online information services, and intellectual property information services, completing over 20 novelty and citation reports and one COVID-19-related patent analysis report, timely submitting them to affiliated hospitals and relevant research institutions.

Under campus control conditions, the library also innovated paper book lending services during the epidemic prevention and control period. Following the principle of "safety first, service priority," it provided "contactless paper book reservation and lending" services from March 9, achieving book lending through online submission, offline fixed-point and timed staggered pickup, and mailing methods, lending 55 books on the first day of launch. Simultaneously, it launched the "HuiCai Platform Reader JD Book Purchase" service—if the library did not have a book needed by readers, faculty and students could select needed books on the platform, with JD Express delivering books to their homes.

To release information objectively and timely, the library's new media platform promptly released various latest developments, proactively publicized digital resources and free resources provided by database vendors to readers, ensured official emergency information was disseminated accurately and accessibly without distortion, and timely answered online reader inquiries and reflected relevant issues.

Meanwhile, the library actively prepared for reopening, formulated centralized disinfection treatment plans for borrowed books after opening, temporarily stored circulated books returned during the epidemic in separate ventilated locations without shelving, and shelved them after disinfection treatment; purchased protective items such as masks, disposable gloves, hand sanitizer, and disinfectant through various channels, and added book disinfection equipment and intelligent temperature testing devices.

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Author Contributions: Ran Weiran: Paper writing and revision; Yang Xinya: Topic selection and overall paper framework; Wang Yanli: Partial content revision and research material provision; Li Xuhong: Professional medical content guidance.

Research on Emergency Management and Measures for Prevention and Control of Library During Epidemic Period

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Abstract: *[Purpose/Significance]* The epidemic is a significant threat to the library industry, and the epidemic of pneumonia caused by the novel coronavirus in early 2020 has severely affected all aspects of social services. As a public area with dense personnel, large circulation, and complicated carriers, the library needs corresponding emergency plans for various emergencies, and it is necessary to improve the emergency management ability of the library to the epidemic and establish a scientific prevention and control system. *[Method/Process]* This paper used network research methods to investigate some measures taken by 27 representative public libraries in China and 42 libraries of "Double First-Class" universities, such as emergency management, temporary measures, material preparation, hidden danger investigation, and network services, and analyzed and summarized the experience in emergency management of public health emergencies. *[Result/Conclusion]* The investigation basically reflects the professionalism and professional ethics of the library industry in the face of the epidemic. The library should have a relatively complete mechanism

of prevention, treatment, resource guarantee, and innovative document service system as the basis for the emergency management and prevention of public infectious health emergencies in the library.

Keywords: COVID-19; library emergency services; emergency plan; epidemic prevention and control

Note: Figure translations are in progress. See original paper for figures.