

One Health Approach in Family Medicine: A Systematic Literature Review within the Prisma 2020 Framework

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Accepted 11 June 2026.

Abstract

Objective and Aim

The One Health approach constitutes an interdisciplinary framework grounded in the fundamental premise that human, animal, and environmental health are inextricably interconnected. Family physicians and primary care practitioners occupy a central position in the operationalization of the One Health paradigm, both as the initial point of diagnosis for zoonotic infections and as the clinicians most directly observing the health impacts of antimicrobial resistance (AMR), climate change, and environmental exposures. This systematic review aimed to map the literature addressing One Health within the context of family medicine and

primary care settings, and to conduct a qualitative synthesis thereof.

Materials and Methods

Two separate searches were conducted in the Web of Science Core Collection database using strategic keywords encompassing family medicine and One Health concepts, yielding a total of 1,736 records. In accordance with the PRISMA 2020 guidelines, records were sequentially subjected to duplicate screening, title-abstract screening, and full-text eligibility assessment. Studies focusing on the family medicine/primary care domain and addressing One Health-related concepts (antimicrobial resistance, zoonotic disease, climate/environmental health, veterinary-medicine collaboration, foodborne/waterborne pathologies) were included. Editorials, letters, and meeting abstracts were excluded at the full-text stage.

Results

A total of 1,735 unique records were screened; 1,281 records were excluded at the title/abstract stage for failing to meet the thematic intersection criteria; 454 records underwent full-text eligibility assessment; and following the exclusion of 23 records on

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To cite:

Sönmez TG, Fidancı I, Biskiner EB. One Health
Approach in Family Medicine: A Systematic
Literature Review within the Prisma 2020
Framework. VMS Journal 2026;2(2):105-116.
doi: 10.64514/vmsjournal.2026.28

the basis of publication type, the final synthesis set comprised 431 studies. The largest proportion of studies pertained to antimicrobial resistance/stewardship (n=314; 72.9%), followed by environment-climate-planetary health (n=53), zoonotic diseases (n=45), and the general One Health framework (n=19). A marked increase in publication volume was observed over time, particularly during the 2020–2025 period following the COVID-19 pandemic.

Conclusion

The One Health literature within the family medicine setting continues to develop predominantly along the axis of rational antibiotic use/AMR; however, climate change and planetary health, early diagnosis and management of zoonotic diseases, and veterinary-medical collaboration have gained considerable momentum in recent years. The integration of the primary care role within the One Health framework into curricula, clinical decision-support tools, and health system-level stewardship policies constitutes a priority requirement.

Keywords: Family Medicine, Primary Care, One Health, Antimicrobial Resistance, Zoonosis, Climate Change, Planetary Health, PRISMA.

1. Introduction

The One Health approach represents a holistic health paradigm that recognises the inseparable entwinement of human health, animal health, and environmental/ecosystem health, and is predicated upon interdisciplinary collaboration among these components. The Quadripartite collaboration—established by the World Health Organization (WHO), the World Organisation for Animal Health (WOAH), the United Nations Food and Agriculture Organization (FAO), and the

United Nations Environment Programme (UNEP)—defines the One Health framework as a global priority across the domains of zoonotic disease prevention and control, combating antimicrobial resistance (AMR), food safety, environmental determinant management, and the mitigation of climate change-related health threats ³⁵.

Family physicians (general practitioners, primary care physicians), by virtue of their characteristics of continuity, comprehensiveness, and community-based practice, constitute one of the most critical points of contact at which the One Health approach is translated into clinical application. A significant proportion of common presenting complaints—such as upper respiratory tract infections, diarrhoea, and febrile syndromes—are of direct zoonotic origin, and the majority of antibiotic prescriptions (70–90% in developed countries) are issued within the primary care setting. Furthermore, changes in the geographical distribution of vector-borne diseases attributable to climate change, chronic diseases associated with air pollution, and the acute effects of extreme heat/cold events have been identified as fundamental dimensions of human health protection in the Anthropocene era, and have become increasingly common presentations in the daily practice of family physicians ^{1,6,19,44}.

Nevertheless, comprehensive mapping studies are limited regarding how the One Health concept is positioned in the family medicine literature, in which thematic subheadings it is concentrated, and what type of evidence relevant to implementation has accumulated. The present study aims to identify, synthesise, and elucidate existing knowledge gaps in the One Health-related literature within the family medicine/primary care setting within the PRISMA 2020 framework, based on two systematic searches conducted via the Web of Science Core Collection.

Research Questions

What is the volume, temporal development, and journal distribution of publications addressing the One Health paradigm in the family medicine setting?

In which thematic sub-domains does this literature concentrate (AMR, zoonosis, environment/climate, food-water, veterinary-medical collaboration)?

What recommendations emerge regarding the clinical, educational, and system-level contribution of family medicine to One Health implementation, and what evidence gaps exist?

2. Materials and Method

Study Design and Reporting Framework

This study was conducted employing a systematic literature mapping (scoping/systematic review) design and was reported utilising the PRISMA 2020 checklist as the foundational framework. The flow diagram was prepared in accordance with the PRISMA 2020 template ⁴¹.

Information Sources and Search Strategy

The literature search was conducted on 26 March 2026 in the Clarivate Web of Science (WoS) Core Collection database. The following Boolean search string, intersecting family medicine/primary care settings with One Health and planetary health themes, was applied as a single line in the "Topic" (TS) field encompassing title, abstract, and author keywords:

TS=(("family medicine" OR "primary health care" OR "primary care" OR "general practice" OR "general practitioner*" OR "family physician*") AND ("one health" OR "planetary health" OR "climate change" OR "environmental health"))

The following restriction filters were applied via the WoS interface: Publication Years: 2005–2026; Document Types: Article and Review. No language restriction was applied. The search was completed on 21 March 2026

in two separate sessions, and the results were exported in RIS and HTML formats and archived as savedrecs (4).ris (n=1,000), savedrecs (5).ris (n=736), together with their HTML counterparts (savedrecs (79).html, savedrecs (80).html). A total of 1,736 records were obtained through the combination of the two files.

Inclusion and Exclusion Criteria

Inclusion criteria:

- Studies focusing on or directly investigating the family medicine, general practice (GP), or primary care/primary health care setting.
- Studies addressing at least one component of One Health and planetary health concepts: (i) studies explicitly employing the concept of "One Health"; (ii) studies focusing on the health effects of planetary health and climate change; (iii) studies adopting an environmental health perspective; within this scope, directly related antimicrobial resistance/rational antibiotic use and zoonotic disease studies were also considered.
- Studies within the publication year range of 2005–2026, classified as Article or Review in WoS document type; no language restriction was applied.

Exclusion criteria:

- Publications without a family medicine/primary care connection (e.g., exclusively hospital/intensive care, exclusively animal clinical research, exclusively microbiological studies).
- Publications not containing any concept related to One Health.
- Publication types classified in the Web of Science (WoS) database as editorial material, letter, meeting abstract, brief communication, correction, and similar non-review/non-original publications were not included in the study; this was verified at the full-text eligibility

stage in addition to the publication type filter.

Study Selection and Data Extraction

The 1,736 records obtained from the two search sessions were merged into a single dataset in EndNote and Microsoft Excel. One duplicate record was removed following duplicate checking based on DOI and title matching, and 1,735 records were subjected to title/abstract screening. Filters pertaining to family medicine/primary care ("family medicine", "family physician*", "general practice", "general practitioner*", "primary care", "primary health care") and One Health sub-themes ("one health", "planetary health", "climate change", "environmental health" and keywords related to these themes including antimicrobial resistance, zoonosis, food/waterborne disease, and veterinary-medical collaboration) were applied to the title, abstract, keywords, and journal name. Records meeting the thematic intersection were subjected to full-text eligibility assessment; at the full-text stage, records with a WoS document type of Editorial Material, Letter, or Meeting Abstract (n=23) were excluded on the basis of publication type criteria. The final synthesis set comprised 431 studies.

3. Results

Study Selection Process (PRISMA Flow Diagram)

A total of 1,736 records were identified through the combination of the two search sets; following the removal of 1 duplicate record, 1,735 records were subjected to title/abstract screening. At this stage, 1,281 records were excluded for failing to meet the family medicine and One Health intersection criteria, and 454 records were subjected to full-text eligibility assessment. Twenty-three records (editorial/letter/meeting abstract) were excluded on the basis of publication type criteria, and 431 studies were ultimately included in the qualitative synthesis set (Figure 1).

Distribution by Year

The distribution of the 431 included studies over time demonstrates that the field has gained momentum particularly since 2018, with the annual number of publications doubling in the last six years (Table 1). It is evident that the COVID-19 pandemic substantially increased academic interest in the One Health concept, with a threshold of 40 or more publications per year becoming sustained particularly during the 2022–2025 period.

Thematic Distribution

Studies were classified into four main categories according to the predominant One Health theme identified for each record (Table 2).

Antimicrobial Resistance and Antimicrobial Stewardship

The majority of included studies (n=314; 72.9%) focused on rational antibiotic use, antimicrobial stewardship (AMS) interventions, and AMR-related clinician behaviours.

The determinants of inappropriate prescribing in primary care have been described in detail across various social and clinical contexts^{36,39}. It has been demonstrated that antibiotic prescribing decisions for common infections such as acute rhinosinusitis are influenced by a multi-stage process¹⁵, and that distinctive antibiotic use patterns exist in elderly individuals and those with dementia¹³. Additionally, racial/ethnic differences in penicillin allergy delabelling processes¹² and the knowledge-attitude-practice profiles of healthcare professionals in low- and middle-income countries⁸ were identified as significant topics broadening the scope of the literature.

When examining evidence regarding effective interventions in this domain, audit-feedback in its various forms of implementation was found to be an effective strategy^{3,29,38}.

Table 1. Distribution of included studies by year (n=431).

Year	n	Year	n
2010	3	2019	27
2012	4	2020	42
2013	6	2021	42
2014	9	2022	52
2015	11	2023	56
2016	17	2024	42
2017	20	2025	61
2018	22	2026	17
Total	92	Total	339

The literature has also reported cost-effectiveness and budget impact analyses of rapid diagnostic tests (CRP point-of-care) ¹⁰, and the positive effects of electronic clinical decision support algorithms (eCDSA) on prescribing behaviour ⁴⁵. Delayed prescribing practices have been reported to be effective in reducing antibiotic use and to represent a safe approach in terms of clinical outcomes ³². Expert consensus reports addressing the role of paediatric associations in particular in AMS ¹⁴ reflect the multi-layered nature of the field.

Table 2. Thematic distribution of included studies.

Theme	n	%
Antimicrobial Resistance / Rational Antibiotic Use	314	72.9%
Environment / Climate / Planetary Health	53	12.3%
Zoonotic Diseases	45	10.4%
One Health General	19	4.4%
Total	431	100.0%

Environment, Climate Change, and Planetary Health

It is notable that climate change and planetary health themes constitute the most rapidly growing sub-domains in recent years (n=53; 12.3%). Studies in this domain were structured around the integration of adaptation and mitigation opportunities pertaining to climate change into primary care by family physicians ^{2,9}. The literature

spans a broad spectrum in this domain, ranging from the relationship between global health and primary care in the era of "permacrisis" ³⁴ to the local effects of climate change on child health ³³.

Table 3. Top 10 journals in which the included studies were published.

Journal	Number of Studies
Antibiotics-Basel	31
Journal Of Antimicrobial Chemotherapy	20
Bmj Open	20
Bmc Primary Care	19
Journal Of Family Medicine And Primary Care	12
Bmc Family Practice	11
Family Practice	10
African Journal Of Primary Health Care & Family Medicine	10
British Journal Of General Practice	10
Scandinavian Journal Of Primary Health Care	9

Carbon-aware prescribing within a planetary health perspective in medical treatment may be considered one of the significant innovations in this domain ⁹; the substitution of high-carbon-footprint inhalers with lower-impact alternatives has constituted an important area of application in particular ^{7,22,27}. Principled frameworks for sustainable primary care service design ¹⁸ and the structuring of climate-resilient primary care models ³¹ represent the practice-oriented components of this literature. Nordic "green care practices" ¹⁷ provide regional examples of good practice.

Zoonotic Diseases and One Health

Zoonotic diseases (n=45; 10.4%) in the literature are concentrated particularly on studies related to the diagnosis, referral, and prevention of diseases at the primary care level in rural/semi-rural areas. A large-scale population-based study conducted in Italy elucidated the burden of common zoonotic infections on primary care and provided significant indicators regarding the

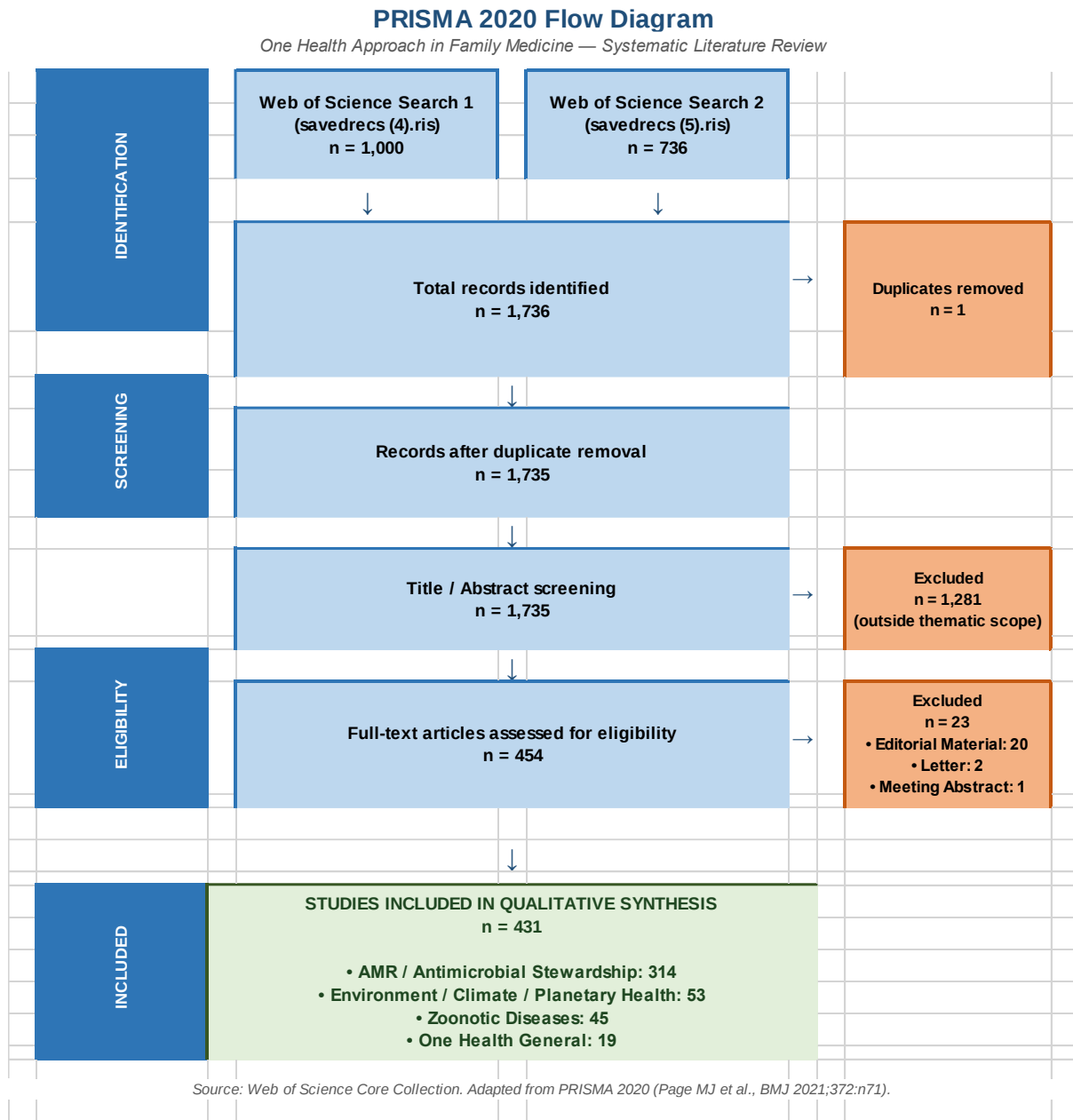


Figure 1. PRISMA 2020 Flow Diagram – Selection Process for One Health Studies in Family Medicine.

diagnostic and management practices of family physicians ²⁴.

When examining studies incorporating antibiotic content in the zoonotic diseases domain, it was found that antibiotic prescribing patterns differ in the paediatric subgroup ⁵, that physician/pharmacist/nurse collaboration should be prioritised in patient education ¹¹, that oral antibacterial prescribing patterns

differ in out-of-hours primary care services ⁴, and that variability exists regarding antibiotic treatment durations for respiratory tract infections ²⁶.

Studies comparing antibiotic use in primary care before and after the COVID-19 pandemic provided findings relating to the association between the pandemic and zoonotic diseases ^{16,30}. An exploratory survey study conducted among primary care

physician candidates in Germany demonstrated that resident physicians exhibit significant gaps in awareness and management competencies regarding zoonotic diseases ³⁷.

One Health General Framework

Publications that explicitly name the concept of "One Health" or "planetary health" and integrate it into family medicine practices (n=19; 4.4%) are comparatively limited in number, yet constitute the paradigmatic framework of the field. The "climate and health history" model that structures the family physician's clinical consultation along the One Health axis ⁴², the mapping of primary care adaptation-mitigation strategies in response to the planetary health crisis ⁴⁰, and "teachable moment" pedagogical models addressing sustainable health topics in daily clinical practice ²¹ represent the concrete contributions of this category. In the undergraduate/postgraduate education dimension, faculty perception studies regarding the addition of planetary health modules to family medicine curricula ²⁵, continuing professional development initiatives ²⁸, and the measurement of practitioners' perceptions towards sustainable healthcare services, as exemplified in Ireland ⁴³, have highlighted the educational gap. Furthermore, nutritional recommendations from a planetary health perspective ("planetary health diet") have also been proposed as primary care-based strategies in the literature ²³.

Journal Distribution

While the included studies were published across more than 200 different journals, the top ten journals in which the field is concentrated are presented in Table 3. As a reflection of the two axes of the subject matter, both journals specific to the family medicine/primary care domain (BMC Primary Care, Journal of Family Medicine and Primary Care, BMC Family Practice,

Family Practice, British Journal of General Practice, Scandinavian Journal of Primary Health Care, African Journal of Primary Health Care & Family Medicine) and antimicrobial resistance-focused journals (Antibiotics-Basel, Journal of Antimicrobial Chemotherapy) are prominent.

Discussion

This review demonstrates that One Health literature in the family medicine setting continues to rely predominantly on the axis of antimicrobial resistance (AMR) and rational antibiotic use. Nevertheless, a marked increase has been observed in the past five years in areas such as climate, environment, and planetary health, the diagnosis and management of zoonoses, and veterinary-medical collaboration.

The increase observed in the One Health literature following the COVID-19 pandemic, as identified in our study, may be explained—consistently with the broader literature—by the zoonotic origin of the pandemic and the renewed prominence of human–animal–environment interaction on a global scale ²⁰. This situation has contributed to the repositioning of the One Health approach not merely as a theoretical framework but as a practical necessity.

When the thematic distribution of One Health literature in primary care is examined, the predominance of the AMR theme constitutes an expected finding. The fact that a large proportion of antibiotic prescriptions globally are issued in primary care has directed research towards the determinants of inappropriate prescribing and intervention strategies addressing this issue ^{36,39}. In this regard, the audit–feedback approach stands out as one of the prominent interventions, characterized by both the structural features defined in expert consensus documents and the efficacy demonstrated through randomized controlled trials ^{3,38}. Next-generation designs

such as the mail-based audit-feedback intervention by Masucci et al. (2026) and the POCT (point-of-care test)-based cost-effectiveness evaluations by Azahaf et al. (2026) indicate that applicable models in the field are developing rapidly ^{10,29}. Expert consensus reports emphasizing the role of associations in paediatric primary care also demonstrate the multi-stakeholder nature of AMR management ¹⁴. However, the fact that a significant proportion of AMR studies in the existing literature do not sufficiently encompass animal production, agricultural antibiotic use, and environmental surveillance dimensions suggests that the One Health approach has yet to be holistically operationalized in primary care.

The concentration on the climate change and planetary health theme in our study may be evaluated as a signal of a paradigmatic shift in terms of the priorities of healthcare services. This transformation necessitates the repositioning of primary healthcare services to encompass environmental and societal determinants, inviting family medicine to take its place among the key actors of the planetary health approach in practice ¹⁹. In this context, the "climate and health history" practice for the family physician is presented in the literature as a concrete model for structuring the clinical consultation along the One Health axis ⁴². Carbon-aware prescribing is among the concrete steps that represent the incorporation of a planetary health perspective in pharmacological treatment ⁹; the substitution of high-carbon-footprint inhalers with lower-impact alternatives constitutes an important application domain in particular ^{7,22,27}.

Principled frameworks have been developed for sustainable primary care service design ¹⁸, and "teachable moment"-based pedagogical models supporting the transfer of these frameworks into daily clinical practice have been identified ²¹. In the educational dimension, studies examining faculty perceptions regarding the integration

of planetary health modules into family medicine curricula ²⁵ and continuing professional development initiatives ²⁸ have increased awareness of the educational gap. On the other hand, mixed-methods vulnerability assessments for the development of climate-resilient primary care models ³¹ and qualitative studies examining practitioners' perceptions of sustainable healthcare services in the Irish context ⁴³ demonstrate that the practice-oriented dimension of the current approach is progressively strengthening. Nevertheless, the fact that a significant portion of the existing literature consists of attitude and perception studies clearly reveals the need for high-level evidence involving intervention development and effectiveness evaluation—particularly randomized controlled trials. This indicates that experimental and scalable intervention studies demonstrating the feasibility of the planetary health approach in primary care should be prioritized.

The zoonotic diseases theme corresponds more closely to clinical reality particularly in rural/semi-rural primary care settings in low- and middle-income countries; however, the literature in high-income countries is also expanding rapidly in conjunction with climate-related shifts in vector geography. A large population-based study conducted in Italy documented the burden imposed by the most common zoonosis on primary care and provided concrete indicators regarding the diagnostic/management practices of family physicians ²⁴. The exploratory online survey study conducted by Scheider et al. (2025) among primary care physician candidates in Germany demonstrates that resident physicians exhibit significant gaps in awareness and management competencies regarding zoonotic diseases; this necessitates the integration of One Health modules into postgraduate education ³⁷. Formal cross-referral pathways and structured communication channels between family physicians and veterinarians remain largely absent; One Health platforms

and digital surveillance-sharing systems are proposed to address this gap.

The relatively limited number of publications evaluated under the general One Health framework heading (n=19) suggests that the concept has yet to be addressed in family medicine literature as a trans-categorical paradigm, but rather implicitly through sub-themes. The explicit integration of One Health competencies (conceptual framework, diagnosis/management along the antibiotic-zoonosis-climate axis, collaboration with veterinary and public health stakeholders, sustainable service delivery) into family medicine specialization and undergraduate curricula ²⁵, the orientation of continuing professional development programmes towards the climate-health axis ²⁸, and the structuring of "teachable moments" in clinical encounters ²¹ are critical steps for closing this gap. Additionally, studies examining under which conditions behavioural interventions such as delayed/back-up prescribing are effective using realistic synthesis methods ³² shed light on the applicability of One Health in the clinical decision-making process.

Limitations

This review is based solely on two search sets conducted via the Web of Science Core Collection; complementary databases such as PubMed, Scopus, Embase, and Cochrane were not searched, and it must therefore be acknowledged that not all publications in the field have been covered. Thematic classification is based on automated keyword matching across title, abstract, keywords, and journal name; full-text review and risk-of-bias assessment were not conducted. Given that the operational definitions of One Health themes were defined broadly, classification may be overly inclusive in certain studies, particularly along the AMR axis.

Conclusion and Recommendations

One Health literature in the family medicine setting is growing rapidly, stabilizing at a threshold of 50+ publications per annum during the 2020–2025 period. In light of the current findings, the following recommendations are highlighted:

- The explicit integration of One Health competencies (AMR-stewardship, zoonotic diagnostic algorithms, climate-health history taking, carbon-aware prescribing) as explicit learning objectives into family medicine specialisation and undergraduate curricula;
- The incorporation of zoonotic disease alerts, AMS decision-support modules, and carbon footprint indicators into primary care electronic health record systems;
- The establishment of structured referral and information-sharing platforms between family physicians and veterinarians (local One Health networks);
- The dissemination at the policy level of cost-effective AMS interventions such as rapid diagnostic tests (CRP POCT, streptococcal antigen test, etc.) and delayed prescribing practices;
- The positioning of family physicians as active stakeholders in public health surveillance systems, climate adaptation plans, and community-based environmental risk communication;
- The strengthening of quantitative effectiveness evidence through intervention studies (particularly randomized controlled and cluster designs along the climate-health and veterinary-medical collaboration axes).

Conflict of interest

The authors declare no conflict of interest.

Funding

This study did not receive any funding.

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