



## Editorial

Power of One Health: the first year of *Science in One Health*

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## ABSTRACT

The international journal *Science in One Health* (SOH), launched a year ago, is a platform to disseminate research achievements and practical lessons in the field of One Health globally and to achieve the United Nations Sustainable Development Goals by systematic thinking with multi-disciplinary approach to solve complex health problems. This paper reviews the efforts that SOH editorial board made in the first year to promote a multi-disciplinary teamwork, create a platform for exchanges of ideas, and initiate a community for One Health. SOH has received manuscripts from six continents and published 24 articles (5 in press) in the first year. SOH is devoted to providing more and more high-quality articles in One Health disciplines including One Health database, antimicrobial resistance, zoonotic diseases, food security, One Health governance and climate changes with their impacts. This editorial illustrated the power of *Science in One Health*.

## 1. Background

With the development of human society, global challenges such as antimicrobial resistance, climate change, food security and food safety, loss of biodiversity, desertification and extreme weather continue to emerge. In addition, most of emerging and re-emerging infectious diseases (60–75%) are derived from pathogens that originally circulated in non-human animal species last decades. The zoonotic spillover, the transmission of pathogens from wild animals to humans, plays an essential role in the emergence of new human infectious diseases. To tackle the zoonotic spillover, it is urgent for human beings to search for an approach to coexist harmoniously with nature, address the global challenges and promote global health governance with joint efforts. In this context, the updated concept of One Health was proposed by the One Health High-Level Expert Panel (OHHLEP) in 2021 with joint efforts of World Health Organization (WHO), Food and Agriculture Organization of the United Nations (FAO), World Organization for Animal Health (WOAH) and United Nation Environment Programme (UNEP). They defined One Health as an integrated unifying approach that aims to sustainably balance and optimize the health of people, animals and ecosystems.

The concept of One Health is becoming increasingly valuable in global health governance since 2003 after Severe acute respiratory syndrome (SARS) outbreak, especially after Coronavirus disease 2019 (COVID-19) pandemic. Disciplines related to One Health application, including zoonotic diseases, antimicrobial resistance (AMR), food safety and climate changes, also receive widespread attention. For examples, universities and colleges in some developed countries like the United States, Canada and Australia have established One Health institutions for education and scientific research. However, based on the global One Health index (GOHI) reported in 2021 [1], the global average score of GOHI was only 56.48 far away from 100 as a top level, which indicated that One Health capacity is still weak at global level. More researches are

needed to explore the interplays at the interface of humans, animals, plants and ecosystems, in order to address challenges on discovering scientific problems from the real world in the field of One Health. Particularly, the challenges on how to solve these interdisciplinary “blind spots” and “pain points” are urgently to be addressed, which can further promote multidisciplinary, multi-field and multi-regional cooperation to jointly solve complex global public health problems such as the COVID-19 epidemic.

To tackle those challenges in the field of One Health, the journal named *Science in One Health* (SOH) was launched in September 2022 with the first article published online in November 2022. The journal aims to provide a platform that disseminates knowledge and case studies on One Health and relevant issues, which is dedicated to real-world research findings and sharing lessons learnt from programmes on health at the human–animal–environment interfaces. On the first anniversary of SOH, the commentary will introduce the vision and developmental process of SOH in the first year, review the publication accepted in SOH and foresee the bright future of SOH (Fig. 1).

2. Power of one: introduction to *Science in One Health*

Under the framework of “One World, One Health”, as the Manhattan Principles, originally proposed by Wildlife Conservation Society in 2004, the vision of SOH is to disseminate the latest knowledge, research achievements, practical lessons in the field of One Health globally and strive to achieve the United Nations (UN) Sustainable Development Goals (SDGs), by systematic thinking with multi-disciplinary approach to solve systemic complex health problems [2].

One strong editorial board of SOH with highly professional, multidisciplinary and young scientists was established in order to achieve the vision of SOH. First, SOH adopts the dual Editor-in-Chief model, and Profs Xiao-Nong Zhou from Shanghai Jiao Tong University and Marcel Tanner

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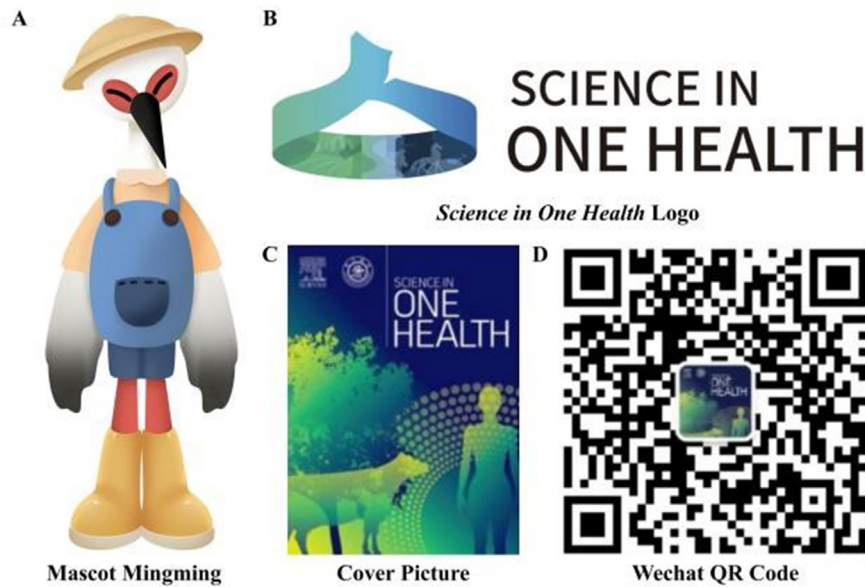


Fig. 1. *Science in One Health*. (A) SOH mascot Mingming. (B) SOH logo. (C) SOH cover picture. (D) SOH WeChat QR code.

from Swiss Academies of Arts and Sciences are serving as the Editor-in-Chief of SOH. Second, a high-level and high-influence editorial board has attracted 83 highly cited scientists from all over the world to be involved (Fig. 2B). Among them, the advisory committee composed of 8 academicians (academicians of the Chinese Academy of Sciences, Chinese Academy of Engineering, French Academy of Sciences, Royal Canadian Academy of Sciences, Australian Academy of Sciences) is mainly responsible for the strategic development guidance of the journal, while 75 editorial members, experienced in the fields of medicine, public health, agriculture, environment, computer science, management and governance, are contributing to improve the impacts by proposing recommendations on key frontier topic, inviting high-level feature manuscripts, organizing and participating in SOH international academic exchange conferences, etc. (Fig. 2A). Associate Editors for the editorial board have

assisted the per-review process focusing on the five research areas of One Health, including zoonotic diseases, AMR control, food safety and food security, environmental change and One Health governance, etc.

One editorial office of SOH, setting up by Shanghai Jiao Tong University, has been actively working on communication, coordinating the editorial works with 8 young scientists holding international vision and professional background. Therefore, a platform to disseminate advances knowledge in One Health has been promoted so far, with support from young scientific editors who keep close connection with more than 80 editorial board members from 29 countries around the world (Fig. 2C and 2D). With the joint efforts of SOH's editorial board team over the past year, SOH has been able to promote multidisciplinary teamwork, build a platform for academic thought exchange, and build a One Health community globally.

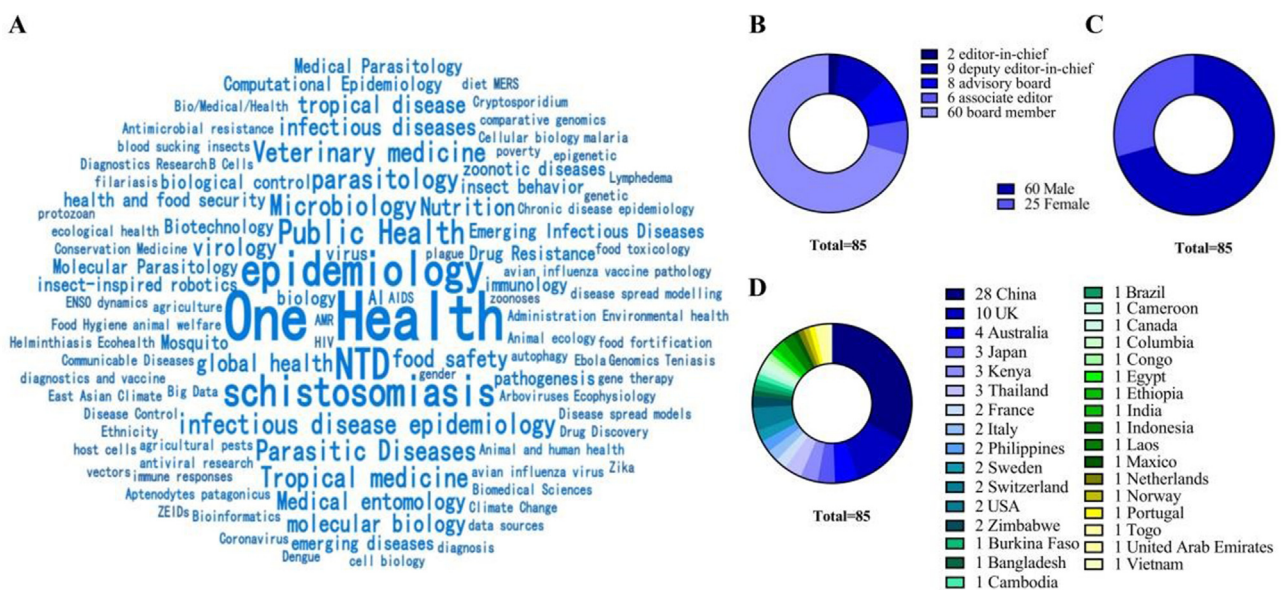


Fig. 2. SOH editorial board. (A) Research interests of the SOH editorial board. (B) The construct of the SOH editorial board. (C) SOH editorial board gender. (D) Nationality of the SOH editorial board.

2.1. One journal to promote a multi-disciplinary teamwork

SOH, as one of high-level journals in One Health, covers a wide range of health disciplines, including zoonotic disease surveillance, AMR control, food safety and food security, vector-borne disease control, environmental pollution and the impact of global climate change on health, and human-animal/plant-environment holistic health governance.

In the first year, 24 articles, out of 162 submissions, have been published or accepted (5 in press) in SOH, including 9 research articles, 9 reviews, 2 correspondences, 2 perspectives, 1 short communication and 1 editorial (Fig. 3A). These articles focus on various health disciplines related to One Health approaches. Except the editorial, 8 articles focus on zoonotic diseases, 5 on climate changes and related environmental problems, 4 on One Health governance, 3 on AMR, 2 on food security, and 1 on One Health database (Fig. 3B).

“One Health” (9 times) and “One Health approach” (3 times) are the most frequent key words presented in 24 articles published (Fig. 3D). The other key words occur only once, while they are widely distributed in different disciplines and hotspots around One Health and One Health approaches (Fig. 3C).

Therefore, a multi-disciplinary teamwork has been formed through SOH publications. In conclusion, the submissions and publications in SOH have all displayed multi-disciplinary teamwork.

2.2. One journal to create a platform for exchanges of ideas

SOH is devoted to creating a platform for authors from all around the world to exchange ideas in One Health disciplines. Totally 132 authors contribute to the 24 articles in the first year. The authors come from 14 countries in 5 continents. The top three countries are China (43, 32.58 %), Brazil (29, 21.97 %) and Nigeria (19, 14.39 %). It is worth mentioning that SOH speak up for people in impoverished and disease endemic areas as 92.42 % (122/132) of the authors come from

undeveloped and developing countries (Fig. 4). All the authors provide different perspectives and valuable ideas in solving One Health issues (Fig. 5).

Besides, the SOH editorial board received 162 manuscripts submission in the first year. The submission came from six continents. Among them, 19 articles were accepted including 4 articles from Africa, 10 from Asia, 1 from Oceania and 4 from South America (Fig. 6).

2.3. One journal to launch a community for One Health

SOH is launching a One Health community among not only experts and researchers, but also postgraduates, graduates, undergraduate students and local citizens. Thankfully, SOH got funding and personnel supports from a) School of Global Health, Chinese Center for Tropical Diseases, Shanghai Jiao Tong University School of Medicine, b) Shanghai Jiao Tong University One Health Institute, c) China Preventive Medicine Association and many other universities and organizations in China. Furthermore, Elsevier provide a wonderful platform for global promotion.

In the first year, SOH set up a WeChat official account, a WeChat video account and an oversea Twitter account (Fig. 1). The first issue was published in November, 2022. SOH generated a series of forums and activities, expanded the editorial board, began to recruit young editors and applied for the DOAJ database. Details are presented in Table 1.

To sum up, Science in One Health has initiated a community for everyone, a platform of “One Health for all”.

3. Power of One Health

Articles published or accepted in SOH in the first year tell stories in six disciplines of One Health (Table 2). The disciplines are One Health database, AMR, zoonotic diseases, food security, One Health governance and climate changes with their impacts.

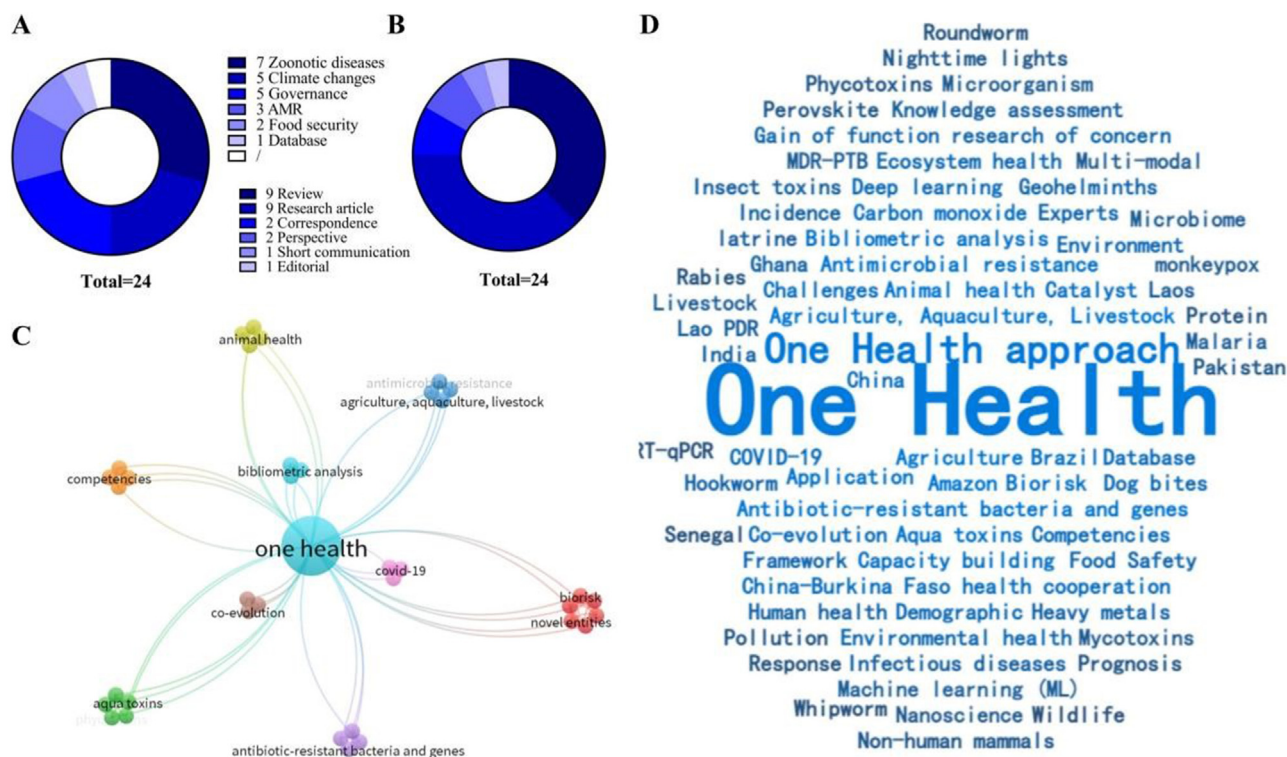


Fig. 3. The articles published/accepted in SOH in the first year. (A) Article types. (B) Related One Health disciplines of the articles. (C) Co-occurrence between the key words in the articles. (D) Key words in the articles.

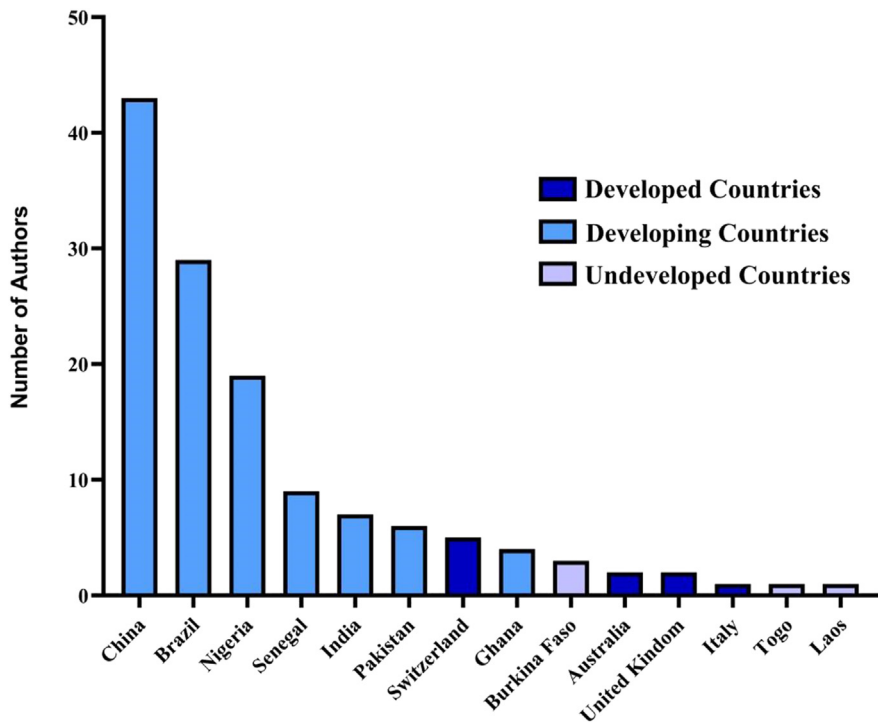


Fig. 4. Nationality and regions of the authors in the SOH articles.

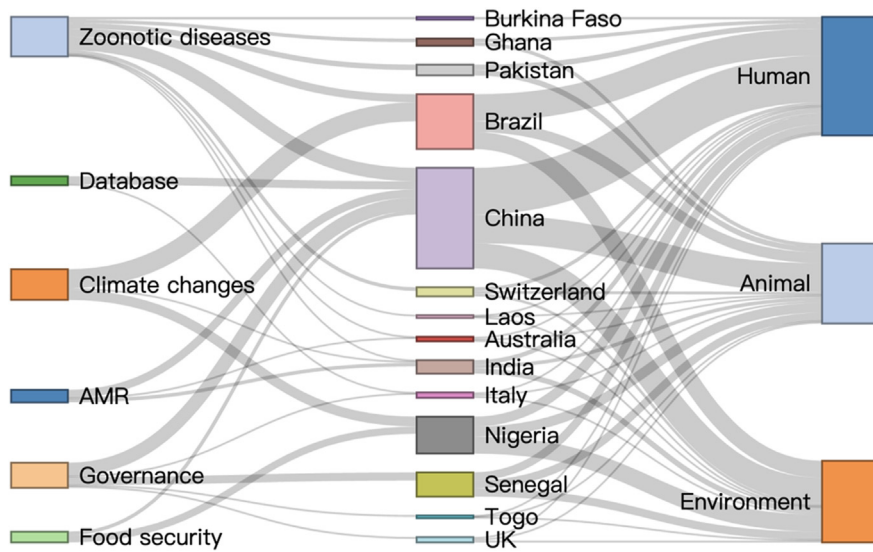


Fig. 5. Correlation among nationality of the SOH authors, One Health disciplines and One Health three elements.

3.1. Advances in One Health database

Ne Qiang et al. [12] developed a One Health information database based on standard bibliometric analysis. In this huge task, they searched 8313 publications on One Health related disciplines in Scopus database and successfully listed top 500 scholars in One Health fields. Based on the One Health information database, SOH can gather One Health scholars around the world.

3.2. Advances in AMR

Ma et al. [20] consider microbiome as a link between human health, animal health and environmental health. They summarized the microbiome in substance cycling and energy flow in nature. As a result, issues

caused by microbials become mutual matters among the three One Health elements. Biswas et al. [11] summarized the impact of AMR among human, animal and environments as the overuse of antimicrobials and called for a sustainable collaboration between the concerned sectors of One Health. Lu et al. [5] put forward an idea that multi-modal deep learning based on dynamic data for multiple dimensions can provide a deeper understanding of personalized treatment plans for multi-drug resistant pulmonary tuberculosis.

3.3. Advances in zoonotic diseases

One Health approaches can be applied in zoonotic diseases control and prevention. Butler [4] compared two official reports from UNEP and listed some underlying driver of potential zoonotic spillover like climate

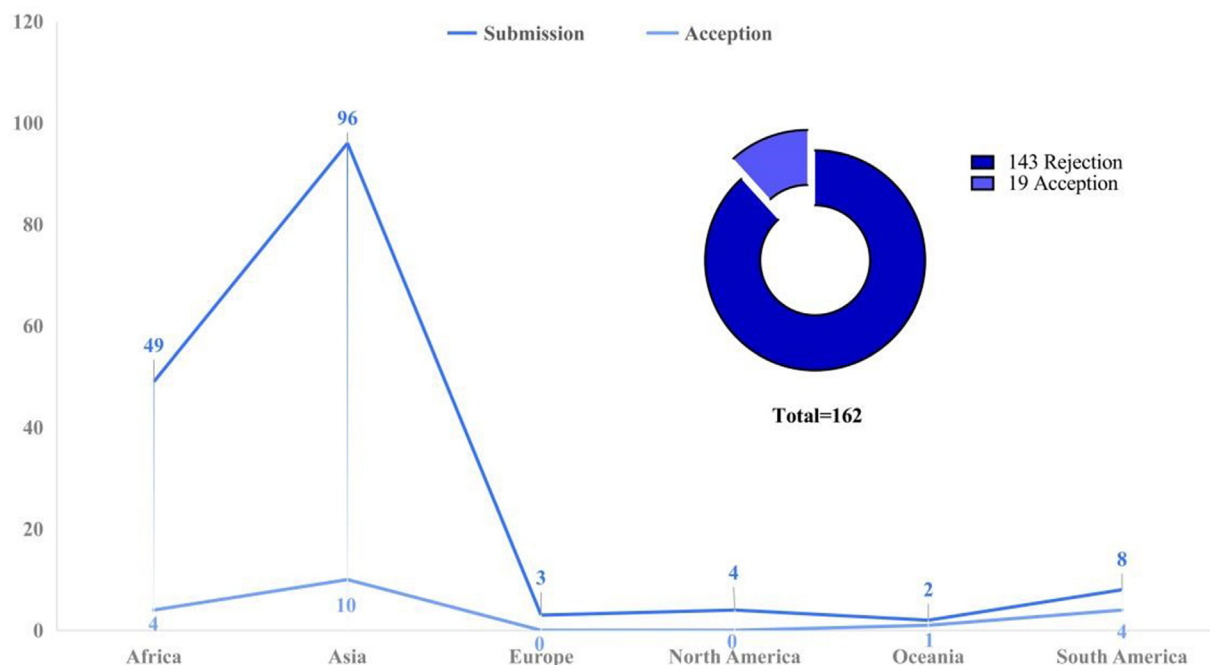


Fig. 6. Articles in SOH submitted and accepted from six continents.

**Table 1**  
Chronological table of SOH in the first year.

No.	Date	Event
1	2022.06	Set up the SOH editorial board
2	2022.09	The SOH initial ceremony on 2022 Pu Jiang Innovation Forum, Shanghai
3	2022.09	Launch of the SOH WeChat official account, WeChat video account and Twitter account
4	2022.11	Hold a series of activities on the 7th global One Health Day. "One Health for a better community"
5	2022.11	Launch the first issue
6	2022.12	Call for papers on zoonotic diseases
7	2023.04	Hold the One Health summit forum
8	2023.05	Establish the global One Health Action Committee
9	2023.06	Expand the editorial board
10	2023.06	Start to recruit young editors

change, changes in food supply chains, increased use and exploitation of wildlife, viral manipulation and laboratory/medical procedure.

Some articles published in SOH focus on researches of certain zoonotic diseases in certain endemic areas. Alfahad et al. [7] focus on the distribution of dog bits in Pakistan to call for rabies prevention. Li [9] et al. summarize the advances of China–Africa cooperation in malaria and schistosomiasis control and prevention in Burkina Faso. Amoah et al. [17] conduct a study on pets with toxocarasis in Ghana. Vonghachack et al. [22] focus on *Schistosoma mekongi* in Lao People's Democratic Republic and call for improved latrines.

Some articles specially focus on recent emerging pandemics including COVID-19 and monkeypox. Rampogu [23] applies machine learning in early diagnosis of monkeypox. Cupertino [16] et al. summarize the zoonotic tendencies of COVID-19, providing a novel animal way in COVID-19 surveillance and response. Guan et al. [24] apply genome studies on COVID-19 mutations that is helpful in COVID-19 tracing.

### 3.4. Advances in food security

In this topic, Qian et al. [14] summarize the impacts of the antibiotic usage in domestic animals from a One Health perspective. Antibiotics on domestic animals lead to transmission of antibiotic-resistant

microorganisms/genes across species and habitats. To solve the issues on antibiotics, departments of human health, animal health and environmental health should contribute joint efforts. Miteu et al. [19] focus on nanoscience and technology, which shows effect on driving sustainable agriculture by suggesting long-lasting solutions to different problems in the agricultural space. The review synthetically summarized its health implications for the environment, plants, animals, and humans.

### 3.5. Advances in One Health governance

One Health training is becoming increasingly important to prevent and respond to public health issues. Ossebi et al. [6] conducted a cross-sectional study in Senegal in 2021, and found out that few of the professionals had received training in the One Health approach and entry-level One Health skills predominated.

One Health governance requires multi-sectional efforts. Huang et al. [21] reviews the connotations of the legal, governmental, technical, and support systems to show precisely the critical factors related to constructing a One Health governance system. Chen et al. [10] proposed an integrated system including emphasis on governance, surveillance, capacity building and multi-disciplinary research to deal with the next pandemic.

Guo et al. [25] summarized the history of One Health in China. They call for foundational education and policy support that are important to cultivate a One Health paradigm.

### 3.6. Advances in climate changes with their impacts

Dey et al. [3] summarize the application of catalytic converters in solving CO pollution from automobile exhaust. Prandi et al. [8] study COVID-19 by wastewater-based epidemiology, which is successfully used to comprehensively monitor and determine the scale and dynamics of some infections in the community. Ellwanger et al. [18] call for attention on heavy metal pollution in Brazil. Ziliotto et al. [15] focus on the soil. They detected soil-transmitted helminths and study on the correlation of people circulation with environmental-related factors. Nwaji et al. [13] summarize the potential hazards of natural toxins to human, animal and environmental health.

**Table 2**

Twenty-four articles published/accepted in SOH in the first year (Last updated for the Cites and Views: Sep 9th, 2023).

No.	Title	Article Types	Corresponding Author	Nationality	One Health Disciplines	Cites	Views
1	Science in One Health: A new journal with a new approach [2]	Editorial	Xiao-Nong Zhou/Marcel Tanner	China/Switzerland	/	1	2370
2	Low temperature catalytic conversion of carbon monoxide by the application of novel perovskite catalysts [3]	Review	Subhashish Dey	India	Climate changes	1	1450
3	Comparing and contrasting two United Nations Environment Programme reports on COVID-19 [4]	Correspondence	Colin David Butler	Australia	Zoonotic diseases	0	1151
4	Multi-modal deep learning based on multi-dimensional and multi-level temporal data can enhance the prognostic prediction for multi-drug resistant pulmonary tuberculosis patients [5]	Perspective	Shun-Xian Zhang	China	AMR	0	924
5	One Health training needs for Senegalese professionals to manage emerging public health threats [6]	Research article	Walter Ossebi	Senegal	Governance	1	1724
6	Incidence of dog bite injuries and its associated factors in Punjab province of Pakistan [7]	Short communication	Tariq Abbas	Pakistan	Zoonotic diseases	0	1177
7	Wastewater-based epidemiological investigation of SARS-CoV-2 in Porto Alegre, Southern Brazil [8]	Research article	Bruno Aschidamini Prandi	Brazil	Climate changes	1	630
8	Strengthening capacity-building in malaria and schistosomiasis control under China–Africa cooperation: assessing a case study of Burkina Faso [9]	Research article	Xiao-Nong Zhou	China	Zoonotic diseases	0	484
9	Challenges and response to pandemics as seen in a One Health perspective [10]	Perspective	Robert Bergquist	Italy	Governance	0	590
10	One Health approaches adapted in low resource settings to address antimicrobial resistance [11]	Review	Indranil Samanta	India	AMR	0	866
11	A One Health information database based on standard bibliometric analysis [12]	Research article	Jin-Jun Ran/Le-Fei Han	China	Database	1	653
12	Natural toxins and One Health: a review [13]	Review	Azubeike Raphael Nwaji	Nigeria	Climate changes	1	1055
13	One Health: a holistic approach for food safety in livestock [14]	Review	Chang Liu	China	Food security	0	797
14	Soil-transmitted helminths detected from environmental samples in a campus of southern Brazil [15]	Research article	Joel Henrique Ellwanger/Jos e Artur Bogo Chies	Brazil	Climate changes	0	505
15	COVID-19 and One Health: potential role of human and animals in SARS-CoV-2 life cycle [16]	Review	Marli do Carmo Cupertino	Brazil	Zoonotic diseases	0	315
16	Toxocariasis in Ghanaian neighborhoods: a need for action [17]	Research article	Linda Ama Owusuaa Amoah	Ghana	Zoonotic diseases	0	166
17	Brazil's heavy metal pollution harms humans and ecosystems [18]	Correspondence	Joel Henrique Ellwanger	Brazil	Climate changes	0	275
18	Nanoscience and technology as a pivot for sustainable agriculture and its One Health approach awareness [19]	Review	Goshen David Miteu	Nigeria	Food security	0	226
19	Impact of the microbiome on human, animal, and environmental health from a One Health perspective [20]	Review	Chang Liu	China	AMR	0	146
20	China's One Health Governance System: the Framework and Its Application [21]	Review	Shizhu Li	China	Governance	0	in press
21	Improved latrines minimally impact <i>Schistosoma Mekongi</i> transmission in Mekong islands [22]	Research article	Somphou Sayasone	Laos	Governance	0	in press
22	A review on the use of machine learning techniques in monkeypox disease prediction [23]	Review	Shailima Rampogu	India	Zoonotic diseases	0	in press
23	Genome analysis of SARS-CoV-2 haplotypes: separation and parallel evolution of the major haplotypes occurred considerably earlier than their emergence in China [24]	Research article	Jiaming Zhang	China	Zoonotic diseases	0	in press
24	Orientation of One Health development: think globally and act locally [25]	Research article	Xiao-Nong Zhou	China	Governance	0	in press

#### 4. One foreseeable journal: future Science in One Health

Despite highly frequent in global research and academic exchanges in the field of One Health, the international exchange platforms still lag the

demand, especially after the COVID-19 pandemic. For instance, the world's first One Health-related journal was launched in 2015, but only 4 journals were named after "One Health" in the world by the end of 2022. This status cannot meet the demand for the growing number of articles

published in One Health in the world. With the co-efforts of WHO, FAO, WOA, UNEP, etc., more activities on One Health will be promoted through either outstanding programmes or advanced research. It has been demonstrated in the total number of submission of SOH last year, in which about 200 submissions have been received but only 22% of submissions are able to be published so far. The lower acceptance rate of SOH is attributed by keeping high-quality publications with international standards, fortunately, an exceedingly platform for academic exchanges on One Health has been established since the inception of SOH.

To keep the space of the global development on One Health, and achieve the vision of SOH in a long-term effort, SOH will adhere to the strategy of giving priority to strengthening, striving to cover all continents of the world with its authorship and readership base, creating a full-cycle platform for high-quality papers, and improving the academic quality and service ability of the journal. Imagining the future, by 2027 in the fifth anniversary, SOH will achieve excellent results, not only being indexed in major databases and entering the top 5 % of journals in this field, but also gaining a good international reputation, and becoming a gathering place for high-level scholars in the world. It is also expected that SOH become the first place for high-level achievements, a dream place for the career development of young scholars, and a promotion channel of One Health discipline-cluster evolution.

In the further future, we expect that SOH will continually focus on the excellent research results on interface of human—animal/plant—environment, keeping the progress tracks of One Health science, promoting multidisciplinary cooperation, intradisciplinary collaboration, and discipline-cluster coordination, and will provide a high-quality academic platform and scientific evidence basis for promoting the global health action plan, become a high-end academic exchange platform to systematically solve the complex health problems, and become a stage for the coherence of ideas and resources of high-level scholars or institutions around the world.

#### Authors' contributions

HQ-Z, LB-W drafted the first version of the manuscript. HQ-Z, L-H, XN-Z perform the data analysis. HQ-Z, LB-W, L-H, XN-Z participated in the revisions. All authors read and approved the final manuscript.

#### Declaration of competing interest

Xiao-Nong Zhou is the Editor-in-Chief of the journal *Science in One Health*. Lu He is the managing editor of the journal *Science in One Health*. Thanks to Elsevier for providing the cites and views data of the published articles in SOH.

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