

Negotiating interdisciplinary practice under the COVID-19 crisis: opportunities and challenges for tourism research

Xinyi Liu, Jun Wen, Metin Kozak, Yangyang Jiang and Zhiyong Li

Xinyi Liu is based at the School of Tourism, Sichuan University, Chengdu, China. Jun Wen is based at the School of Business and Law, Edith Cowan University, Joondalup, Australia. Metin Kozak is based at the Department of Advertising, School of Communication, Kadir Has University, Cibali, Istanbul. Yangyang Jiang is based at Nottingham University Business School, University of Nottingham Ningbo China, Ningbo, China. Zhiyong Li is based at the School of Tourism, Sichuan University, Chengdu, China.

Abstract

Purpose – COVID-19 is currently the most serious crisis facing the world, and scholars in the medical and social sciences are working to save lives and mitigate the societal effects of the pandemic. This global public health emergency requires interdisciplinary work to provide comprehensive insight into a rapidly changing situation. However, attempts to integrate the medical and social sciences have met several barriers. This paper aims to identify feasible research opportunities for interdisciplinary studies across tourism and public health regarding COVID-19.

Design/methodology/approach – This paper presents a critical review of the literature and generates corresponding conceptual and theoretical frameworks to provide an in-depth discussion.

Findings – Tourism-related issues of destination management policies and capital are addressed from an interdisciplinary perspective. The conclusions encourage interdisciplinary research into global health problems, which will promote tourism's renaissance and sustainable development while enhancing social welfare.

Practical implications – This study focuses on integrating tourism and public health to offer stakeholders recommendations regarding destination management and tourism industry recovery amid COVID-19.

Originality/value – This paper represents a frontier study, critically uncovering a host of innovative interdisciplinary research directions and tourism-focused collaboration opportunities related to COVID-19.

Keywords Interdisciplinary research, Public health, Social sciences, Tourism management, COVID-19, Medical sciences

Paper type Conceptual paper

新冠疫情危机下的跨学科实践谈判: 旅游研究的机遇和挑战

研究目的：新冠疫情是当今世界面对的最严重的危机，医学和社会科学领域的学者们在共同努力，拯救生命，减轻疫情的社会影响。基于快速变化的形势，这项全球突发的公共卫生事件亟需跨学科工作来进行全面的调查，但目前医学和社会科学的融合存在一些阻碍因素。为了应对新冠疫情的爆发，本文旨在探讨旅游与公共卫生跨学科合作的可行性和研究机会，并总结潜在的研究主题和未来的研究议程。

研究设计/方法：本研究对文献进行了批判性的回顾，并生成了相应的概念和理论框架，以提供一个全面的、深入的主题讨论。

研究结果：研究结果从跨学科的角度讨论了旅游产业中的目的地管理、政策和资本问题。我们的结论鼓励对全球健康问题进行跨学科研究，这将促进旅游业的复兴和可持续发展，同时提高社会福利。

研究局限/启示：目前的研究重点是旅游研究和公共卫生的融合，为利益攸关方提供关于在危机中目的地管理和旅游业复苏的建议。

原创性/价值：本文是一项前沿研究，批判性地、全面地确定了一系列与新冠疫情相关的旅游领域的跨学科研究方向和合作机会。

关键词：医学，社会科学，公共健康，旅游管理，跨学科研究，新冠肺炎

文章类型：研究型论文

La negociación de las prácticas interdisciplinarias durante la crisis de COVID-19: Oportunidades y retos para la investigación turística

Diseño/metodología/enfoque (límite 100 palabras) : Este trabajo presenta una revisión crítica de la literatura y genera los correspondientes marcos conceptuales y teóricos para proporcionar una discusión en profundidad.

Received 18 January 2021
Revised 7 April 2021
1 July 2021
25 August 2021
27 August 2021
Accepted 27 August 2021

Objetivo (límite 100 palabras) : *El COVID-19 es actualmente la crisis más grave a la que se enfrenta el mundo, y los especialistas en ciencias médicas y sociales están trabajando para salvar vidas y mitigar los efectos sociales de la pandemia. Esta emergencia de salud pública mundial requiere un trabajo interdisciplinario para proporcionar una visión completa de una situación que cambia rápidamente. Sin embargo, los intentos de integrar las ciencias médicas y sociales han encontrado varios obstáculos. El objetivo de este artículo es identificar las oportunidades de investigación viables para los estudios interdisciplinarios entre el turismo y la salud pública en relación con la COVID-19.*

Conclusiones (límite 100 palabras) : *Las cuestiones relacionadas con el turismo en materia de gestión de destinos, políticas y capital se abordan desde una perspectiva interdisciplinaria. Nuestras conclusiones alientan la investigación interdisciplinaria de los problemas de salud global, lo que promoverá el renacimiento del turismo y el desarrollo sostenible, al tiempo que aumentará el bienestar social.*

Implicaciones prácticas (límite 100 palabras) : *Este estudio se centra en la integración del turismo y la salud pública para ofrecer a las partes interesadas recomendaciones relativas a la gestión de los destinos y la recuperación de la industria turística en medio de COVID-19.*

Originalidad/valor (límite 100 palabras) : *Este trabajo representa un estudio de frontera, que descubre de forma crítica una serie de direcciones innovadoras de investigación interdisciplinaria y oportunidades de colaboración centradas en el turismo en relación con COVID-19.*

Palabras clave : *Palabras clave Ciencias médicas, ciencias sociales, salud pública, gestión del turismo, investigación interdisciplinaria, COVID-19*

Tipo de artículo : *Investigación*

Introduction

The organization of tourism as an episteme requires an interdisciplinary approach intended to depict, analyze and understand the industry's complexity (Darbellay and Stock, 2012). Tourism has expanded in tandem with insight from anthropology, economics, geography and sociology. The disciplinary focus turned to management in the 1980s. This field is still young, however, and generally integrates more knowledge than it imparts to other areas. Tourism scholars have, thus advocated for interdisciplinary research to develop this domain (Becken, 2013). The need for such work has become exceedingly urgent amid COVID-19.

The COVID-19 outbreak has touched nearly all countries with surprising speed and severity, arousing international concern. Public health-related research on this crisis has gradually come to the forefront. Tourism is a highly mobile activity that increases infection risk (Yang et al., 2020); its high-contact nature is thought to promote the spread of COVID-19 given the virus's transmissibility and penchant for asymptomatic infection. Many countries suspended their visa-on-arrival policies and announced travel bans to prevent the spread of the disease. Tourism is traditionally risk averse and has borne the brunt of the outbreak; the pandemic grounded airplanes closed hotels and resorts and suspended destination businesses. A UNWTO (2020) report suggested that the industry could expect a 20%–30% decline in international travel movements and US\$300–450bn in losses due to COVID-19. Individual actors' efforts will be insufficient to address pandemic challenges, including in tourism – the outbreak represents a far-reaching humanitarian crisis (Grasselli et al., 2020). This public health crisis hence, requires cooperation among professionals and academics in clinical medicine, virology, infectious diseases, sociology, economics, psychology, public administration, tourism and other disciplines.

Interdisciplinary approaches can produce systematic theoretical frameworks around human health, well-being (Rosenfield, 1992) and resilience and sustainable development in tourism (Becken, 2013). Interdisciplinary studies of COVID-19 will be critical to meeting current and future challenges in this industry. Although issues in public health and tourism development are interrelated, the potential for integrating studies in the two domains has not been fully exploited. Moreover, the convergence of health and tourism has given rise to a variety of tourism markets, including “health and welfare tourism, dental tourism, stem cell tourism, transplant tourism and abortion tourism” (Hall, 2011, p. 5). Medical and health tourism is

one of the fastest-growing areas in tourism and health studies. To this end, the current study focuses on the fusion of tourism and public health to offer stakeholders recommendations regarding destination management and tourism industry recovery amid this crisis. The potential marrying of tourism and public health is based on four theoretical propositions. First, public health is a management science that harnesses community health resources to provide people disease prevention knowledge and health guidance and promote the health of the masses. As a social practice, public health falls under administrative management rather than medical behavior. The government essentially establishes policies to execute macro-control on societal health-related efforts and to formulate, plan and implement policies that guarantee people's health (Rosen, 2015). Second, tourism is a "place-based, multi-scalar and politically mediated experience" (Gillen and Mostafanezhad, 2019, p. 70). By incorporating global, national and regional contexts, industry implications will go beyond traditionally defined "tourism impacts" to become dimensionally connected to public health among residents and tourists. Third, the theoretical intersection of tourism and public health is important to consider; tourism and public health crises are closely related to historical and place-specific attributes, including power and capital (Johnston *et al.*, 2011) in tourism development and pandemic prevention. Finally, cultural collisions occur from pandemic outbreaks. A country's culture plays a key role in disease transmission. Social distancing is known to slow the spread of the pandemic. Yet, in areas with high civic culture, mobility increased significantly before and after mandatory travel bans, reducing social distancing and accelerating the outbreak (Durante *et al.*, 2021). People in cultures characterized by a "short-term orientation" and "indulgence" are less likely to engage in social distancing when faced with higher opportunity costs. In particular, religious and social gatherings continue to sustain the pandemic's life cycle (Wang, 2021). Although studies have confirmed that wearing masks in public places can partly mitigate the spread of COVID-19, individuals' attitudes toward masking vary greatly, such as throughout Europe (Timpka and Nyce, 2021).

Interdisciplinary studies, albeit complex, can serve as springboards for broader theorization on the intersection between tourism and public health. This paper addresses the potential for cross-disciplinary work in these domains, with COVID-19 providing an impetus. The ensuing review of relevant literature and macro-level analysis justifies the integration of tourism and public health. Future research directions are also summarized.

Literature review and theoretical basis

Transdisciplinarity is a research paradigm in which scholars combine theories, methods and measures from specific disciplines to adopt a harmonious approach in a single study (Rosenfield, 1992). The theoretical foundation of interdisciplinary research lies in the concepts of "human flourishing" and "one health," especially during the pandemic. The prosperity of mankind depends on a profound shift in values that abolishes old norms and emphasizes well-being over differences between people and non-people or between societies (Ehrenfeld and Hoffman, 2013). The measurement of "well-being" will become increasingly crucial post-pandemic, with human prosperity remaining a core issue (Cheer, 2020). The notion of "one health" refers to "a collaborative, multi-sectoral and interdisciplinary approach – working at the local, regional, national and global levels [to] recognize the connectivity of people, animals, plants and their shared environment with the goal of achieving optimal health outcomes" (CDC.gov, 2017). This concept encourages people to abandon academic and professional silos in favor of joint efforts to promote well-being.

Context for collaboration between the medical and social sciences

Natural science involves naturally occurring phenomena and spans the earth sciences, life sciences, physical sciences and other types. Among these categories, the medical and health sciences focus on human life functioning and include "anatomy, physiology and

pathology along with biochemistry, immunology, virology, microbiology, molecular biology, genetics, preventive medicine and public health” research. By contrast, social sciences aim to explain the psychological, sociological and economic mechanisms underlying human society from individual or group perspectives.

The medical community has long recognized human health as more than a medical concept; it is the result of a combination of many factors, including socioeconomic and cultural considerations. In the seventeenth century, William Petty began to examine associations among demographic, economic, health-related and social issues. He viewed health comprehensively given that the natural sciences are objective while the social sciences are less concrete (Bhattacharjee, 2012). Much later, in the 1980s, social scientists came to play more prominent roles in studies of health issues and programs. A number of sub-disciplines in medicine and sociology have introduced interdisciplinary themes and increased the depth of such work, including the following: the roles of culture and behavior in disease (Rosenfield *et al.*, 1981); problems with sex, gambling and drugs caused by psychopathology (Kass and Lund, 1996; Morgan *et al.*, 2003); programs for reproductive safety and child nutrition (Behrman and Wolfe, 1987; Gupta *et al.*, 2011; Litman, 1974); health-care financing (Uzochukwu *et al.*, 2015); and health service policies (Brennan *et al.*, 2006).

Recently, studies focusing on medicine and the humanities have moved beyond the application of laboratory medicine in different systems and environments to consider “medicalization” as a universal cultural force. These efforts have extended the tentacles of medicine (Heath, 2010) and bode well for sustaining collaboration between the social and medical sciences. For the sake of mankind’s long-term health and well-being, interdisciplinary research must be added to the agenda as soon as possible to develop new linkages (Rosenfield, 1992). As such, when the next public health emergency occurs, humans will be better prepared to act. Progress in human civilization has brought more complex issues to the fore, but the world seems rather ill-prepared to confront them.

Context for collaboration involving public health and tourism

There is a growing public health crisis associated with global tourism (Richter, 2003). In the past two decades, the global tourism industry has been exposed to health crises such as severe acute respiratory syndrome, Middle East respiratory syndrome and Ebola. The emergence and spread of SARS on a global scale raised important legal and ethical issues. The MERS pandemic led to approximately \$2.6bn in lost revenue from tourism and related service industries – equivalent to 0.2% of South Korea’s gross domestic product in 2015. This loss was permanent because tourists canceled rather than postponed travel (Joo *et al.*, 2019). Scholars have explored the SARS and MERS pandemics from multiple perspectives, such as economics, biology, urban planning and psychiatry. In the tourism field, Kuo *et al.* (2008) evaluated the impact of SARS on demand for international tourism in Asia. Wang (2009) used the theory of tourism crises to study SARS’s consequences on inbound international tourism demand in Taiwan. Despite the extensive scope of pandemic research, substantive interdisciplinary research remains lacking, especially that integrating the arts, science and medicine.

Mobility drops sharply from mandated travel restrictions, particularly in areas with a heavier recent burden from Ebola and long-distance travel. What is more, travel will not necessarily resume as normal once restrictions are lifted (Peak *et al.*, 2018). Nevertheless, these crises are short-lived compared with the impact of COVID-19: blockades imposed during this pandemic have affected multiple subdivisions of the tourism system, including transportation (e.g. flights and cruises), accommodation, tourist attractions and employment (Gössling *et al.*, 2020). Academics have aimed to resolve numerous tourism-related problems associated with COVID-19. Topics of interest have included tourism health risk perception (Godovykh *et al.*, 2021), dynamic crisis management (Li *et al.*, 2021), post-disaster tourism behavior and preferences (Wen, Kozak *et al.*, 2020), the government and social support and recovery strategies (Sharma *et al.*, 2021). Ioannides and Gyimóthy (2020) proposed that COVID-19

represents an opportunity to alter unsustainable tourism and to rebuild the tourism industry within neoliberalism.

People naturally encounter a pathogenic environment and potential viruses outside the home, such as when consuming food prepared using polluted water. The link between tourism and disease has become decisively clear; for example, resorts present an environment where personal and social norms are temporarily suspended. Tourists are, thus, more likely to take risks (e.g. sex tourism, drug tourism and wildlife consumption) compared to when at home. Risky behavior can increase the spread of disease via blood and sexual contact. Such viruses do not only spread among tourists but also local residents, who can then carry the illness upon returning home. It is impossible to fully control tourists' multidirectional infection paths, which pose grave threats to humans. Even worse, tourism-related illnesses, accidents and deaths are an estimated 50 times higher in developing countries than in developed countries (Richter, 2003). Developing nations are often incapable of monitoring infectious disease outbreaks and may lack adequate blood supplies, safe transport and medical and communication facilities.

At the same time, the globalization of healthcare and the increasing international trade of related products and services have contributed to cross-border patient mobility and medical tourism (Pocock and Phua, 2011). The benefits of medical tourism are beginning to be recognized: it can promote national economic development and bring potential medical revenue. For individuals, medical services in developed countries can offer more advanced technology and professional medical resources, whereas services in developing countries often involve lower costs. People can make related decisions based on the need to improve their health or manage disease (Blouin *et al.*, 2009). In addition, income generated by an inflow of medical tourists can be reinvested into medical care, allowing for medical equipment purchases, less reduction in medical practitioners and the promotion of medical research (Hopkins *et al.*, 2010). Conversely, medical tourists are inevitably exposed to risky environments containing pathogens and microbiologic fauna and flora. Their genome and immunity may not be able to adapt fully to an environment abroad, which can threaten not only patients but also the medical environment in a destination (Hall and James, 2011).

According to Richter (2003), drug and medical evacuation policies, medical insurance and required equipment and training are necessary components of travel preparation. These factors also call for international coordination. Even with such diverse and urgent needs, a lack of reliable data on medical tourism hinders the formulation and implementation of public health policies to address industry risks, such as the spread of infectious diseases (Johnston *et al.*, 2011). Moreover, as tourism continues to increase in importance for most countries, international regulations and coordination are being weakened to ensure the development of such tourism. These approaches can compromise early warning mechanisms or the authority of international institutions (Richter, 2003). In terms of COVID-19, tourism-related public health issues have re-entered the world's sights and reminded scholars of the need for interdisciplinary research in this area.

Methodology

We aimed to construct a comprehensive database of COVID-19 articles published in tourism journals; 28 were ultimately selected according to the Social Science Citation list. Raw data were obtained from Web of Science (WoS), a platform recognized as the largest accessible citation database for academic sources. A keyword search for "COVID-19" was conducted roughly every four months beginning in June 2020. The resulting data set contained 306 articles published from 2020 to 2021, ending on May 8, 2021. Table 1 presents the number of publications about COVID-19 in the selected journals. We also searched for the keyword "interdisciplinary" in the same journals on WoS and extracted 117 articles with a timeframe ranging from 1989 to 2021; see Table 2 for details.

Table 1 Number of articles on “COVID-19” by journal

<i>Journals</i>	<i>No. of papers</i>	<i>(%)</i>
<i>Leisure Sciences</i>	46	15.0
<i>Current Issues in Tourism</i>	42	13.7
<i>Tourism Geographies</i>	36	11.8
<i>Annals of Tourism Research</i>	31	10.1
<i>International Journal of Contemporary Hospitality Management</i>	24	7.8
<i>Journal of Sustainable Tourism</i>	24	7.8
<i>Tourism Economics</i>	16	5.2
<i>Journal of Travel Research</i>	14	4.6
<i>Tourism Management Perspectives</i>	10	3.3
<i>Journal of Hospitality and Tourism Management</i>	10	3.3
<i>Journal of Destination Marketing and Management</i>	9	2.9
<i>Scandinavian Journal of Hospitality and Tourism</i>	8	2.6
<i>Tourism Management</i>	7	2.3
<i>Journal of Hospitality and Tourism Research</i>	7	2.3
<i>Tourism Review</i>	7	2.3
<i>Leisure Studies</i>	4	1.3
<i>International Journal of Tourism Research</i>	3	1.0
<i>Journal of Hospitality Marketing and Management</i>	2	0.7
<i>Cornell Hospitality Quarterly</i>	2	0.7
<i>Asia Pacific Journal of Tourism Research</i>	1	0.3
<i>Journal of Vacation Marketing</i>	1	0.3
<i>Journal of Hospitality Leisure Sport and Tourism Education</i>	1	0.3
<i>Tourist Studies</i>	1	0.3
Total	306	100.00

Table 2 Number of articles on “interdisciplinary” by journal

<i>Journals</i>	<i>No. of papers</i>	<i>(%)</i>
<i>Annals of Tourism Research</i>	19	16.2
<i>International Journal of Contemporary Hospitality Management</i>	13	11.1
<i>Tourism Management</i>	12	10.3
<i>Journal of Sustainable Tourism</i>	10	8.5
<i>Current Issues in Tourism</i>	7	6.0
<i>Tourism Review</i>	7	6.0
<i>Journal of Travel Research</i>	5	4.3
<i>Leisure Studies</i>	5	4.3
<i>Journal of Outdoor Recreation and Tourism-Research Planning and Management</i>	5	4.3
<i>Tourism Geographies</i>	4	3.4
<i>Leisure Sciences</i>	4	3.4
<i>Journal of Tourism and Cultural Change</i>	4	3.4
<i>Journal of Destination Marketing and Management</i>	3	2.6
<i>Journal of Hospitality and Tourism Research</i>	3	2.6
<i>Journal of Hospitality and Tourism Management</i>	3	2.6
<i>Tourist Studies</i>	3	2.6
<i>International Journal of Hospitality Management</i>	2	1.7
<i>International Journal of Tourism Research</i>	2	1.7
<i>Journal of Hospitality Marketing and Management</i>	1	0.9
<i>Tourism Management Perspectives</i>	1	0.9
<i>Scandinavian Journal of Hospitality and Tourism</i>	1	0.9
<i>Cornell Hospitality Quarterly</i>	1	0.9
<i>Tourism Economics</i>	1	0.9
<i>Journal of Travel and Tourism Marketing</i>	1	0.9
Total	117	100.00

The Delphi method was adopted to systematically review the collected papers. This multidisciplinary and multi-method process allows for flexibility. Specifically, we first reviewed all chosen articles and then summarized the research topics we considered important. When the subject areas became saturated, we held an idea workshop to discuss all topics and to expand, eliminate or merge them. Once final topics were determined, we discussed the feasibility of interdisciplinary research in tourism and public health during the COVID-19 crisis. We frequently engaged in problem reframing, knowledge brokering and brainstorming in this stage.

Results and discussion

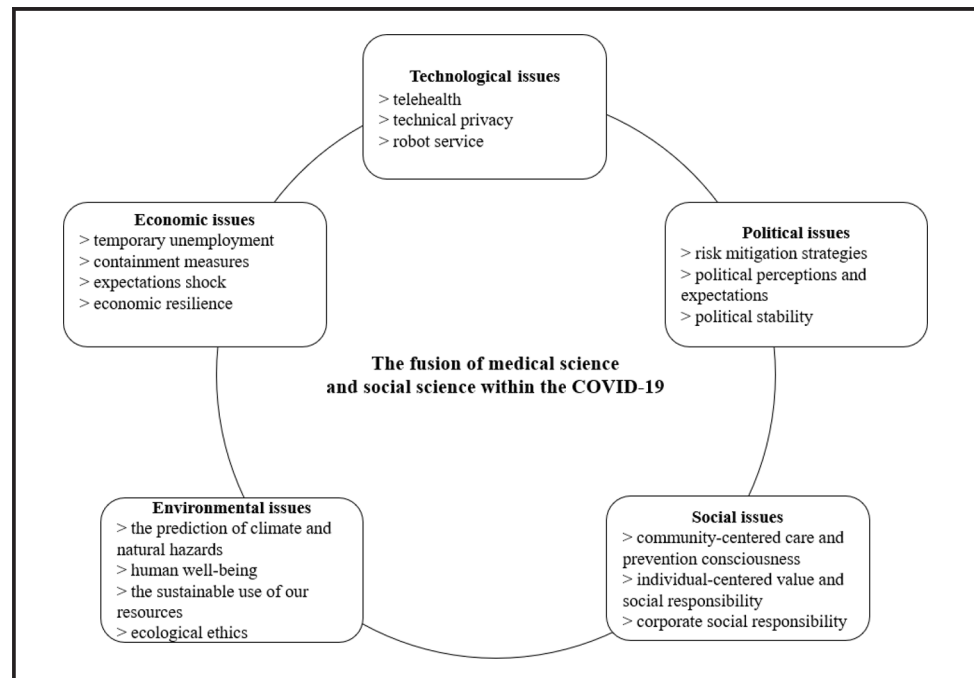
The COVID-19 outbreak is a medical phenomenon involving infection and treatment; it is also a far-reaching humanitarian crisis (Grasselli *et al.*, 2020) related to multiple issues (Figure 1).

Social issues

Ventilator, mask and drug shortages have become alarming trends and medical staff are working overtime without basic protection during COVID-19. Other medical services, such as cancer treatment and childbirth, have changed in kind and the disposal of bodies has raised ethical concerns because of the high number of deaths attributed to the pandemic (Nacoti *et al.*, 2020). In hospitals, health-care workers and ancillary staff are attempting to keep the system operational. Outside hospitals, some communities and prisons are struggling to maintain social distancing. These facts should remind the world that a viral outbreak of this scale requires a complete shift toward community-centered care. Pandemic solutions will, thus, require a collective effort – and not solely in health care.

Pandemics function as a mirror on society and provide researchers valuable opportunities to rethink wider social and cultural issues. Future interdisciplinary studies of COVID-19

Figure 1 Fusion of medical science and social science *vis-Á-vis* COVID-19



should seek to enhance public consciousness around prevention and broader social responsibility. For example, social research can explore the roles of individualistic value systems and leisure activities in driving the spread of disease.

Economic issues

Globalization has contributed greatly to COVID-19 infection and death rates (McKibbin and Fernando, 2020). Supply chains and consumers have faced disruption from domestic segregation and shutdowns, which have been further exacerbated by traffic restrictions and visa suspensions. With the exception of certain medical products such as masks and disinfectants, specific industries, especially tourism and hospitality, have been severely hit by the pandemic. Production is shrinking and unemployment continues to climb. To cope with the economic impact of this pandemic, many governments allocated emergency relief funds for small businesses and self-employed individuals facing difficulties.

In terms of practical experience, cross-disciplinary research on COVID-19 and economics should focus on three aspects. The first is the outbreak's drain on economic resources. Accurate fund estimation and allocation are essential to combating COVID-19 and promoting countries' sustainable development. Second, the waves of unemployment brought by quarantine measures and economic recessions present vast challenges for companies and individuals. Questions of how to manage the unemployed population, help small- and medium-sized enterprises and identify new business opportunities during the pandemic are particularly important. Third, it remains difficult to estimate the long-term economic impact of COVID-19. A loss of confidence triggered by short-term trauma has left investors on the sidelines, perhaps, nowhere more so than in the travel and hospitality industry.

Political issues

Reducing exposure has been identified as the most effective COVID-19 mitigation strategy. Mass gatherings pose a substantial public health challenge (World Health Organization, 2015). Consequently, many governments' primary concern is risk reduction, which medical professions are also examining. In addition to the public health risks associated with mass gatherings, managing political perceptions and expectations is essential. Scholars should investigate how hotels can develop contingency plans to mitigate infection risk. For example, hotels could collaborate with the government to engage in crisis management.

Environmental issues

COVID-19 has been tied to wild game exposure and consumption, suggesting possible zoonosis (Li *et al.*, 2020). The ecosystem is indeed an organic whole and environmental destruction will be met with nature's revenge. Therefore, researchers should focus on not only the pandemic but also the environmental problems associated with infection. Yet, medical science cannot realize this goal alone; strong interdisciplinary cooperation is needed to address the complex environmental problems arising in industrialized societies, such as global warming and particulate matter 2.5. Effective prediction and prevention of natural disasters play indisputable roles in the ecological environment and human welfare. The development of medical equipment, delineation of viral transmission and understanding of the causes and effects of climate change depend on a combination of medicine, meteorology, atmospheric science, ecology and other fields (Paytan and Zoback, 2007). Ultimately, COVID-19 is an environmental problem. Studies should, thus, attach importance to tourism and ecological protection so as to reduce the possibility of disasters and the severity of consequences.

Technological issues

The COVID-19 pandemic has placed a spotlight on the use of telehealth for health-care delivery, especially to reduce the risk of cross-contamination via close contact. Telemedicine offers an effective means of treating patients while protecting doctors and others. Telemedicine can also shorten patients' waiting time in addition to lowering the risk of infection (Smith *et al.*, 2020). When working with patients suspected of having COVID-19, telehealth enables medical practitioners to ensure timely testing and treatment.

Overall, reducing infection, limiting hospitalizations and conserving resources are the core benefits of telemedicine. Medical research will likely shift its focus to home care and mobile clinics to minimize pressure on health-care facilities, as well as patient movement (Heymann and Shindo, 2020). Interdisciplinary studies can inform the provision of accreditation, funding and training related to health care workers' roles in telemedicine. Meanwhile, artificial intelligence, robots and automation can lower fixed costs in hospitals and other care settings, boost revenue and facilitate physical distancing (Assaf and Scuderi, 2020). These innovations could deliver materials, disinfect and sterilize public spaces, detect body temperature, prioritize security and comfort and entertain patients among other tasks (Zeng *et al.*, 2020).

COVID-19 research in hospitality and tourism

Our systematic review revealed six major themes within the extant literature.

Theme 1. Reflection and change. Studies on this topic mainly focused on food tourism and a turning point in the tourism industry. Bertella (2020) suggested re-thinking the use of animal-derived food in tourism via ecofeminism, an eco-philosophical line of thought that critically examines different living entities' positions in the natural world. Scholars have also begun to reflect on consumerism and capital perspectives that have promoted large-scale growth of the tourism industry. To some extent, the COVID-19 pandemic can be seen as a turning point in this industry's transformation. Concepts such as social justice (Benjamin *et al.*, 2020), human prosperity (Cheer, 2020) and "Buen Vivir" (Everingham and Chassagne, 2020) have been introduced into sustainable tourism in an attempt to foster greater social and environmental well-being, as well as meaningful human connection.

Theme 2. Crisis impact and resilience. The COVID-19 outbreak poses severe challenges to the adaptation of the tourism industry. The economic paradigm has been used to evaluate the pandemic's varied impacts on industry sectors, underlining the importance of relief funds. Travel firms, in particular, have faced significant currency risks during the pandemic. Resilience has thus, become a core determinant of business stability and adaptability in this industry. Some researchers have explored how tourism and hotel firms can develop organizational resilience from different angles, such as human resource management and psychological capital. Additionally, Sharma *et al.* (2021) proposed a resilience-based framework including government response, technological innovation, local belonging and consumer and employee confidence, which may bring a new order to industry transformation.

Theme 3. Crisis response. Many studies have concentrated on national policies and departmental strategies during and after the pandemic. Despite the importance of first-level policies for pandemic control and recovery, "bottom-up" strategies are more feasible to implement (Collins-Kreiner and Ram, 2020). The hotel industry, which has been severely affected by the pandemic, has received widespread attention. Yang and Han (2021) investigated the hotel industry's response to COVID-19 using unstructured textual data from social media platforms. Lai and Wong (2020) explored the hotel industry's crisis management across phases of COVID-19; responses have ranged from everyday operational decisions and health and safety considerations to cost savings, human resources and marketing.

Theme 4. Perceived risk and behavior. Influences on tourists' travel intentions and behavior include risk perception, social media, destination image and demographic factors. Hostility toward countries or governments that are believed to pose disease-related health threats may affect tourists' travel intentions and behavior as well (Abraham *et al.*, 2020). Zhan *et al.* (2020) compiled a tourism risk perception scale based on the concept and dimensions of tourism risk perceptions, highlighting the four aspects of health, finance, society and performance.

The use of service robots enables low interpersonal contact and reduces the perceived risk of virus transmission, increasing tourists' willingness to visit destinations (Wan *et al.*, 2020). Bonfanti *et al.* (2021) outlined seven safety measures for luxury hotels, namely, customer wait time reorganization, hygiene and protection, internal work reorganization, investment in technology and digital innovations, servicescape reorganization, staff training and updated communication. A lack of perceived behavioral control can lead to cognitive bias, causing travelers to trust a destination in spite of apparent risks. Tourists might also minimize risk through wishful thinking (Sembada and Kalantari, 2020).

Theme 5. Mental well-being. Mental well-being has become a vital issue amid COVID-19, especially for tourism employees. Chen (2020) pointed out that unemployment and panic caused by the pandemic, as well as a lack of social support, have affected workers' well-being at tourism companies and hotels. Moreover, the pandemic has exacerbated the challenges facing immigrant workers in the service sector (Sönmez *et al.*, 2020). Three types of occupational stressors – traditional hotel employment, a demanding work setting and unethical labor practices – may affect hotel workers post-pandemic (Wong *et al.*, 2021).

Theme 6. Other topics. Corporate social responsibility has been repeatedly mentioned as affecting not only tourists' behavior but also employees' psychological capital and safety. For instance, local leisure activities, especially walking between neighborhoods, seem to promote neighborhood relations (Glover, 2020). Leisure activities within specific demographic groups, such as single women (Giles and Oncescu, 2020), have also been analyzed.

The pandemic has forced the tourism industry to seek innovative ways to survive. Some firms have leveraged extended reality technology (Kwok and Koh, 2020) and robotics (Christou *et al.*, 2020). Meanwhile, usage barriers, image barriers, privacy issues and visibility have affected the use of mobile payments in the hotel sector (Khanra *et al.*, 2021). Employees' use of digital technology to stay in touch with their employers is likely to lead to withdrawal, including separation from work (Chadee *et al.*, 2020).

Interdisciplinary research in hospitality and tourism

Present interdisciplinary research in hospitality and tourism covers multiple topics, including politics, the economy, the environment, ethics, education and other concerns. Among them, interdisciplinary studies regarding natural disasters have largely investigated how tourism organizations manage these disasters, engage in disaster prevention and restoration and conduct disaster planning and preparation. For example, a large proportion of the global tourism industry is highly vulnerable to environmental hazards and has been affected by crises in the past few years. Tourism involves interaction among organizations, people and events across subsystems. Ritchie (2008) combined the hazards and emergency planning literature with tourism disaster planning when reviewing 113 publications on crisis management to identify possible research agendas. Ritchie (2008) specifically recommended a "post-disciplinary" approach to tourism disaster planning, featuring insight from communication, education, emergency planning, hazards, sociology and tourism. Aliperti and Cruz (2020) discussed tourist-oriented, built-for-disaster mobile applications and ways to boost user volume.

In general, the number of interdisciplinary studies remains limited. Most related papers merely applied interdisciplinary methods to extract topics in their own area without

necessarily considering the feasibility of interdisciplinary research in terms of content and practice. In addition, interdisciplinary studies in tourism and hospitality have tended to focus on the humanities and social sciences (e.g. psychology, social anthropology and accounting) with less attention given to joining social sciences with natural sciences and medicine.

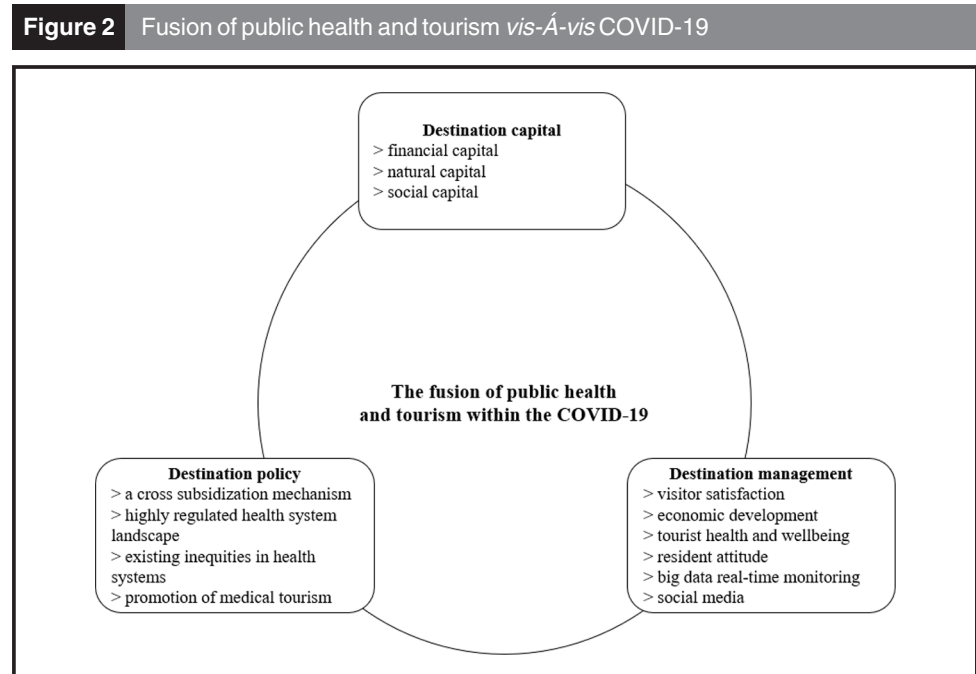
Fusion of public health and tourism vis-À-vis COVID-19

The role of tourism in accelerating the global spread of infectious disease represents a prime public health concern. As such, tourism is especially vulnerable to public health emergencies such as COVID-19. We, therefore, call for research combining public health and tourism in terms of destination management, destination policy and destination capital, as illustrated in [Figure 2](#).

Destination management

Destination management is based on the tool perspective to coordinate destinations' integrated elements, ultimately enabling tourism stakeholders to obtain optimal results ([Volgger et al., 2021](#)). Destination image is critical to travel choices. The potential effects of COVID-19 on image dimensions include perceptions of health infrastructure, safety or inaccurate associations with infection (e.g. perceptions of nightlife, mass tourism events or crowding). These impacts must be addressed through destination management. Many destinations have offered free travel and accommodation to show appreciation for medical staff who have contributed to the fight against COVID-19. Such marketing campaigns can promote destination image and encourage tourists' post-COVID-19 travel ([Chen et al., 2020](#)).

In recent years, the responsibilities and resources of destination management have gradually been distributed among stakeholders. Alternative approaches (e.g. smart tourism) are a topic of particular interest. Tourism management and planning will likely focus on a trio of objectives in the future: tourist satisfaction, economic development and tourists'



health and well-being (Gunn and Var, 2002). Further, if a community is developed into a tourist attraction, then tourism activities will affect residents' lives. Local residents' well-being (e.g. material well-being, community well-being, emotional well-being, health and safety) and life satisfaction should, thus, be considered in tourism planning (Kim *et al.*, 2013).

The public health implications of COVID-19 entail several dimensions. Regarding disease and safety, intensive source control will continue to be needed (e.g. quarantining infected persons and their contacts, lockdowns and mobility restrictions and social distancing) (Heymann and Shindo, 2020). Testing is key to slowing the spread of the virus, especially when carriers can be asymptomatic yet infectious. Hotel product designers should consider creating spaces for healthy and balanced lifestyles where guests can exercise, work and relax while practicing social distancing. Private kitchens, fitness centers and healthcare centers should be established and enhanced (Hao *et al.*, 2020).

In terms of transmission and recovery, viruses know no national boundaries. International coordination and cooperation are, hence essential. Big data should be used to visualize global pandemic information sharing and the movement of people from high-risk areas. Furthermore, scenic spots and hotels can provide customized services according to visitors' preferences. Hoteliers can also harness big data to analyze target consumers' composition, demand and travel distance to facilitate customer management during the pandemic. Staff can monitor guests' health status with help from the medical system. The ad hoc implementation of video conferencing, cloud collaboration and teleworking can improve service efficiency and health security as well.

With respect to hospital capacity, institutions should be divided into low-, moderate- and high-risk areas. Staff should specify medical locations, implement dynamic monitoring and tracking and effectively use resources, such as by identifying and evaluating the number of local infections to allocate resources appropriately (Verhagen *et al.*, 2020).

More general safety measures should also be enacted. Personal protective equipment should be used as needed, including masks, goggles, protective clothing and disinfectant. Visitors and second homeowners can be turned away to ensure area safety and security. Restrictions should be placed on the number of people allowed to gather in open scenic spots and safe distances should be marked.

Destination policy

Health policy implementation and tourism development are somewhat contradictory: among other tasks, governments are obligated to preserve public health in addition to guiding the tourism industry (Pocock and Phua, 2011). Ministries of health aim to provide effective, equitable medical services to improve national health, whereas tourism departments are mainly responsible for economic revenue generation and destination planning and management. Destination policy, which depends on the coordination and cooperation of several agents, involves the protection and enhancement of existing resources, supplementary services for tourists and the promotion of new products (Andergassen *et al.*, 2015). However, many governments have failed to clarify the roles of these two agencies or to resolve their policy conflicts.

Fortunately, the growth of medical tourism has offered opportunities for intersectoral policy coordination. By instituting a cross-subsidy mechanism, tourism taxes can generate additional revenue for public hospitals. Analyzes of visitor information and flows collected by tourism departments can ground the formulation of public health policies. In this case, the priorities of tourism and health ministries appear to converge, with health gradually becoming a private commodity. The health and tourism sectors are increasingly considering one another's policies. Some countries are even establishing agencies to promote local health facilities to foreign governments and patients and to ensure tourists'

health while visiting. Future research should investigate how governments pursue comprehensive destination management by balancing public health and tourism policies. It is also necessary to identify ways to involve local residents in tourism development and anti-pandemic initiatives.

Destination capital

Tourism is essentially the outcome of numerous capital-related games, including social, human, physical, financial and natural capital, all of which interact (Vermuri and Costanza, 2006). Recently, tourism revenues have become central to many countries' trade markets – especially for developing countries – although health-related consequences have rarely been discussed. In addition to human capital, financial capital, cultural capital, natural capital, construction capital and political capital, destination capital is closely related to tourism-related social capital (McGehee *et al.*, 2010). Destinations generally adopt a cost leadership strategy to gain a competitive edge. Cost leadership draws traffic through price wars but is not a sustainable long-term approach; it produces vicious industry competition, complicates suppliers' profit generation and inhibits product upgrades (Porter, 1980). Once a mass influx of tourists exceeds a destination's carrying capacity, environmental damage can be irreversible. Overly dense populations can also lead to public health crises and accelerate the spread of disease. The apparent zoonotic origins of COVID-19 underscore the importance of protecting wildlife and the greater environment through tourism development (Li *et al.*, 2020). Therefore, we recommend advancing interdisciplinary thinking in tourism by incorporating natural sciences into research on destination capital.

The so-called “triple bottom line” is key to sustainable development. Financial, social and natural capital are top priorities in destination capital management. As Dwyer (2005) argued, the protection and maintenance of natural and cultural resources in tourism activities will benefit subsequent generations. The triple bottom line indicates that tourism organizations must emphasize economic profits, as well as the protection of environmental and social resources. Integrated research in public health and well-being is pivotal to ensuring sustainable tourism.

Conclusion

Health issues in tourism are inherently complicated. Many governments, health providers, international agencies and medical practitioners consider the tourism industry to be part of health care. The health-related benefits and risks of tourism, on an individual and group level, warrant attention. However, no academic program has yet blended health with the social sciences. Interdisciplinary studies necessitate academic support, career opportunities and adequate funding (Pedersen, 2016; Rosenfield, 1992).

In addition to summarizing the overall impacts of COVID-19 on the hospitality and tourism industry, this study's novelty lies in identifying a host of innovative interdisciplinary research directions related to COVID-19. Researchers can further develop tourism through such research to produce valuable knowledge and anti-pandemic strategic frameworks. This paper also demonstrates the possibility of a crossover between literature and science in the context of the pandemic. Major trends are put forth for destination marketing, management and capital in the post-pandemic tourism industry. Furthermore, the interdisciplinary COVID-19 framework established in this study can be adopted to manage health-related disasters in a wider context.

COVID-19 implicates an array of natural disasters, social and political crises, economic crises and tourism demand crises. The tourism industry has been framed as a key player in COVID-19. This outbreak has stifled global travel (Sharma *et al.*, 2021). Tourism has tended to be a multidisciplinary field rather than an interdisciplinary one, as the research objects fall into standalone dimensions. Theoretically, interdisciplinary research extends the “human

flourishing” and “one health” concepts, especially during the pandemic. By examining collaborative applications in hospitality and tourism, this study advances the theoretical development around human well-being and health (Cheer, 2020). Findings also provide meaningful practical implications for tourism stakeholders to improve marketing and business development via destination management, policy and capital integration.

This paper reflects on the possibility of interdisciplinary research between tourism and medicine by focusing on the impact of COVID-19 on tourism-related domains. Interdisciplinary research is essential to enhancing the prevention and control of infectious diseases. This article presents an overview of interdisciplinary dimensions of tourism, maps key subject areas related to tourism and public health and puts forward a three-point agenda for research and practice. First, by leveraging the expertise of scholars from different fields, interdisciplinary research can lay a foundation for policymaking in the government and health sectors. For instance, the effects of pandemic mitigation efforts in tourism at the beginning of the outbreak (e.g. early travel cancellations) should be considered. Second, raising healthcare professionals' awareness of tourists affected by COVID-19 can inform management strategies. Tourists are likely to express particular interest in destinations' cleanliness, health facilities and hygiene when making post-pandemic travel plans (Wen, Kozak *et al.*, 2020). It is necessary to explore the growing relationship between hotels and the health sector as well. As an example, the rise of medical hotels also reflects the application of public services in tourism. These hotels specialize in providing health care services, hospital facilities, etc. To more closely evaluate the utility of these sites, researchers can gather empirical evidence from stakeholders to assess the hotels' feasibility as isolation options in a public health crisis. This knowledge is also conducive to improving human health on a broader scale: regional tourism crisis measures developed by hotel industry stakeholders can benefit international communities' pandemic control and prevention (Li *et al.*, 2021). Third, interdisciplinary cooperation can uncover new disciplines and research branches, which is of great significance to the progress of human civilization (Rosenfield, 1992). Such cooperation can also disseminate medical advances to the public in a more accessible fashion, which enables individuals to understand how these developments might apply in everyday life. Core themes uncovered in this paper involve destination development, management and the environment, which are tied to the economic, marketing and geographical aspects of tourism. Other clusters need to be explored further – particularly contemporary themes such as innovation, gender, governance, information systems, culture and human activity.

References

- Abraham, V., Bremser, K., Carreno, M., Crowley-Cyr, L. and Moreno, M. (2020), “Exploring the consequences of COVID-19 on tourist behaviors: perceived travel risk, animosity and intentions to travel”, *Tourism Review*, Vol. ahead-of-print No. ahead-of-print, doi: [10.1108/TR-07-2020-0344](https://doi.org/10.1108/TR-07-2020-0344).
- Aliperti, G. and Cruz, A.M. (2020), “Promoting built-for-disaster-purpose mobile applications: an interdisciplinary literature review to increase their penetration rate among tourists”, *Journal of Hospitality and Tourism Management*, Vol. 44, pp. 193-210.
- Andergassen, R., Candela, G. and Figini, P. (2015), “The management of tourism destinations: a policy game”, *Tourism Economics*, pp. 1-17.
- Assaf, A. and Scuderi, R. (2020), “COVID-19 and the recovery of the tourism industry”, *Tourism Economics*, Vol. 26 No. 5, pp. 731-733.
- Becken, S. (2013), “Developing a framework for assessing resilience of tourism Sub-systems to climatic factors”, *Annals of Tourism Research*, Vol. 43, pp. 506-528.
- Behrman, J.R. and Wolfe, B.L. (1987), “How does mother's schooling affect family health, nutrition, medical care usage, and household sanitation?”, *Journal of Econometrics*, Vol. 36 Nos 1/2, pp. 185-204.
- Bertella, G. (2020), “Re-thinking sustainability and food in tourism”, *Annals of Tourism Research*, Vol. 84, doi: [10.1016/j.annals.2020.103005](https://doi.org/10.1016/j.annals.2020.103005).

- Benjamin, S., Dillette, A. and Alderman, D.H. (2020), "We can't return to normal": committing to tourism equity in the post-pandemic age", *Tourism Geographies*, Vol. 22 No. 3, pp. 476-483.
- Bhattacharjee, A. (2012), "Social science research: principles, methods, and practices", available at: http://scholarcommons.usf.edu/oa_textbooks/3 (accessed 14 February 2021).
- Blouin, C., Chopra, M. and van der Hoeven, R. (2009), "Trade and social determinants of health", *The Lancet*, Vol. 373 No. 9662, pp. 502-507.
- Bonfanti, A., Vigolo, V. and Yfantidou, G. (2021), "The impact of the covid-19 pandemic on customer experience design: the hotel managers' perspective", *International Journal of Hospitality Management*, Vol. 94, doi: [10.1016/j.ijhm.2021.102871](https://doi.org/10.1016/j.ijhm.2021.102871).
- Brennan, T., Rothman, D., Blank, L., Blumenthal, D., Chimonas, S., Cohen, J., Goldman, J., Kassirer, J., Kimball, H., Naughton, J. and Smelser, N. (2006), "Health industry practices that create conflicts of interest: a policy proposal for academic medical centers", *JAMA*, Vol. 295 No. 4, pp. 429-433.
- CDC.gov (2017), "One health", available at: www.cdc.gov/onehealth/basics/health
- Chadee, D., Ren, S. and Tang, G. (2020), "Is digital technology the magic bullet for performing work at home? Lessons learned for post COVID-19 recovery in hospitality management", *International Journal of Hospitality Management*, Vol. 92, p. 102718.
- Cheer, J.M. (2020), "Human flourishing, tourism transformation and COVID-19: a conceptual touchstone", *Tourism Geographies*, Vol. 22 No. 3, pp. 514-524.
- Chen, H., Huang, X. and Li, Z. (2020), "A content analysis of Chinese news coverage on COVID-19 and tourism", *Current Issues in Tourism*, doi: [10.1080/13683500.2020.1763269](https://doi.org/10.1080/13683500.2020.1763269).
- Chen, C. (2020), "Psychological tolls of COVID-19 on industry employees", *Annals of Tourism Research*, doi: [10.1016/j.annals.2020.103080](https://doi.org/10.1016/j.annals.2020.103080).
- Christou, P., Simillidou, A. and Stylianou, M.C. (2020), "Tourists' perceptions regarding the use of anthropomorphic robots in tourism and hospitality", *International Journal of Contemporary Hospitality Management*, Vol. 32 No. 11, pp. 3665-3683.
- Collins-Kreiner, N. and Ram, Y. (2020), "National tourism strategies during the covid-19 pandemic", *Annals of Tourism Research*, doi: [10.1016/j.annals.2020.103076](https://doi.org/10.1016/j.annals.2020.103076).
- Darbellay, F. and Stock, M. (2012), "Tourism as complex interdisciplinary research object", *Annals of Tourism Research*, Vol. 39 No. 1, pp. 441-458.
- Durante, R., Guiso, L. and Gulino, G. (2021), "Asocial Capital: civic culture and social distancing during COVID-19", *Journal of Public Economics*, Vol. 194, doi: [10.2139/ssrn.3611606](https://doi.org/10.2139/ssrn.3611606).
- Dwyer, L. (2005), "Relevance of triple bottom line reporting to achievement of sustainable tourism: a scoping study", *Tourism Review International*, Vol. 9 No. 1, pp. 79-94.
- Ehrenfeld, J.R. and Hoffman, A.J. (2013), *Flourishing: A Frank Conversation about Sustainability*, Stanford University Press.
- Everingham, P. and Chassagne, N. (2020), "Post COVID-19 ecological and social reset: moving away from capitalist growth models towards tourism as Buen Vivir", *Tourism Geographies*, Vol. 22 No. 3, pp. 555-566.
- Giles, A. and Oncescu, J. (2020), "Single women's leisure during the coronavirus pandemic", *Leisure Sciences*, Vol. 43 Nos 1/2, pp. 204-210.
- Gillen, J. and Mostafanezhad, M. (2019), "Geopolitical encounters of tourism: a conceptual approach", *Annals of Tourism Research*, Vol. 75, pp. 70-78.
- Glover, T. (2020), "Neighboring in the time of coronavirus? Paying civil attention while walking the neighborhood", *Leisure Sciences*, Vol. 43 Nos 1/2, pp. 280-286.
- Gössling, S., Scott, D. and Hall, C.M. (2020), "Pandemics, tourism and global change: a rapid assessment of COVID-19", *Journal of Sustainable Tourism*, Vol. 29 No. 1, pp. 1-20.
- Grasselli, G., Pesenti, A. and Cecconi, M. (2020), "Critical case utilization for the COVID-19 outbreak in Lombardy, Italy", available at: <https://jamanetwork.com/journals/jama/fullarticle/2763188> (accessed 14 March 2021).
- Gunn, C. and Var, T. (2002), *Tourism Planning: Basics, Concepts, Cases*, Routledge, New York, NY.

- Gupta, A., Bhosale, R., Kinikar, A., Gupte, N., Bharadwaj, R., Kagal, A., Joshi, S., Khandekar, M., Karmarkar, A., Kulkarni, V., Sastry, J., Mave, V., Suryavanshi, N., Thakar, M., Kulkarni, S., Tripathy, S., Sambarey, P., Patil, S., Paranjape, R., Bollinger, R. and Jamkar, A. (2011), "Maternal tuberculosis: a risk factor for mother-to-child transmission of human immunodeficiency virus", *The Journal of Infectious Diseases*, Vol. 203 No. 3, pp. 358-362.
- Godovykh, M., Pizam, A. and Bahja, F. (2021), "Antecedents and outcomes of health risk perceptions in tourism, following the COVID-19 pandemic", *Tourism Review*, Vol. 76 No. 4, pp. 737-748.
- Hall, C.M. (2011), "Health and medical tourism: a kill or cure for global public health?", *Tourism Review*, Vol. 66 Nos 1/2, pp. 4-15.
- Hall, C.M. and James, M. (2011), "Medical tourism: emerging biosecurity and nosocomial issues", *Tourism Review*, Vol. 66 Nos 1/2, pp. 118-126.
- Hao, F., Xiao, Q. and Chon, K. (2020), "COVID-19 and china's hotel industry: impacts, a disaster management framework, and post-pandemic agenda", *International Journal of Hospitality Management*, Vol. 90, doi: [10.1016/j.ijhm.2020.102636](https://doi.org/10.1016/j.ijhm.2020.102636).
- Heath, I. (2010), "The double face of diagnosis", in Evans, M., Ahlén, R. and Louhiala, P. (Eds.), *Medical Humanities Companion: Diagnosis*, Radcliffe Publishing, Oxford, pp. 62-75.
- Heymann, D.L. and Shindo, N. (2020), "COVID-19: what is next for public health?", *The Lancet*, Vol. 395 No. 10224, pp. 542-545.
- Hopkins, L., Labonté, R., Runnels, V. and Packer, C. (2010), "Medical tourism today: what is the state of existing knowledge?", *Journal of Public Health Policy*, Vol. 31 No. 2, pp. 185-198.
- Ioannides, D. and Gyimóthy, S. (2020), "The COVID-19 crisis as an opportunity for escaping the unsustainable global tourism path", *Tourism Geographies*, Vol. 22 No. 3, pp. 624-632.
- Johnston, R., Crooks, V.A., Adams, K., Snyder, J. and Kingsbury, P. (2011), "An industry perspective on canadian patients' involvement in medical tourism: implications for public health", *BMC Public Health*, Vol. 11 No. 1, p. 416.
- Joo, H., Maskery, B.A., Berro, A.D., Rotz, L.D., Lee, Y.K. and Brown, C.M. (2019), "Economic impact of the 2015 MERS outbreak on the Republic Of Korea's tourism-related industries", *Health Security*, Vol. 17 No. 2, pp. 100-108.
- Kass, L.R. and Lund, N. (1996), "Physician-assisted suicide, medical ethics, and the future of the medical profession", *Duquesne Law Review*, Vol. 35 No. 1, pp. 395-425.
- Khanra, S., Dhir, A., Kaur, P. and Joseph, R.P. (2021), "Factors influencing the adoption postponement of mobile payment services in the hospitality sector during a pandemic", *Journal of Hospitality and Tourism Management*, Vol. 46, pp. 26-39.
- Kim, K., Uysal, M. and Sirgy, M.J. (2013), "How does tourism in a community impact the quality of life of community residents?", *Tourism Management*, Vol. 36, pp. 527-540.
- Kuo, H.I., Chen, C.C., Tseng, W.C., Ju, L.F. and Huang, B.W. (2008), "Assessing impacts of SARS and avian flu on international tourism demand to Asia", *Tourism Management*, Vol. 29 No. 5, pp. 917-928.
- Kwok, A.O. and Koh, S.G. (2020), "COVID-19 and extended reality (XR)", *Current Issues in Tourism*, pp. 1-6.
- Lai, I. and Wong, J. (2020), "Comparing crisis management practices in the hotel industry between initial and pandemic stages of COVID-19", *International Journal of Contemporary Hospitality Management*, Vol. 32 No. 10, doi: [10.1108/IJCHM-04-2020-0325](https://doi.org/10.1108/IJCHM-04-2020-0325).
- Li, J., Li, J.J., Xie, X., Cai, X., Huang, J., Tian, X. and Zhu, H. (2020), "Game consumption and the 2019 novel coronavirus", *The Lancet Infectious Diseases*, Vol. 20 No. 3, pp. 275-276.
- Li, B., Zhang, T., Hua, N. and Wang, Y. (2021), "A dynamic model of crisis management from a stakeholder perspective: the case of COVID-19 in China", *Tourism Review*, Vol. 76 No. 4, pp. 764-787.
- Litman, T.J. (1974), "The family as a basic unit in health and medical care: a social-behavioral overview", *Social Science & Medicine (1967)*, Vol. 8 Nos 9/10, pp. 495-519.
- McGehee, N., Lee, S., O'Bannon, T. and Perdue, R.R. (2010), "Tourism-related social Capital and its relationship with other forms of Capital: an exploratory study", *Journal of Travel Research*, Vol. 49 No. 4, pp. 486-500.
- Mckibbin, W. and Fernando, R. (2020), "The global macroeconomic impacts of COVID-19: seven scenarios", CAMA Working Paper, No. 19, available at: <http://dx.doi.org/10.2139/ssrn.3547729>

- Morgan, G.D., Kobus, K., Gerlach, K.K., Neighbors, C., Lerman, C., Abrams, D.B. and Rimer, B.K. (2003), "Facilitating transdisciplinary research: the experience of the transdisciplinary tobacco use research centers", *Nicotine & Tobacco Research*, Vol. 5 No. 6, pp. 11-19.
- Nacoti, M., Ciocca, A., Giupponi, A., Brambillasca, P., Lussana, F., Pisano, M., Goisis, G., Bonacina, D., Fazzi, F., Naspro, R., Longhi, L., Cereda, M. and Montaguti, C. (2020), "At the epicenter of the covid-19 pandemic and humanitarian crises in Italy: changing perspectives on preparation and mitigation", *NEJM Catalyst Innovations in Care Delivery*, Vol. 1 No. 2.
- Paytan, A. and Zoback, M.L. (2007), "Crossing boundaries, hitting barriers", *Nature*, Vol. 445 No. 7130, p. 950.
- Peak, C., Wesolowski, A., Erbach-Schoenberg, E.Z., Tatem, A., Wetter, E., Lu, X., Power, D., Weidman-Grunewald, E., Ramos, S., Moritz, S., Buckee, C. and Bengtsson, L. (2018), "Population mobility reductions associated with travel restrictions during the ebola epidemic in Sierra Leone: use of mobile phone data", *International Journal of Epidemiology*, Vol. 47 No. 5, pp. 1562-1570.
- Pedersen, D.B. (2016), "Integrating social sciences and humanities in interdisciplinary research", *Palgrave Communications*, Vol. 2 No. 1, pp. 1-7.
- Pocock, N.S. and Phua, K.H. (2011), "Medical tourism and policy implications for health systems: a conceptual framework from a comparative study of Thailand, Singapore and Malaysia", *Globalization and Health*, Vol. 7 No. 1, p. 12.
- Porter, M. (1980), *Competitive Strategy: Techniques for Analyzing Industries and Competitors*, Free Press, New York, NY.
- Richter, L.K. (2003), "International tourism and its global public health consequences", *Journal of Travel Research*, Vol. 41 No. 4, pp. 340-347.
- Ritchie, B. (2008), "Tourism disaster planning and management: from response and recovery to reduction and readiness", *Current Issues in Tourism*, Vol. 11 No. 4, pp. 315-348.
- Rosen, G. (2015), *A History of Public Health*, Jhu Press.
- Rosenfield, P.L. (1992), "The potential of transdisciplinary research for sustaining and extending linkages between the health and social sciences", *Social Science & Medicine*, Vol. 35 No. 11, pp. 1343-1357.
- Rosenfield, P.L., Widstrand, C.G. and Ruderman, A.P. (1981), "Social and economic research in the UNDP/world bank/WHO special programme for research and training in tropical diseases", *Social Science and Medicine. Part A: Medical Psychology and Medical Sociology*, Vol. 15 No. 5, pp. 529-538.
- Sembada, A. and Kalantari, H.D. (2020), "Biting the travel bullet: a motivated reasoning perspective on traveling during a pandemic", *Annals of Tourism Research*, doi: [10.1016/j.annals.2020.103040](https://doi.org/10.1016/j.annals.2020.103040).
- Sharma, G., Thomas, A.B. and Paul, J. (2021), "Reviving tourism industry post-COVID-19: a resilience-based framework", *Tourism Management Perspectives*, Vol. 37, doi: [10.1016/j.tmp.2020.100786](https://doi.org/10.1016/j.tmp.2020.100786).
- Smith, A.C., Thomas, E., Snoswell, C.L., Haydon, H., Mehrotra, A., Clemensen, J. and Caffery, L.J. (2020), "Telehealth for global emergencies: implications for coronavirus disease 2019 (COVID-19)", *Journal of Telemedicine and Telecare*, Vol. 26 No. 5, doi: [10.1177/1357633X20916567](https://doi.org/10.1177/1357633X20916567).
- Sönmez, S., Apostolopoulos, Y., Lemke, M.K. and Hsieh, Y. (2020), "Understanding the effects of COVID-19 on the health and safety of immigrant hospitality workers in the United States", *Tourism Management Perspectives*, Vol. 35, doi: [10.1016/j.tmp.2020.100717](https://doi.org/10.1016/j.tmp.2020.100717).
- Timpka, T. and Nyce, J.M. (2021), "Face mask use during the COVID-19 pandemic – the significance of culture and the symbolic meaning of behavior", *Annals of Epidemiology*, Vol. 59, pp. 1-4.
- UNWTO (2020), "Tourism and coronavirus disease (COVID-19)", available at: www.unwto.org/tourism-covid-19-coronavirus (accessed 14 March 2021).
- Uzochukwu, B.S., Ughasoro, M.D., Etiaba, E., Okwuosa, C., Envuladu, E. and Onwujekwe, O.E. (2015), "Health care financing in Nigeria: implications for achieving universal health coverage", *Nigerian Journal of Clinical Practice*, Vol. 18 No. 4, pp. 437-444.
- Verhagen, M.D., Brazel, D.M., Dowd, J.B., Kashnitsky, I. and Mills, M.C. (2020), "Forecasting spatial, socioeconomic and demographic variation in COVID-19 health care demand in England and Wales", *BMC Medicine*, Vol. 18 No. 1, pp. 1-11.
- Vermuri, A. and Costanza, R. (2006), "The role of human, social, built, and natural Capital in explaining life satisfaction at the country level: toward a national well-being index", *Ecological Economics*, Vol. 58 No. 1, pp. 119-133.

- Volgger, M., Erschbamer, G. and Pechlaner, H. (2021), "Destination design: new perspectives for tourism destination development", *Journal of Destination Marketing & Management*, Vol. 19, doi: [10.1016/j.jdmm.2021.100561](https://doi.org/10.1016/j.jdmm.2021.100561).
- Wan, L., Chan, E. and Luo, X. (2020), "ROBOTS COME to RESCUE: how to reduce perceived risk of infectious disease in Covid19-stricken consumers?", *Annals of Tourism Research*, doi: [10.1016/j.annals.2020.103069](https://doi.org/10.1016/j.annals.2020.103069).
- Wang, Y. (2021), "Government policies, national culture and social distancing during the first wave of the COVID-19 pandemic: international evidence", *Safety Science*, Vol. 135, doi: [10.1016/j.ssci.2020.105138](https://doi.org/10.1016/j.ssci.2020.105138).
- Wang, Y.S. (2009), "The impact of crisis events and macroeconomic activity on Taiwan's international inbound tourism demand", *Tourism Management*, Vol. 30 No. 1, pp. 75-82.
- Wen, J., Kozak, M., Yang, S. and Liu, F. (2020), "COVID-19: potential effects on Chinese citizens' lifestyle and travel", *Tourism Review*, Vol. 76 No. 1, pp. 74-87.
- Wong, A., Kim, S., Kim, J. and Han, H. (2021), "How the COVID-19 pandemic affected hotel employee stress: employee perceptions of occupational stressors and their consequences", *International Journal of Hospitality Management*, Vol. 93, p. 102798.
- World Health Organization (2015), "Public health for mass gatherings: key considerations", available at: www.who.int/ihr/publications/WHO_HSE_GCR_2015.5/en/ (accessed 14 March 2021).
- Yang, M. and Han, C. (2021), "Revealing industry challenge and business response to covid-19: a text mining approach", *International Journal of Contemporary Hospitality Management*, Vol. 33 No. 4, doi: [10.1108/IJCHM-08-2020-0920](https://doi.org/10.1108/IJCHM-08-2020-0920).
- Yang, Y., Zhang, H. and Chen, X. (2020), "Coronavirus pandemic and tourism: dynamic stochastic general equilibrium modeling of infectious disease outbreak", *Annals of Tourism Research*, Vol. 83, doi: [10.1016/j.annals.2020.102913](https://doi.org/10.1016/j.annals.2020.102913).
- Zeng, Z., Chen, P.J. and Lew, A.A. (2020), "From high-touch to high-tech: COVID-19 drives robotics adoption", *Tourism Geographies*, Vol. 22 No. 3, pp. 724-734.
- Zhan, L., Zeng, X., Morrison, A., Liang, H. and Coca-Stefaniak, J.A. (2020), "A risk perception scale for travel to a crisis epicentre: visiting Wuhan after COVID-19", *Current Issues in Tourism*, pp. 1-18.

Further reading

- Boni, M.F., Lemey, P., Jiang, X., Lam, T., Perry, B.W., Castoe, T.A., Rambaut, A. and Robertson, D. (2020), "Evolutionary origins of the SARS-CoV-2 sarbecovirus lineage responsible for the COVID-19 pandemic", *Nature Microbiology*, Vol. 5 No. 11, pp. 1408-1417.
- Hunter, C. (1997), "Sustainable tourism as an adaptive paradigm", *Annals of Tourism Research*, Vol. 24 No. 4, pp. 850-867.
- Jiang, Y. and Wen, J. (2020), "Effects of COVID-19 on hotel marketing and management: a perspective article", *International Journal of Contemporary Hospitality Management*, Vol. 36 No. 8, pp. 2563-2573.
- Jiang, Y., Ritchie, B.W. and Benckendorff, P. (2017), "Bibliometric visualisation: an application in tourism crisis and disaster management research", *Current Issues in Tourism*, Vol. 22 No. 16, pp. 1-33.
- Meyer, R.E. (2001), "Finding paradigms for the future of alcoholism research: an interdisciplinary perspective", *Alcoholism: Clinical and Experimental Research*, Vol. 25 No. 9, pp. 1393-1406.
- Stoffelen, A., Ioannides, D. and Vanneste, D. (2017), "Obstacles to achieving cross-border tourism governance: a multi-scalar approach focusing on the German-Czech borderlands", *Annals of Tourism Research*, Vol. 64, pp. 126-138.

About the authors

Xinyi Liu is a PhD student in the School of Tourism at Sichuan University, China. Her current research interests lie in Chinese tourist behavior and tourism technology innovation.

Jun Wen is a Lecturer in tourism and hospitality management in the School of Business and Law at Edith Cowan University. His current research interests lie in Chinese outbound

tourism marketing, behaviors and other related aspects. Jun Wen is the corresponding author and can be contacted at: j.wen@ecu.edu.au

Metin Kozak is Professor of Department of Advertising, School of Communication at Kadir Has Universit, Turkey. His main research interests focus on consumer behavior, benchmarking and competitiveness. He acts as the co-editor of *Anatolia: An International Journal of Tourism and Hospitality Research*.

Yangyang Jiang is an Associate Professor in Marketing at Nottingham University Business School China, University of Nottingham Ningbo China and Fellow of the Higher Education Academy. Her research focuses on services marketing, customer experience and sustainable development. Her research work has appeared in *Journal of Travel Research*, *Journal of Business Research*, *Technological Forecasting and Social Change*, *International Journal of Hospitality Management*, *International Journal of Contemporary Hospitality Management*, *Cornell Hospitality Quarterly* and *Tourism Recreation Research*, etc. Dr Jiang worked for the Olympic Partner's Global Hospitality Program at four Olympic Games.

Zhiyong Li is a Professor and the Dean of the School of Tourism at Sichuan University. His research interests center on tourism marketing, outbound tourism and hospitality management.

For instructions on how to order reprints of this article, please visit our website:
www.emeraldgrouppublishing.com/licensing/reprints.htm
Or contact us for further details: permissions@emeraldinsight.com