

Child and adolescent mental health in the Western Pacific region

Policies, resources, and interventions for child and adolescent mental health in China: a scoping review



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Summary

Child and adolescent mental health (CAMH) disorders have become a public health concern in China, yet evidence on resource allocation remains limited. This scoping review synthesizes English- and Chinese-language peer-reviewed and grey literature to assess four domains related to CAMH: legislation and policy, financing and health insurance coverage, service delivery and utilization, and available interventions. While China has established a comprehensive legislative and policy framework for CAMH, resources remain insufficient to fully implement it. In 2020, per-adolescent (aged 10–19 years) spending on mental health curative care in China was 27.6 RMB (equivalent to \$4.6 in 2023 USD), with households covering 58.1% and the government only 14%. Insurance rarely covers psychotherapy or counselling for children and adolescents. CAMH workforce and infrastructure remain limited and concentrated in urban areas. Intervention studies are mostly small-sample and focus on short-term outcomes. Evidence on cost-effectiveness is scarce. Key recommendations include expanding health insurance coverage, improving CAMH workforce and infrastructure, especially in underserved regions, and strengthening evidence-based policymaking through establishing a national-level monitoring system and conducting large-sample, long-term studies.

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Translation: For the Chinese translation of the abstract see the [Supplementary Materials](#) section.

Introduction

China, the second-most populous country in the world and the most populous in the Western Pacific Region (WPR), is home to approximately 397 million children and adolescents aged 24 or younger.¹ Benefiting from decades of rapid economic growth, the country has made remarkable progress in promoting the development of its young population, including improved physical health and nutrition status,² universal access to primary and secondary education,³ and enhanced living standards driven largely by industrialization and urbanization.⁴ However, China continues to face considerable challenges in improving many socioeconomic and public health dimensions, leaving its young population to various risks that require urgent attention, including the surge of mental disorders.

A recent study⁵ based on national-scale psychiatric epidemiological survey data revealed that approximately 17.5% of school-age children (6–16 years) in China have one or more mental disorders, exceeding the estimated global prevalence of 13.4% among children and adolescents aged 18 years or younger.⁶ According to the study, the three most common mental disorders are attention-deficit hyperactivity disorder (6.4%), oppositional defiant disorder (3.6%), and major depressive disorder (2.0%).⁵ In terms of disease burden, Global Burden of Disease data show that mental-health related conditions, including mental disorders, substance use disorders, and self-harm, ranked first in contributing to disability among individuals aged 24 years and younger in China, accounting for approximately 15.6% of their total disability-adjusted life years (DALYs) in 2021.⁷ These alarming statistics align with the growing concern among the Chinese public as well as the academic researcher and medical practitioner communities who increasingly regard child and adolescent mental health as a major public health crisis in the country.^{5,8}

A variety of socioeconomic, demographic, and policy factors have contributed to this crisis, with differences between urban and rural areas. In urban settings, the dominant parenting style places excessive emphasis on children and adolescents' academic performance (e.g., sending children to after-school tutoring), often at the expense of adequate sleep and physical activity. While score-oriented parenting is also prevalent in other WPR countries, especially East Asian countries, it is particularly pronounced in urban China.⁹ For many Chinese adolescents, psychological pressure does not ease after completing their education but instead shifts to the job search phase.¹⁰ As China's economy transitions from rapid to moderate growth, with fewer employment opportunities and a steady increase in university graduates, securing an ideal job immediately after graduation has become increasingly challenging. This uncertainty places adolescents at elevated risk of depression, anxiety, and problematic social media use.^{10–12}

Meanwhile, children and adolescents in rural China face distinct challenges related to parental rural-to-urban labour migration. Approximately 41.8 million rural children aged 0–17 remain in their hometowns while one or both parents migrate to urban areas for work.¹³ This separation is largely driven by China's household registration system (*hukou*), which limits rural children's access to equal education and health-care services in cities. As a result, many rural children have to be raised by their grandparents who remain in the countryside. Children lack emotional connection with their parents for a prolonged time and face higher risks of depression,¹⁴ anxiety,¹⁴ self-injury,¹⁵ bullying,¹⁶ and behavioural problems.¹⁷

In recent years, the Chinese government and society have increasingly recognized the importance of promoting child and adolescent mental health (CAMH). To inform future efforts, there is an urgent need for a comprehensive assessment of the resources allocated to CAMH, spanning legal and political commitments, financial investment, human and infrastructural capacity, service utilization, and intervention strategies. However, such evaluations remain largely unavailable.¹⁸ To our knowledge, this is the first comprehensive scoping review to synthesize national and subnational legislation, policies, financing, workforce and facilities, service utilization, and interventions related to CAMH in China. By filling this critical gap, the study establishes a foundation for understanding China's CAMH resource landscape to facilitate future policy making and research investigation. It also offers transferable insights for other low- and middle-income countries (LMICs) in the WPR.

This study is one of three papers in this Series on CAMH in the WPR, alongside companion papers focused on high-income settings¹⁹ and other LMICs²⁰ in the region. A standalone paper was developed for China for two key reasons. First, our literature search revealed that China accounts for a disproportionately large number of publications compared to other LMICs in the region. Separating China from the other 14 LMICs enabled us to present findings on those countries more comprehensively in the LMICs paper.

Second, China is home to the WPR's largest young population, which faces mental health challenges driven by a unique mix of risk factors found in both developing and developed countries, largely due to vast regional disparities in socioeconomic development (Fig. 1). For example, like many high-income countries in the WPR, parts of China are transitioning toward an aging society with declining fertility rates. This demographic shift imposes disproportionate economic²¹ and caregiving²² burdens on adolescents, which are closely associated with increased risks of depression and anxiety.^{23,24} At the same time, similar to other LMICs, Chinese youth are increasingly exposed to the adverse effects of digitalization, including widespread

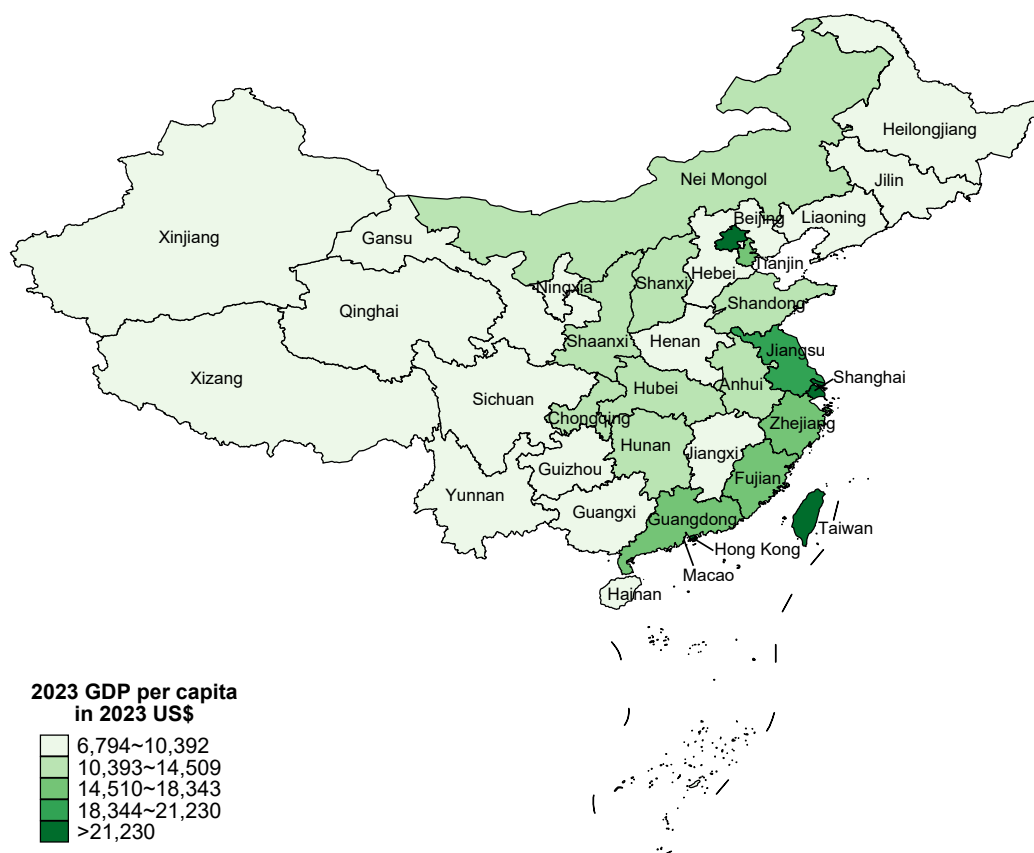


Fig. 1: China's 2023 gross domestic product per capita by provincial unit (in 2023 United States dollars). **Caption:** In this figure, we refer to China's 23 provinces, five autonomous regions, four centrally administered municipalities, and two special administrative regions collectively as "provincial units." Data on gross domestic product (GDP) in Renminbi (RMB) and population size for all provincial units, excluding Taiwan Province and the Hong Kong and Macao Special Administrative Regions, were obtained from the China National Bureau of Statistics (<https://data.stats.gov.cn/>). We converted RMB to United States dollars (USD) using the 2023 average official exchange rate (1 USD = 7.084 RMB) published by the World Bank (<https://data.worldbank.org/indicator/PA.NUS.FCRF?view=chart>). GDP per capita (in 2023 USD) for Taiwan Province, as well as for the Hong Kong and Macao Special Administrative Regions, was sourced from the International Monetary Fund (<https://www.imf.org/external/datamapper/datasets>).

unhealthy online content that negatively impacts mental health.²⁵ Understanding how China leverages its political and economic resources to address the urgent mental health needs of children and adolescents can provide valuable lessons for both high-income countries and LMICs across the region.

Following the structure used in the LMICs paper, this study synthesizes evidence from China across four key domains: (1) legislation and policies related to CAMH; (2) financial investments in CAMH, including government expenditure, household out-of-pocket spending, and health insurance coverage; (3) human and infrastructural capacity for delivering CAMH services and associated service utilization; and (4) evidence on the effectiveness and cost-effectiveness of CAMH interventions. Our synthesis covers both national and subnational levels, including China's 22 provinces, five autonomous regions, and four centrally administered

municipalities. We did not include evidence from Taiwan Province or the Hong Kong and Macao Special Administrative Regions, as these jurisdictions operate under distinct legal and fiscal systems and maintain independent health, education, and social welfare governance structures. Evidence pertaining to these three jurisdictions is included in the high-income settings paper of this Series.¹⁹

Methods

Protocol

This study closely followed the protocol published in the Appendix of the LMICs paper in this Series, which outlines the full methodology, including search strategy, inclusion and exclusion criteria, literature review and data extraction procedures, and data synthesis and analysis.²⁰

Definition of children and adolescents in China

China does not apply a universally adopted age definition for children and adolescents; instead, definitions vary depending on legal and policy contexts. In alignment with the United Nations Convention on the Rights of the Child,²⁶ the Law of the People's Republic of China on the Protection of Minors²⁷ defines “children” as citizens under the age of 18. In 2017, recognizing the extended efforts required for today's Chinese youth to pursue education, seek employment, form families, and achieve economic security, the Communist Party of China (CPC) Central Committee and the State Council defined “youth” as individuals aged 14 to 35 in the Middle- and Long-term Youth Development Plan (2016–2025).²⁸

In this paper, when searching and reviewing literature, we treated “children” and “adolescents” as categorical terms rather than terms with precise age-based definitions. This approach allowed us to focus on the broader early life course, characterized by rapid psychological development, accelerated human capital accumulation, and the initial stages of labour market engagement—all of which generate intensive mental health needs.

Search strategy

This study's search strategy closely followed the approach used in the LMICs study²⁰ included in this Series. We searched both peer-reviewed papers and grey literature to examine the inclusion of CAMH in legislation and policy, government and household expenditures on CAMH, coverage of CAMH services by social and commercial health insurance programs, CAMH service delivery capacity and utilization, as well as the effectiveness and cost-effectiveness of CAMH interventions. Recognizing that robust study designs are essential for high-quality evidence on intervention effectiveness and cost-effectiveness, we limited our search for CAMH interventions to studies published in peer-reviewed journals.

We searched both English- and Chinese-language literature based on two main considerations. First, information about legislations, policies, regulations, financing mechanisms, and human and physical capacities is usually in Chinese, especially at the subnational level. Among the identified literature on national legislations in this study, 88.9% are in Chinese. For the subnational policies, all the documents are in Chinese. The Chinese-language versions are often the only available sources on these topics, making their inclusion indispensable for an accurate assessment of the policy environment. Second, previous studies have found that extending the search to local-language sources significantly enriches the evidence base and reveals perspectives that were absent or even contradictory in the English-language literature, particularly in terms of context-specific and cultural-

relevant interventions and policy implications.²⁹ To capture as many relevant policies and research outputs as we could, we conducted the search in both English and Chinese literature.

For English-language sources, database selection was informed by prior studies and consultation with librarians at Yale University.^{30–32} (1) For peer-reviewed literature, we selected eight major bibliographic databases: Medline (via Ovid), Embase, Web of Science, APA PsycInfo, APA PsycExtra, EconLit, Global Health (EBSCO), and WHO Western Pacific Region Index Medicus. These databases are widely recognized as reliable and comprehensive sources for literature reviews on public health and medicine (e.g., Medline and Web of Science), psychological science (e.g., APA PsycInfo), and the social and economic dimensions of health (e.g., EconLit). (2) For grey literature, we searched six databases: PAIS Index, Organization for Economic Cooperation and Development (OECD) iLibrary, Lens, OpenGrey, Policy Commons, and Overton (the world's largest policy and grey literature database). In addition, we manually searched for the reports published by major international organizations, including the World Health Organization (WHO), United Nations International Children's Emergency Fund (UNICEF), the World Bank, and the United Nations Development Programme (UNDP). Searches of these English-language sources were limited to documents published between January 2016 (the start of the Sustainable Development Goals agenda) and April 2024.

For Chinese-language sources, database selection followed the approach used in prior studies.^{30–32} (1) For peer-reviewed literature, we searched China National Knowledge Infrastructure (CNKI) and Wanfang Data, China's two leading academic databases, for studies published between January 2016 and April 2024. (2) For grey literature, we searched four source types. Firstly, we identified national CAMH-related legislation and policies by manually searching four legal and policy databases: The National Database of Laws and Regulations, State Council Policy Document Database, Government Information Disclosure Platform, and Pkulaw. Secondly, we searched the official websites of national government agencies for information on national-level CAMH-related financing arrangements. To understand the political and financial commitment to CAMH at the subnational level, we also searched the websites of 22 provincial, five autonomous regions, and four municipal governments for locally initiated CAMH policies and financial allocations. Thirdly, we reviewed the websites of four major nationwide commercial insurance companies to identify their CAMH coverage policies. These three data sources represent an expanded search for this China-focused scoping review compared to the search strategy used in the LMICs paper.²⁰ Fourthly, consistent with our approach to

searching English-language grey literature, we also searched Chinese-language reports from major international organizations. We applied no date restrictions to the first three source types but limited the fourth to documents published between January 2016 and April 2024.

Search strings and technical details for the English-language sources, Chinese-language peer-reviewed databases, and Chinese-language reports from major international organizations are provided in the Appendix of the LMICs paper.²⁰ Details for searches in Chinese-language legal and policy databases and government websites are included in the Appendix (pages 1–3) of this paper.

To capture any critical information overlooked by the databases and websites search, we also searched Google, Google Scholar, and Baidu (the dominant search engine in China), using English- and Chinese-language keywords to identify both peer-reviewed and grey literature. We employed a snowballing strategy by reviewing the reference lists of all captured peer-reviewed papers and grey literature to identify any potentially missed entries. We also consulted content experts to identify significant CAMH-related articles.

Inclusion and exclusion criteria

The inclusion criteria for reviewed literature were as follows: (1) focused on children and adolescents; (2) contained information on any of the studied domains; (3) for Chinese-language peer-reviewed papers, published in journals considered ‘Core Journals’,³³ as defined by the Peking University Library; (4) included quantitative or qualitative data; and (5) available in full text. Regarding exclusion criteria, when reviewing subnational government documents, we excluded those that simply reported, in verbatim, laws and policies issued by the central government or its departments, or those that largely replicated the content of central documents. For subnational government data, we focused on local government documents that provided original and contextualized CAMH-related policies.

Literature review and data extraction

For the English-language and Chinese-language peer-reviewed papers identified through keyword search, titles and abstracts were imported into the Covidence platform (<https://www.covidence.org/>) or an Excel file for duplicate removal. Each of the remaining unique peer-reviewed articles was screened by two independent reviewers at the title and abstract level to assess eligibility for full-text review. In cases of disagreement, a third reviewer was consulted to reach a majority (2:1) decision. If consensus still could not be reached, inclusion or exclusion was determined collectively by the project working group. Full texts of the selected articles were then retrieved, evaluated, and extracted for CAMH-related information, following the same

procedure, including cross-checking for accuracy. All reviewers were either psychiatrists with post-doc training in public health or researchers in psychology, mental health, or public health. All reviewers received training and reached consensus on the review process to ensure consistent screening and data extraction. For grey literature, due to limitations in reliable referencing and platform constraints—such as the absence of unique identifiers and the inability to export complete search result lists from certain websites—duplicates could not be removed digitally using Covidence or Excel. Instead, duplicates were identified and removed manually during the screening and data extraction process, following the same procedure applied to peer-reviewed articles. The final records of data extraction for both peer-reviewed and grey literature are presented in the Excel file as part of the Appendix.

Data synthesis and analysis

We began data synthesis by summarizing China’s major national-level CAMH-related legislation and policies. When available, locally initiated policies, built upon national directives to address context-specific CAMH issues, were also summarized.

For CAMH financing, we summarized available data on government spending, household out-of-pocket spending, and services coverage in social and commercial insurance programs. We converted spending data reported in Renminbi (RMB) to 2023 constant United States dollars (USD), with methods presented in the Appendix (page 4).

Regarding service delivery capacity, we highlighted the national percentage of tertiary psychiatric hospitals with child psychiatric units, the proportion of child psychiatric beds relative to all psychiatric beds, and their geographic distributions. Additionally, we provided data on the density and distribution of paediatricians and child psychiatrists. When available, we included information on service utilization rates and their socioeconomic inequalities, as well as the barriers preventing young people from accessing mental health services.

Lastly, we presented findings from peer-reviewed studies on CAMH interventions. We summarized characteristics of these studies, including sample size, methodology design (e.g., randomized controlled trials, quasi-experimental studies, mixed-methods studies, meta-analyses, and systematic reviews without meta-analysis), intervention types (e.g., promotion, prevention, treatment), delivery platforms (e.g., individual/family-based, school-based, community-based, digital-based), targeted mental health conditions (e.g., depression, anxiety, autism), and intervention strategies (e.g., cognitive-behavioural therapy, art therapy, group exercises). Furthermore, we specifically summarized information on interventions targeting conditions related to academic performance, children and

adolescents with autism, and disadvantaged groups that have become the focus of recent policies in China (e.g., impoverished children and adolescents). We also reported available evidence on the effectiveness and cost-effectiveness of the reviewed interventions. Following previous definitions of “long-term effectiveness,” we also synthesized available effectiveness information with follow-up assessments conducted at least four weeks after the intervention ended.^{34,35}

Ethical approval

This scoping review consists of collecting, reviewing, and analysing secondary data from publicly accessible sources. Therefore, it does not require ethical approval.

Results

Identified peer-reviewed publications and grey literature

Our search yielded 614 publications, with 196 peer-reviewed and 418 grey literature. The details of the search process and PRISMA flowcharts are presented in [Appendix](#) (page 5–6). While individual publications could address multiple study themes, the majority (313) focused on legislation and policies, followed by financing (180), interventions (135), and service capacity and utilization (76).

Legislation and policies on CAMH

The 313 publications containing information on legislation and policies cited 140 unique national legal and policy initiatives related to CAMH, published between 1986 and 2024. These initiatives fall into four categories: legislation (N = 8), administrative regulations (N = 50), departmental rules (N = 77), and the five-year economic and social development plans (N = 5). In China, administrative regulations are formulated by the State Council to guide and manage the country’s administrative work based on the Constitution and laws. Departmental rules are issued by various departments of the State Council within the scope of their authority.³⁶ Five-year economic and social development plans aim to establish China’s socioeconomic development goals for a five-year period.⁵¹

A total of 53 national-level legislatures and government agencies have contributed to the publication of the 140 national CAMH-related legislative and policy initiatives, either independently or in collaboration with other authorities. The Ministry of Education, the National Health Committee (NHC, former Ministry of Health), and the State Council are the top three authorities most frequently involved in publishing ([Fig. 2](#)).

Over the past three decades, China has progressively developed a comprehensive legal and policy framework to address the various aspects of children and adolescents’ mental health needs. This framework covers

access to early screening, mental health education, prevention of risk factors, treatment and rehabilitation for those with mental disorders, and targeted support for disadvantaged groups. It includes legislation that protects the rights of children and adolescents, national development programs that promote their all-around development, and administrative regulations and departmental rules aimed specifically at strengthening CAMH ([Fig. 3](#)).

CAMH-related legislation

In 1991, China enacted the Law on the Protection of Minors,²⁷ which stipulates that the state shall protect the physical and mental health of minors (defined as individuals under the age of 18). Since then, a series of CAMH-related legislative measures have been introduced or amended to ensure the educational rights of children and adolescents with psychological or developmental challenges and to prevent the psychobehavioral risk factors underlying juvenile delinquency.^{52–55}

A major milestone came in 2012 with the enactment of the Mental Health Law,⁵⁶ which standardized mental health services nationwide and affirmed the legal rights of individuals with mental disorders. For the first time, national law explicitly mandated that schools at all levels provide mental health education. Under this law, schools are required to employ mental health education teachers or counsellors, establish dedicated counselling rooms, monitor students’ mental health, and communicate concerns to guardians in a timely manner.

In 2019, the Law on the Promotion of Basic Medical and Health Care was approved,⁵⁷ marking China’s most comprehensive legislative effort to guarantee equitable, full-life-cycle healthcare for all citizens. The law mandates the development and strengthening of mental health services, including system-building, prevention, and treatment of mental disorders. It also calls for targeted mental health support for key populations, such as minors, individuals with disabilities, and the elderly.

In addition to institutional settings such as schools and healthcare systems, recent legislation has also emphasized the role of families in supporting CAMH. Recognizing that family environments are critical to children’s mental and physical well-being, the state introduced the Law on Family Education Promotion in 2021.⁵⁸ This law requires guardians to monitor minors’ mental health status and to provide guidance on healthy internet use and anti-bullying strategies, underscoring the family’s responsibility in fostering psychosocial resilience.

CAMH-related policies

Building on CAMH-related legislation, China has integrated CAMH into several national development strategies and action plans. For example, following the launch of the “Healthy China 2030 Planning Outline”⁵⁹ by the CPC Central Committee and the State Council in

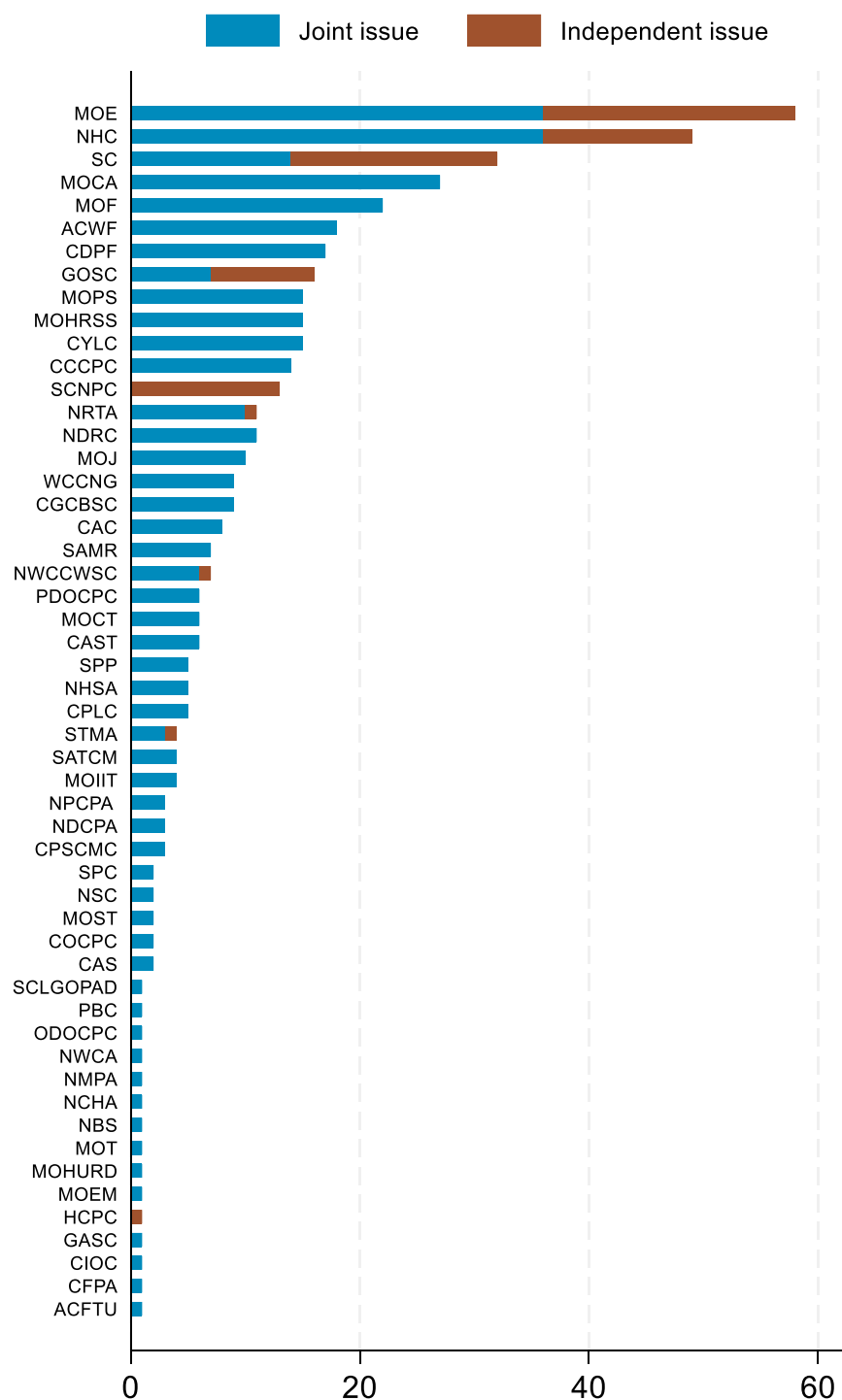


Fig. 2: Number of national CAMH-related legislation and policy by issuing authority and collaboration status, 1986–2024. Caption: Legislation and policies jointly issued by multiple authorities are counted under each corresponding authority. MOE = Ministry of Education; NHC = National Health Commission (former Ministry of Health); SC = State Council; the full list of acronyms can be found in [Appendix](#), page 7.

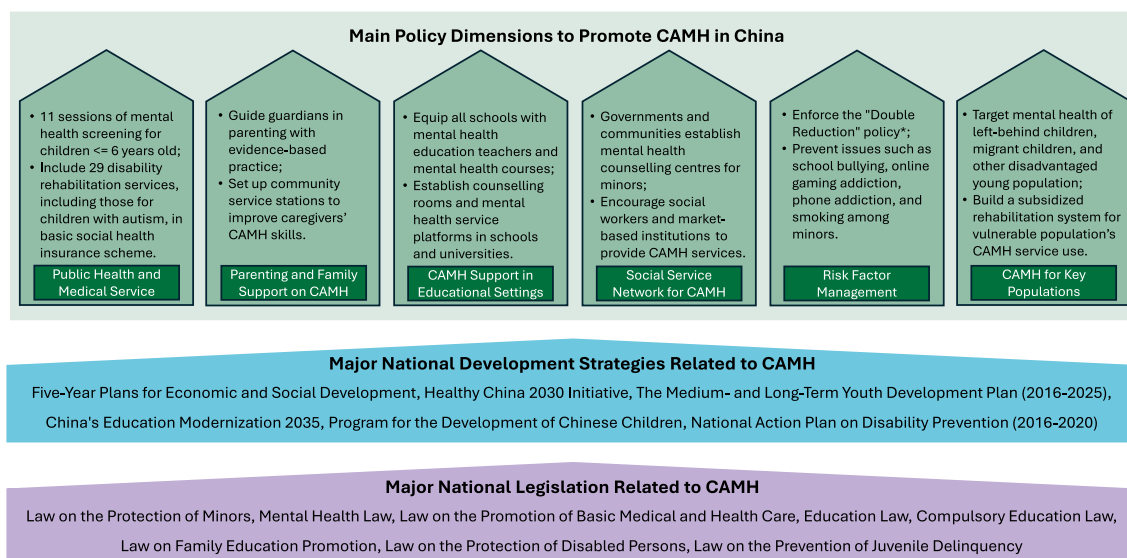


Fig. 3: CAMH-related national legislation and policy framework. Caption: *. "Double Reduction" policy aims to alleviate the burden of excessive homework and after-school tutoring for students at the compulsory education stage.

2016—China's first medium- to long-term strategic plan in the health sector developed at the national level since the country's founding—the State Council and its affiliated departments issued a series of regulations aimed at strengthening CAMH promotion, prevention, treatment, and rehabilitation. This momentum contributed to a marked increase in CAMH-related policies between 2016 and 2020, with 52 policy documents issued during that period (Fig. 4). These policies particularly emphasize a multisectoral approach to advancing CAMH across four major dimensions outlined below.

Public health and medical service provision. China's public health services are delivered through a three-tiered system comprising community health centres (and stations) in urban areas, township health centres, and village clinics in rural areas.³⁷ In its three editions of the National Standard for Basic Public Health Services (2009,^{S10} 2011,^{S11} and 2017^{S12}), the NHC mandated that public health institutions provide free "child health management" services for children aged 0–6 years. These services include assessments of physical growth and psychosocial development conducted at 11 scheduled time points. In 2022, the General Office of the NHC issued the Notice on Standards for Autism Screening Intervention Services for Children Aged 0–6 (Trial),^{S13} which further detailed the processes for primary screening, re-screening, referral, diagnosis, and intervention and rehabilitation for children with autism.

In 2021, to support the goals outlined in the 14th Five-Year Plan (2021–2025) for National Economic and Social Development and Vision 2035^{S1} and

the "Healthy China 2030", the NHC and other government agencies jointly published the Implementation Plan for Construction of High Quality and Efficient Medical and Health Service System.^{S14} A key objective of this plan is to enhance mental health and psychiatric service capacity for children. Notably, the plan outlines support for each province to establish a provincial-level psychiatric hospital or a psychiatric ward within a general hospital, with a particular focus on facilities for treating mental illness in children and the elderly.

A coordinated network for improving CAMH involving families, schools, and society. The Chinese government has promoted collaboration among families, schools, and society to improve the mental well-being of children and adolescents. For families, the All-China Women's Federation, in collaboration with other authorities, has published three editions of the Five-Year Plan for Promoting Family Education report.^{S15–S17} These documents encourage parents to foster a supportive, child-friendly environment and provide appropriate care to support children's psychosocial development. The most recent plan (2021–2025)^{S17} specifically calls on families to assist schools in reducing students' academic burden, such as excessive homework and after-school tutoring, and to help address issues including the overuse of mobile phones and the internet. For schools, the Special Action Plan for Comprehensively Strengthening and Improving the Mental Health Work of Students in the New Era (2023–2035)^{S18} set a target for 95% of schools at all levels to have full-time or part-time mental health education teachers by 2025.

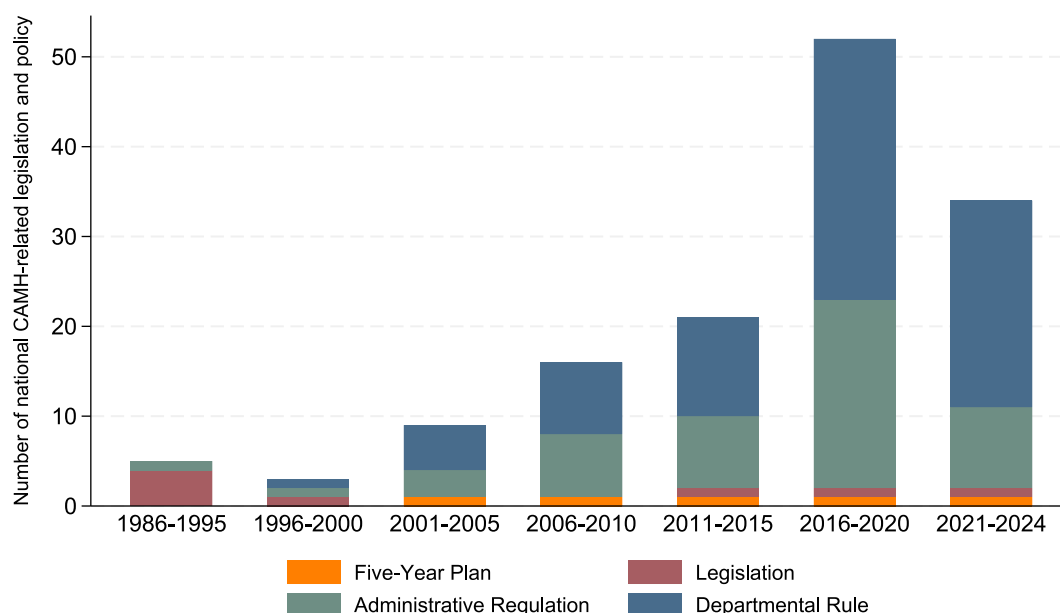


Fig. 4: Distribution over time of CAMH-related national legislation and policy in China. Caption: According to China's Legislation Law (<https://lawinfochina.com/Display.aspx?lib=law&ID=386#menu7>), administrative regulations refer to regulations formulated by the State Council to lead and manage the country's administrative work based on the Constitution and national laws. Departmental rules refer to regulatory documents formulated by departments under the State Council, developed within their respective jurisdictions.

Furthermore, the Chinese government has emphasized the need to expand social counselling and healthcare service capacity through multiple providers, including government-run mental health centres for minors, community-based parental education stations offering CAMH sessions, and market-based institutions serving children and adolescents with CAMH needs. To ensure the quality of rehabilitation services provided by market-based institutions—particularly for children with autism—a small number of jurisdictions have issued local standards to standardize infrastructure requirements, professional qualifications, and the scope of services provided. These jurisdictions include one province (Anhui),^{S19,S20} one autonomous region (Ningxia),^{S21} three municipalities (Beijing,^{S22} Shanghai,^{S23} and Chongqing^{S24,S25}), and two cities (Hefei^{S26} and Wenzhou^{S27}).

Policies addressing academic burden, school violence, and addiction. To mitigate school-related stressors that negatively affect students' physical and mental health, the Chinese government has issued policies addressing both academic burden and school climate. In 2021, the General Offices of the CPC Central Committee and the State Council issued an opinion mandating that schools eliminate homework for first- and second-grade students, limit it to no more than 60 min for third to sixth graders, and no more than 90 min for seventh to ninth graders.^{S28} In the same year, the Ministry of Education introduced the Regulations on the Protection of Minors

in Schools,^{S29} which require schools to adopt a zero-tolerance policy toward school violence and bullying.

Additionally, the Chinese government has enacted a series of stringent policies to prevent online gaming addiction and tobacco use among children and adolescents. These include mandatory real-name registration for online gaming accounts, restrictions limiting minors to 1 h of online gaming per week,^{S30-S32} banning smoking on school premises,^{S33,S34} promoting smoke-free households,^{S35} and prohibiting the sale of cigarettes and e-cigarettes to minors.^{S36-S38} However, while the Law on the Protection of Minors explicitly prohibits the sale of alcohol to minors, our review found no national legislation banning alcohol consumption by minors or specifying a minimum legal age for alcohol purchase—an area of regulatory oversight that remains unaddressed.

At the subnational level, we identified three noteworthy initiatives targeting context-specific CAMH-related risk factors. In 2017, recognizing the growing mental health risks associated with cyberbullying, the Shanghai Municipal Education Commission became the first in the country to issue dedicated guidelines to address this issue. The guidance outlines strategies for students, schools, families, and society to collaboratively prevent, identify, and respond to harmful online behaviours.^{S39}

In 2021, the Hubei Provincial Tobacco Monopoly Administration and the Hubei Provincial Procuratorate jointly issued China's first provincial-level regulation to

protect minors from tobacco-related harm through strengthened inter-agency collaboration. The regulation calls for synergy across prosecutorial oversight, regulatory enforcement, and public supervision to more effectively block minors' access to tobacco products.^{S40}

In 2024, the Heilongjiang provincial government launched a multi-agency action plan to curb the misuse of narcotic, psychotropic, and addictive prescription drugs among youth. The plan includes province-wide inspections of pharmaceutical manufacturers and retail pharmacies to disrupt illegal drug supply chains near schools, legal education campaigns targeting vendors, and the establishment of a long-term mechanism to promote safe medication practices among adolescents.^{S41}

CAMH for disadvantaged populations. Between 2010 and 2016, the State Council and its General Office published four opinions and one national program to improve care and rescue systems for vulnerable groups, including orphans,^{S42} homeless children,^{S43} children in poverty-stricken areas,^{S44} rural “left-behind children”^{S45} (those who remain in rural areas while their parents migrated to urban areas for work), and children living in difficult circumstances.^{S46} In 2024, 21 government agencies jointly published an action plan to further strengthen care for migrant children.^{S47} These policies emphasize the government's responsibility to provide psychological counselling and behavioural interventions for these children and ensure their access to compulsory education. They also highlight the importance of multisectoral collaboration involving teachers, social workers, psychological counsellors, legal professionals, medical practitioners, and volunteers to meet the mental health needs of these vulnerable populations.

Since 2018, the government has also worked to establish a dedicated assistance mechanism to provide rehabilitation services for children with disabilities, including those with autism.^{S48} This mechanism provides government subsidies for rehabilitation services received at designated institutions, with special prioritization for children from low-income households, those residing in welfare institutions, and orphans, ensuring equitable access to essential CAMH rehabilitation services. Additional information on this subsidy program is provided in the CAMH financing section below.

CAMH financing

Government spending on CAMH

Information on government spending for CAMH is limited. We identified one peer-reviewed study that reported adolescent (10–19 years) health expenditure in 2014, including disaggregated data by healthcare functions, financing schemes, and diagnosed diseases.^{S49} According to this study, China spent 8.5 RMB per adolescent (equivalent to \$1.8 USD in 2023) on curative

care for mental illness (including outpatient, inpatient, and rehabilitative care), representing just 1.6% of total per-adolescent healthcare expenditure (525 RMB, equivalent to \$108.4 USD in 2023). Of the 8.5 RMB (\$1.8) spent, only 15% was funded by the government. A more recent study^{S50} (submitted for publication) examined trends in adolescent health expenditure from 2014 to 2020. It found that per-adolescent spending on curative mental health care increased from 8.5 RMB (\$1.8) in 2014 to 27.6 RMB (\$4.6) in 2020. Despite this increase, adolescent mental health remained underfunded relative to need: it accounted for only 2.8% of total adolescent health spending in 2020 (up slightly from 1.6% in 2014), while mental disorders accounted for approximately 20.0% of DALYs among adolescents aged 10–19 during the same period.⁷ Moreover, the government's share of funding for adolescent curative mental health care declined slightly, from 15.0% in 2014 to 14.0% in 2020.^{S50}

Beyond adolescent mental health spending, we also found evidence on government financing for early childhood CAMH services. For instance, the 11-session developmental assessments for children aged 0–6 years—delivered under the “child health management” module of China's basic public health program—are co-financed by the central and provincial governments, with cost-sharing ratios determined by each province's level of economic development.^{S10–S12,S51} For example, in less developed regions such as Guizhou Province, the provincial government contributes 20% of the costs, whereas in more developed areas like Shanghai, the local government covers 90%. However, no publicly available data were found on the absolute amounts paid by central or provincial governments to implement this assessment program.

In the education sector, between 2016 and 2022, the central government invested a total of 2.6 billion RMB (equivalent to \$0.4 billion in 2023 USD) to support the development of special education for children and adolescents with disabilities, including those with autism.^{S52} During the compulsory education phase, the government funding standard for each student in special education schools was 6000 RMB per year (equivalent to \$922.6 in 2023 USD), which is six to eight times of that for students in ordinary schools.^{S53} This standard is expected to increase to 7000 RMB per year by 2025 (\$943.9 in 2023 USD).^{S54} However, we did not find evidence on the specific amount allocated to children with autism or other mental health conditions within these special education schools.

In addition, the Special Action Plan for Comprehensively Strengthening and Improving the Mental Health Work of Students in the New Era (2023–2035), launched by 17 departments in 2023, called for increased funding to support mental health education and services in educational settings.^{S18} In response, several provincial governments have outlined budget

plans to finance CAMH initiatives in schools and universities. For example, Gansu Province plans to invest at least 15 RMB per college student annually (equivalent to \$2.1 in 2023 USD), Anhui and Hainan Provinces at least 10 RMB per primary and secondary school student (\$1.4), and the Tianjin Municipality at least 20 RMB per student across all school levels (\$2.8).^{S55–S58} For comparison, in 2023, China's national general public budget for primary education was 13,057.1 RMB (\$1843.2 in 2023 USD) per student, 18,257.3 RMB (\$2577.3 in 2023 USD) and 19,460.7 RMB (\$2747.1 in 2023 USD) for each lower and upper secondary school student, and 22,453 RMB (\$3169.5 in 2023 USD) for each college student.^{S59}

At the city level, the Yinzhou District of Ningbo City in Zhejiang Province (one of China's most economically developed provinces) invested \$7.1 (in 2023 USD) per student in 2019 (5 million RMB for 0.12 million students) to support the operation of vision health centres and mental health centres for primary and secondary school students.^{S60} In the same province, Huzhou City spent around \$14 (2023 USD) per child in 2023 to establish mental support funds for children and adolescents.^{S61,S62} In contrast, in the relatively less developed Sichuan Province, Nanchong City has invested over 60 million RMB since 2021 (\$8.5 per student) to comprehensively improve the foundational infrastructure for student mental health education. This funding has enabled the full establishment of standardized municipal- and county-level psychological counselling centres, and over 90% of schools are now equipped with standardized psychological counselling rooms.^{S63}

We also identified several government documents from municipalities (e.g., Beijing), provinces (e.g., Jiangsu), and cities (e.g., Xingyang in Henan Province) that outlined local action plans to improve student mental health; however, these documents did not specify budgetary allocations.^{S64–S76}

Household economic burden

Evidence about household expenditure on CAMH was very limited. We have identified two studies that generated estimates at the national level and highlighted the significant economic burden faced by families with adolescents (10–19 years old) experiencing mental health issues. At the national level, households bore 62.2% and 58.1% of curative expenditures for adolescent (10–19 years) mental illnesses in 2014 and 2020, respectively.^{S49,S50}

For autism specifically, a few studies have examined the household economic burden associated with treating and caring for children and adolescents with the condition; however, nationally representative studies are lacking. A 2020 study using online survey data voluntarily reported by 3236 families of children with autism across the country estimated that, on average, families spent \$6009.2 per year (equivalent to \$6670.2

in 2023 USD) on direct medical services, including inpatient, outpatient, and drug expenses.^{S77} They also spent \$18,859.8 per year (\$20,934.3 in 2023 USD) on direct non-medical services, such as rehabilitation or treatment-related education, house rental, transportation, and care. In addition, families reported annual indirect costs of \$13,990.7 (\$15,529.6 in 2023 USD) due to productivity loss from resignation and job adjustment for caregiving responsibilities. Of those families surveyed, 83.6% reported that these expenses and costs imposed significant financial stress. This finding aligns with results from other studies. For example, a study using 2019 data from 3064 families raising children with autism (aged 0–18) found that household health expenditures for these children negatively affected families' perceived financial well-being, primarily by imposing material hardships that hindered their ability to meet basic needs.^{S78}

At the local level, heavy autism-related economic burdens have been observed in both the most- and least-developed regions of China. One study, based on hospital records from all hospitals in Beijing (the nation's capital), analysed data from 26,826 patients (largely children and adolescents) with autism between 2017 and 2021. It found that the average annual cost of autism-related care was \$422 for outpatient visits and \$4412 for inpatient admissions. Notably, 70.7% of outpatients and 47.3% of inpatients were self-paying.^{S79} In Guizhou Province (one of China's least-developed regions), a 2022 study of 231 families raising children with autism estimated the total annual financial burden of rehabilitation training and related non-medical expenses (including accommodations, meals, and transportation) at 86,700 ± 5688 RMB (\$14,140 ± 928 in 2023 USD). Approximately 30% of parents reported that these expenses consumed 70% of their household income, and 37.7% considered discontinuing treatment due to the cost.^{S80}

Health insurance coverage and assistance

The Urban and Rural Resident Basic Medical Insurance (URRBMI), one of the core components of China's basic social medical insurance system, provides coverage for rural and urban children, unemployed adolescents, and school students.³⁸ In addition to URRBMI, children, adolescents, and their families may also receive financial protection from two supplementary social security mechanisms: critical illness insurance and medical assistance.^{S48,S81} Critical illness insurance offers additional reimbursement to cover part of the out-of-pocket healthcare expenditures once these expenditures accumulate to a defined threshold, while medical assistance provides subsidies to citizens, including children and adolescents, who are unable to afford medical treatment due to poverty or other disadvantaged statuses, such as disability.^{S48,S81}

As of the end of 2022, 263 million infants, preschool children, primary and secondary students, and college students (typically aged 18–22) were enrolled in URRBMI, accounting for 70.5% of China's population aged 0–22 years.^{1,582} The national standard premium for 2024 was set at 1020 RMB per person-year (\$145 in 2023 USD), with individuals contributing 380 RMB (\$53.6) and the remainder funded by the government.⁵⁸³ The generosity of URRBMI coverage varies by enrollee age, service type (e.g., outpatient vs. inpatient), and the level of healthcare institution (e.g., primary, secondary, or tertiary hospitals), with substantial regional disparities. For example, in 2024, school students in Shanghai, a highly developed coastal city, needed to pay a deductible of 50 RMB (\$7) before receiving 80% reimbursement for inpatient care at primary health centres.⁵⁸⁴ By contrast, students in Changchun, a less developed inland city, faced a deductible of 100 RMB (\$14) to access the same reimbursement level.⁵⁸⁵

For the treatment of mental illness, commonly prescribed medications such as quetiapine, fluoxetine, and sertraline are reimbursable nationwide under URRBMI.^{586,587} However, coverage for non-pharmacological treatments, such as psychotherapy or counselling, remains limited and varies substantially across provinces and cities. Only a few developed regions, such as Beijing,⁵⁸⁸ Shanghai,⁵⁸⁹ Guangdong Province,⁵⁹⁰ and Jiangsu Province,⁵⁹¹ have covered these treatments for the general population (including children and adolescents). Regarding mental health treatments specifically for minors, we identified only Hainan Province as having explicitly included mental health counselling for minors in its insurance benefit package, beginning in September 2024.⁵⁹² In addition, the central government has gradually expanded URRBMI nationwide to cover 29 rehabilitation services, several of which are relevant to children with mental and developmental disorders, including autism diagnostic assessments and behaviour and language training.⁵⁹³ However, this expansion also did not include general psychotherapy or counselling services, which remain largely uncovered at the national level.

Moreover, to further alleviate the financial burden of outpatient care, China has introduced an “outpatient chronic and special diseases” policy within its basic social medical insurance system. This policy allows for more generous coverage, such as lower deductibles and higher reimbursement rates, for medicines and services related to diseases that are clinically diagnosed, have relatively stable conditions, and require long-term outpatient treatment, such as hypertension and diabetes. While guided by the central government, local governments retain discretion to define their lists of eligible diseases and to establish tailored reimbursement arrangements based on local healthcare needs and resource availability.³⁹ Our review found that 11 provinces and municipalities have included autism in

their local lists, enabling enhanced reimbursement for autism-related outpatient care.^{594–5104}

In addition to coverage under social health insurance, children and adolescents with disabilities who come from low-income households, are orphans, are under the care of welfare institutions, or live in poverty may access medical assistance programs that provide direct government subsidies to offset rehabilitation expenses. With respect to CAMH, a 2018 policy issued by the State Council officially recognized autism as a qualifying disability, thereby making affected children eligible for rehabilitation subsidies.⁵⁴⁸ However, the annual subsidy amount for autism rehabilitation training varies considerably by location, age group, and the type of service-providing institution. For example, in Hainan Province, children aged 0 to 6 who receive at least 10 months of rehabilitation training are eligible for a subsidy of 30,000 RMB (\$4167 in 2023 USD), while those aged 7 to 17 receiving the same duration of training are eligible for 10,000 RMB (\$1389).⁵¹⁰⁵ In comparison, in Guangdong Province, children aged 0 to 6 who receive at least 10 months of full-time rehabilitation services are eligible for 12,000 RMB (\$1667 USD) at government-run institutions and 20,000 RMB (\$2778 USD) at non-government-run institutions.⁵¹⁰⁶

A 2020 voluntary online survey of 3236 families raising children aged 2–6 years with autism found that 54.2% had received rehabilitation subsidies, with an average annual amount of \$3744.5 per child (2023 USD).⁵⁷⁷ Among those who did not receive the subsidy, 38.4% had not applied, primarily due to lack of policy awareness (20.1%) or other application-related difficulties (18.3%). The remaining families were deemed ineligible due to missing documentation, including the absence of diagnostic materials (4.2%), a disability certificate (22.5%), registered residence (13.8%), or because they did not receive services from designated institutions (21.1%).

In terms of commercial health insurance, we reviewed 35 schemes specifically designed for children and adolescents from four major commercial insurance companies in China (China Pacific Insurance, Taikang Life, China Life, Ping An Insurance) and found that none provided insurance coverage for mental, behavioural, and neurological disorders.^{5107–5141}

CAMH service delivery capacity and utilization

Infrastructure and human capacity

Much of the following data was drawn from the 2019 National Hospital Performance Evaluation Survey (NHPES), a nationwide study of 41 top-tier tertiary psychiatric hospitals across 29 provinces.^{5142,5143} Representing China's best psychiatric resources, NHPES figures are likely overestimates of actual capacity and utilization for CAMH at the national level.^{5142,5144}

Of the top-tier psychiatric hospitals surveyed in the 2019 NHPES, 75.6% (31/41) had a child psychiatric

unit. However, child psychiatric beds accounted for just 3.3% of all psychiatric beds, with an average of 26 child beds per psychiatric hospital (range: 0–120).^{S142} An earlier study from 2015, based on a sample of 2936 mental health institutions—including nationwide general hospitals with psychiatric units, psychiatric hospitals (including top-tier psychiatric hospitals), rehabilitation hospitals, and psychiatric clinics—found that only 6% had a child psychiatry ward, and just 0.9% of all psychiatric beds were designated for children.^{S145} Additionally, in 2015, there were 1.6 CAMH beds reported per 100,000 children and adolescents.²⁰

CAMH bed capacity varies widely by geographic region and development level. At the time of survey in 2019, hospitals in more developed regions (e.g., Shanghai, Beijing, Jiangsu Province) were found to have significantly more CAMH beds than less developed regions (e.g., Yunnan Province and Guizhou Province): mean 38.8 vs. 18.8 beds, or 4.1% vs. 2.1% of all beds.^{S143} The same survey found that several less developed regions, including Qinghai Province, Hainan Province, and Ningxia Autonomous Region, did not have a single CAMH bed, and Gansu Province did not have any provincial tertiary psychiatric hospital.^{S143}

Human resources for CAMH are similarly scarce. In 2020, there were fewer than 0.2 CAMH psychiatrists per 100,000 children and adolescents in China.^{S146} This figure is less than the average in both the WPR's LMICs and HICs, which were 0.7 (China excluded) and 7.4 respectively in 2020.^{20,S147} In terms of absolute numbers, the government reported in 2015 that there were fewer than 100,000 paediatricians and fewer than 500 full-time child psychiatrists in China.^{S148} Considering that the 2019 NHPES found a total of 5124 psychiatrists serving the general population across China's top-tier psychiatric hospitals, it is likely that fewer than 10% of all psychiatrists in China are CAMH psychiatrists.^{S142} The NHPES also found the overall ratios of psychiatrists, psychiatric nurses, and psychologists per bed were 0.16, 0.34, and 0.03 respectively, suggesting the CAMH staffing ratios are likely lower than these.

Aside from psychiatrists, the shortage of clinical social workers was found to be particularly severe. At the time of the survey in 2019, 43.9% (18/41) hospitals had no social workers, and 90.2% (37/41) had fewer than ten in their workforces. There were a total of 139 social workers for general mental health services across these top-tier psychiatric hospitals. These numbers also suggest that social workers are significantly limited for CAMH.^{S142}

CAMH service utilization and its socioeconomic disparities

The population younger than 24 years old comprised 27.9% of China's total population in 2023.¹ While data on CAMH inpatient admissions was not found, children and adolescents made up 7.5% of patients discharged from 29 of the 41 NHPES top-tier psychiatric

hospitals during a two-week study period in 2019.^{S143} Of these discharged youth patients, 45.6% were discharged from adult psychiatric units due to the shortage of youth beds. The most common discharge diagnoses in this sample were schizophrenia (30.2%), depressive disorder (22.8%), and bipolar disorder (19.5%).^{S143}

Among all 41 NHPES top-tier psychiatric hospitals, nearly two-thirds (26/41, 63.4%) had an overall psychiatric bed occupancy rate exceeding 100%,^{S142} further indicating that the psychiatric bed capacity, much less the subset of beds dedicated to CAMH, is insufficient for meeting demand.

This capacity shortage was similarly identified by a qualitative study conducted in 2019, which explored the experiences of medical staff caring for adolescents with suicide-related behaviours.^{S149} Staff described being understaffed and noted that limited time often constrained their ability to communicate effectively with patients and families.^{S149}

Evidence from local contexts also reflects the shortage of professional counsellors in school-based mental health services. A study published in 2022 interviewed university students in Jinan City, Shandong Province (date of interviews unclear), revealing that a common concern was that some campus counsellors were academic staff without expertise in counseling.^{S150} Students in the study reported that the shortage of professional counsellors limited their ability to access timely and adequate mental health support.^{S150}

Demand for CAMH beds may be further exacerbated by the perception that the quality of mental health services is better in more developed regions. In a qualitative study, many parents of children with autism expressed concern over the quality of their local government-designated autism organizations, instead preferring to seek care for their children elsewhere.^{S151} Indeed, in a study of Beijing hospital records from 2017 to 2021, where 98.6% of the 26,583 outpatients were under 18 years old, the majority of patients did not reside in Beijing (66.2%).^{S79}

Literature on utilization rate of CAMH care was very limited, yet the existing evidence shows evident socioeconomic disparities, particularly for rural left-behind children, children of migrant workers living in their new cities of residence, and children whose fathers were mixed white/blue-collar workers. A 2018 survey of students in rural areas of Sichuan, Anhui and Henan Provinces found that rural left-behind and non-left-behind children had similar utilization rates (27.9% vs. 27%), but demand for mental health services was significantly higher among left-behind children (63% vs. 57.2%).^{S152} Specifically, left-behind children had a significantly higher demand for services that addressed skills such as managing emotional discomfort associated with depression and anxiety, affirming one's self-worth, and reframing negative perceptions.^{S152} A 2018 survey of 508 families from Shenzhen, the city with the

largest number of migrant children, found that migrant children had significantly lower utilization rates of childhood development guidance (59% vs. 77.5%) and mental health guidance (13% vs. 20.7%) compared to local children.^{S153} Children whose fathers were mixed white/blue-collar workers were also significantly less likely to have used mental health guidance compared to those whose fathers were white-collar workers, with an odds ratio (OR) of 0.48 (95% CI: 0.29–0.78).^{S153}

The evidence found on CAMH care-seeking behaviour by gender is mixed. A 2013 survey conducted on 438 adolescents in Shanghai found that more girls than boys had sought health care for any reason in the last year (36.2% vs. 22.6%). Of these individuals who sought care, however, more boys cited mental health as a reason for seeking care (9.3% vs. 1.7%).^{S154} In the 2018 Shenzhen survey, girls were instead found to be more likely to have used mental health guidance services than boys (OR = 1.83, 95% CI: 1.16–2.90).^{S153} Common reasons for not seeking care were long waiting times, lack of trust, and fear of judgment.^{S150,S154}

CAMH interventions

Our review included 135 peer-reviewed articles from China on CAMH interventions, comprising 130 primary studies, four meta-analyses, and one systematic review.^{S155–S289} More than half of these studies (N = 75, 55.6%) were published between 2019 and 2021 (Fig. 5). Among the 130 primary studies, 90 (69.2%) reported information on data collection years. As shown in Fig. 6, the number of primary studies with reported data collection began to rise in 2014, with a peak observed between 2015 and 2020.

The 135 peer-reviewed studies employed a variety of methodological approaches. As Fig. 7 shows, most of the included studies were primary studies applying randomized controlled trials (61.5%; N = 83)^{S155–S236,S289} or quasi-experimental designs (28.9%; N = 39).^{S237–S275} We also included eight mixed-methods studies with quantitative evidence,^{S276–S283} and five studies using secondary research approaches (four meta-analyses,^{S284–S287} one systematic review^{S288}).

Regarding the geographic distribution of the interventions, 83.8% of the primary studies (N = 109 out of 130) reported specific data collection locations. Beijing (17 studies), Jiangxi Province (7 studies), and Henan Province (7 studies) were the top three locations with the highest number of studies conducted (Fig. 8). The four meta-analyses and one systematic review reported national-level results.

In terms of sample size, 69.2% of the primary studies (N = 90 out of 130) recruited less than or equal to 100 participants to investigate the effectiveness of interventions (Fig. 9).^{S155–S163,S166–S173,S175–S178,S180–S186,S188–S192,S195–S200,S204–S206,S209–S211,S213,S214,S216–S218,S220–S222,S224,S226,S229,S230,S232–S234,S236,S238,S239,S240,S243–S249,S251–S253,S256–S260,S264,S265,S272,S274,S275,S277,S279–S282,S289}

Intervention focus and design

Targeted outcomes. Many studies assessed more than one mental health condition and various well-being aspects. Across all studies reviewed (N = 135), depression emerged as the most frequently examined mental health condition (31.9%; N = 43),^{S155–S167,S204–S207,S212–S216,S222–S224,S236–S242,S259,S260,S262–S264,S267–S269,S276,S277,S282} followed by anxiety (22.2%; N = 30, including 5 on social anxiety),^{S163–S174,S208,S214,S215,S217,S222–S224,S240,S241,S262,S263,S265,S267,S268,S276,S278,S282,S288} autism (19.3%; N = 26),^{S175–S188,S243–S249,S279,S280,S284–S286} and attention-deficit hyperactivity disorder (ADHD) (13.3%; N = 18).^{S169,S189–S198,S249–S252,S281,S285,S289} Interventions targeting distress (N = 12),^{S165,S214–S216,S221,S222,S224,S234,S242,S262,S265,S274–S242,S265} sleep-related issues (N = 11),^{S164,S170,S188,S198,S205,S215,S219,S240–S242,S265} behavioural problems (N = 6; e.g., violence),^{S169,S203,S253,S266,S283,S286} and other mental health conditions (see Table 1 for summary) have also been investigated. In terms of mental well-being, self-concept (N = 12; including self-esteem, self-satisfaction)^{S174,S199,S205,S218,S222,S225–S229,S267,S288} and resilience (N = 11)^{S165,S206,S207,S209,S219,S229,S230,S253,S269,S270,S288} also received considerable research attention.

Intervention types and platforms. Focusing on outcomes above, 91 interventions (67.4%) were designed as treatments,^{S155–S211,S236–S258,S276–S282,S284–S286,S289} 44 as

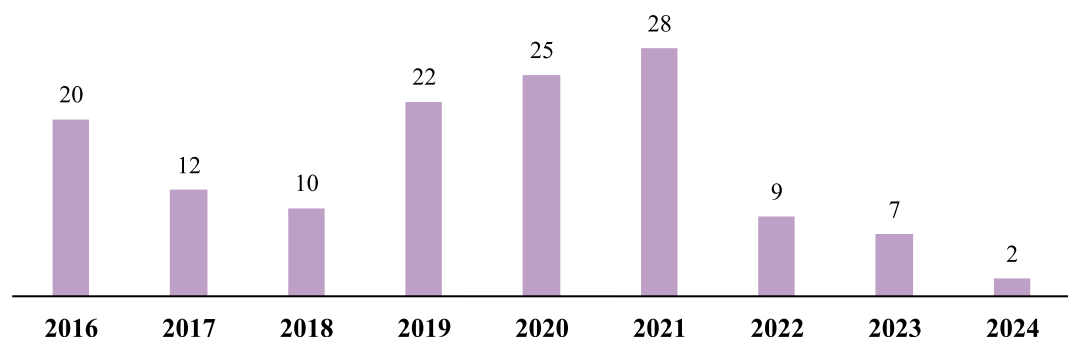


Fig. 5: Annual publication counts of CAMH intervention studies conducted in China (N = 135 studies).

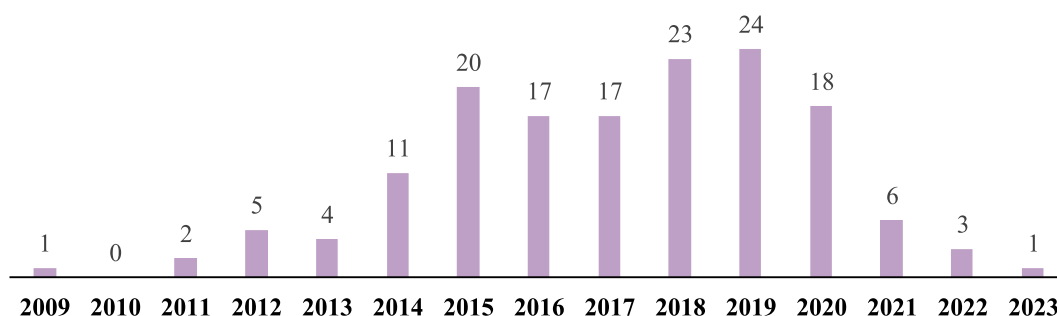


Fig. 6: Distribution of CAMH intervention studies by year of data collection (N = 90 primary studies). Caption: Among the 130 primary studies, 90 reported information on data collection years. Studies that collected data across multiple years were counted once in each corresponding year.

promotions (32.6%),^{S204–S211,S218–S235,S262–S275,S282,S283,S287,S288} and 19 as preventions (14.1%).^{S212–S221,S259–S266,S288} Of note, there were overlaps between types, as some interventions had multiple objectives (e.g., treating depression and promoting resilience).

Interventions were delivered across various platforms, with some implemented through multiple platforms (e.g., delivering community-based activities and parent training simultaneously). 48.1% of the studies (N = 65) were school-based, implemented in classrooms or school counselling rooms. Besides two review studies focusing on school-based interventions,^{S286,S288} three of the other school-based intervention studies were conducted in kindergartens,^{S210,S232,S233} seven in elementary schools,^{S169,S195–S197,S245,S227,S268} 12 in middle schools,^{S164,S199,S203,S198,S212,S226,S229,S235,S262,S263,S268,S271} five in high schools,^{S164,S199,S203,S214,S264} 36 in colleges,^{S158–S161,S170,S172,S174,S201,S202,S204–S207,S211,S213,S216–S219,S222,S224,S228,S230,S234,S241,S242,S258–S261,S265,S267,S269,S270,S277,S282} and four in special education schools for deaf-mute or autistic children.^{S173,S253,S275,S279}

Individual-based interventions accounted for 37.8% (N = 51), 20 of which involved parent participation.^{S155–S157,S163,S165,S167,S171,S175–S185,S189–S194,S198,S209,S220,S223,S231,S236,S239,S240,S243–S246,S250,S251,S254,S256,S257,S262,S263,S266,S273,S276,S281,S284–S287}

Community-based interventions accounted for 17% (N = 23), focusing on group strategies in community settings or mental health centres.^{S162,S166,S178,S185,S186,S188,S191,S200,S220,S237,S240,S243,S244,S247–S249,S266,S272,S274,S283,S284,S288,S289} Lastly, 14 studies (10.4%) employed digital platforms, delivering interventions via mobile apps or online meetings.^{S168,S187,S208,S215,S219,S221,S228,S238,S241,S252,S255,S278,S280,S289}

Fig. 10 grouped the studies based on their types and platforms. As demonstrated, the most common designs were individual-based treatment (31.9%; N = 43),^{S155–S157,S163,S165,S167,S171,S175–S185,S189–S194,S198,S209,S236,S239,S240,S243–S246,S250,S251,S254,S256,S257,S276,S281,S284–S286} school-based promotion (24.4%; N = 33),^{S204–S208,S210,S211,S218,S219,S222,S224–S230,S232–S235,S262–S265,S267–S271,S275,S282,S288} and school-based treatment (23.7%; N = 32).^{S158–S161,S164,S169,S170,S172–S174,S195–S197,S199,S201–S208,S210,S211,S241,S242,S253,S258,S277,S279,S282,S286}

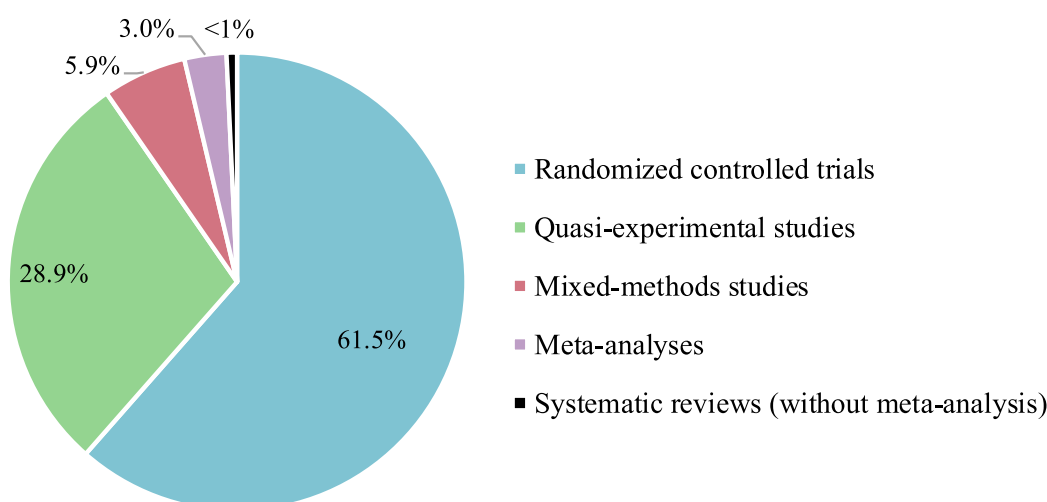


Fig. 7: Distribution of CAMH intervention studies by research methodology (N = 135 studies).

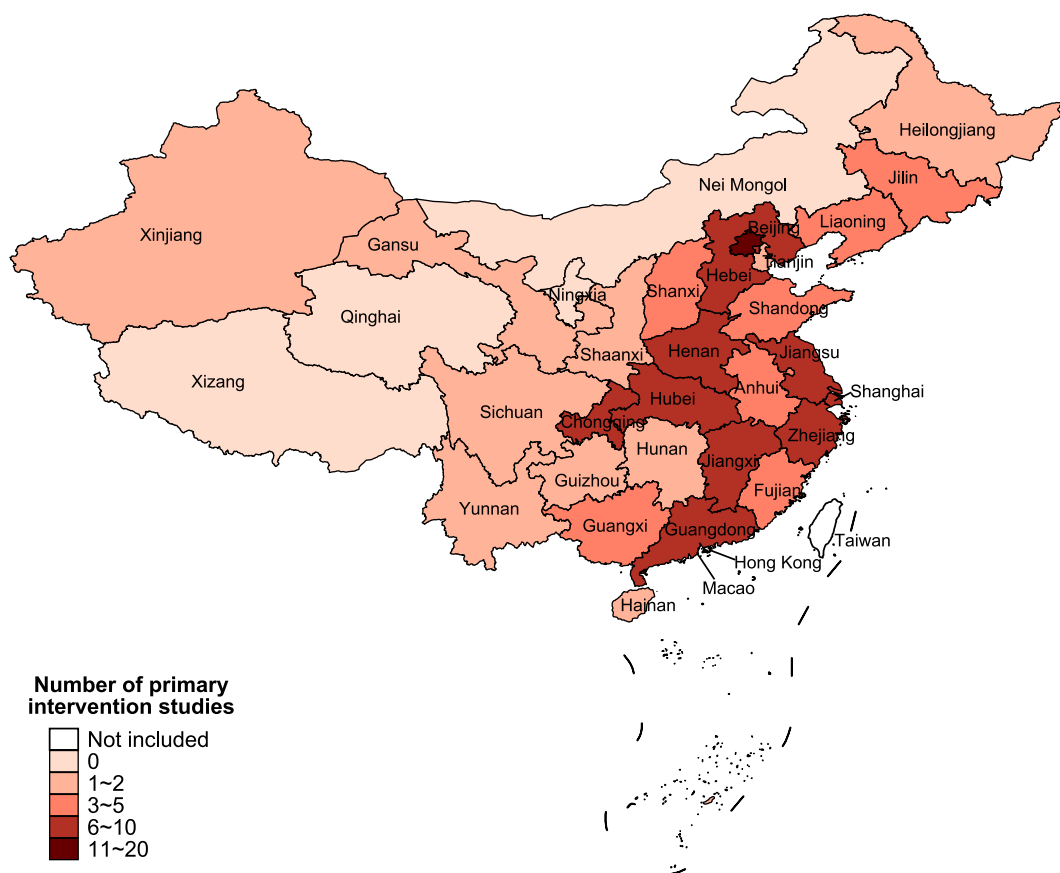


Fig. 8: Distribution of CAMH primary intervention studies by provincial unit (N = 109 primary studies). Caption: In this figure, we refer to China's 23 provinces, five autonomous regions, four centrally administered municipalities, and two special administrative regions collectively as "provincial units." Among the 130 primary studies included, 109 reported specific data collection locations. Information on intervention studies conducted in Taiwan Province, as well as in the Hong Kong and Macao Special Administrative Regions, is available in the high-income settings paper of this Series.

Intervention strategies. Regarding the specific intervention strategies used in these 135 studies, 20 (14.8%) were exercise interventions including aerobic exercise, yoga, tai chi and martial arts. These were mostly

designed as school classes (N = 11) to treat depression, anxiety and sleep issues or promote self-concept.^{S170,S174,S208,S219,S225,S242,S258,S265,S267,S275,S288} Community-based exercises (N = 8)^{S162,S178,S243,S247–S249,S272,S288} were primarily focused on

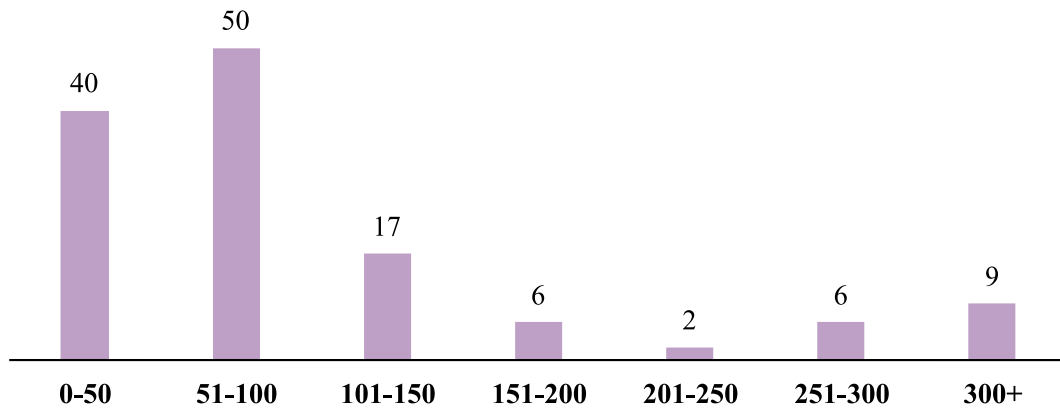


Fig. 9: Distribution of CAMH intervention studies by sample size (N = 130 primary studies).

	Count of studies	Proportion (out of 135 studies)	Reference
Mental health conditions			
Depression	43	31.9%	S155–S167,S204–S207,S212–S216,S222–S224,S236–S242,S259,S260,S262–S264,S267–S269,S276,S277,S282
Anxiety	30	22.2%	S163–S174,S208,S214,S215,S217,S222–S224,S240,S241,S262,S263,S265,S267,S268,S276,S278,S282,S288
Autism	26	19.3%	S175–S188,S243–S249,S279,S280,S284–S286
Attention-deficit hyperactivity disorder (ADHD)	18	13.3%	S169,S189–S198,S249–S252,S281,S285,S289
Distress	12	8.9%	S165,S214–S216,S221,S222,S224,S234,S242,S262,S265,S274
Sleep issues	11	8.1%	S164,S170,S188,S198,S205,S215,S219,S240–S242,S265
Behavioural problems	6	4.4%	S169,S203,S253,S266,S283,S286
Schizophrenia	2	1.5%	S256,S257
Paranoia	2	1.5%	S263,S268
Bipolar disorder	1	0.7%	S254
Post-traumatic stress disorder	1	0.7%	S199
Compulsion	1	0.7%	S268
Non-suicidal self-injury	1	0.7%	S167
Drug addiction	1	0.7%	S255
Mental well-being aspects			
Self-concept	12	8.9%	S174,S199,S205,S218,S222,S225–S229,S267,S288
Resilience	11	8.1%	S165,S206,S207,S209,S219,S229,S230,S253,S269,S270,S288
General and emotional well-being	9	6.7%	S207,S209,S224,S266,S267,S269,S271,S274,S277
Interpersonal relationship	7	5.2%	S221,S227,S234,S261,S263,S266,S268

Depression, anxiety, and autism are the most studied conditions. Attention-deficit hyperactivity disorder was also a notable focus. Other mental health conditions were rarely targeted. Mental well-being aspects received less attention overall.

Table 1: Number and proportion of intervention studies by targeted mental health conditions and well-being aspects.

group activities for children with autism.^{S178,S243,S247–S249} The remaining exercise intervention (N = 1) was individual-based and targeted children with autism.^{S184} Other common strategies included art therapy (N = 8; including drawing, music and dance therapies),^{S169,S195,S196,S205,S209,S217,S267,S282} cognitive-behavioural therapy (N = 7),^{S156,S165,S168,S193,S200,S203,S236} sandplay (N = 7),^{S182,S186,S188,S198,S202,S276,S281} group counselling (N = 7),^{S201,S206,S211,S218,S229,S230,S234} and mindfulness (N = 6).^{S215,S216,S241,S253,S264,S278} Interestingly, six studies applied Chinese acupuncture to

treat autism (N = 5)^{S179–S181,S185,S245} and depression (N = 1),^{S161} and four studies used Chinese medicine for ADHD (N = 2)^{S192,S250} and depression (N = 2)^{S163,S259} treatment.

Intervention targeting vulnerable groups

We further summarized interventions for three vulnerable groups: children and adolescents with autism, students facing academic-related mental health issues, and impoverished, rural left-behind children and adolescents. These groups were selected due to the

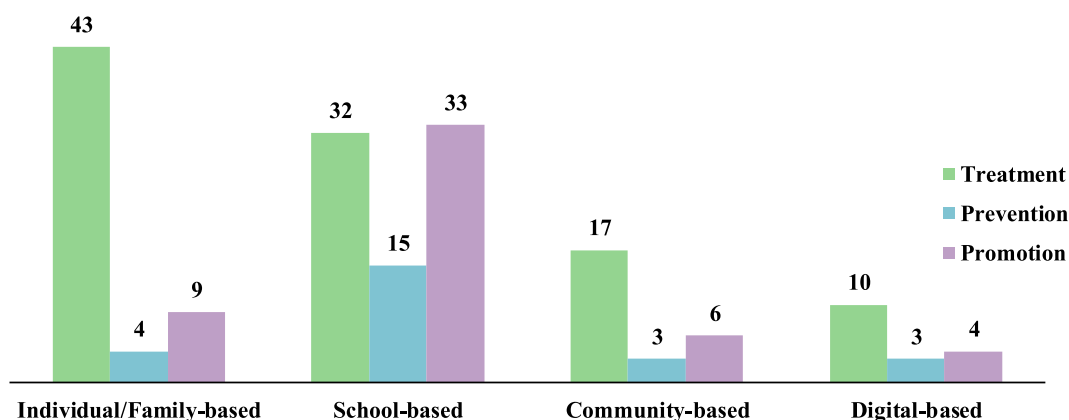


Fig. 10: Number of intervention studies by intervention type and delivery platform (N = 135 studies). Caption: Intervention studies were counted more than once if they address multiple intervention types across different platforms.

Chinese government's recent intensive policy attention on autism, the widespread and severe academic burden leading to mental health issues among students,⁹ and the fact that impoverished, and rural left-behind children and adolescents are more likely to develop mental disorders and require greater attention through targeted interventions.^{14–17}

Children and adolescents with autism. As previously mentioned, there were 26 treatments targeting children and adolescents with autism. The most common strategies applied were exercise interventions (N = 6),^{S178,S184,S243,S247–S249} and acupuncture (N = 5),^{S179–S181,S185,S245} Interventions were delivered via individual (N = 17),^{S175–S185,S243–S246,S284,S285} with eight requiring parental participation,^{S175–S178,S243,S244,S284,S285} community (N = 9),^{S178,S185,S186,S243,S244,S247–S249,S284} school (N = 1),^{S279} and digital platforms (N = 2).^{S187,S280}

Students facing academic-related mental health issues.

For interventions addressing academic-related mental health issues (N = 8), six of them were delivered at school as group activities (N = 4),^{S201,S222,S211,S265} exercises (N = 1),^{S267} or drawing therapy (N = 1),^{S169} aiming to alleviate students' test anxiety (N = 3)^{S201,S202,S211} and academic stress (N = 3).^{S169,S267,S268} Four of these school-based studies focused on college students,^{S201,S202,S211,S267} one on elementary school students^{S169} and one on both primary and secondary school students.^{S268} The remaining two interventions on academic-related problems were delivered through multiple platforms with parent participations: one intervention was a program integrating child, teacher, and parent components, delivered through school and family platforms^{S262}; the other specifically targeted parents through individual and community programs to alleviate children's academic problems.^{S220}

Impoverished, rural left-behind children and adolescents.

Eight interventions were specifically targeting socioeconomically disadvantaged children and adolescents. Among the eight, two interventions targeted impoverished college students, both of which applied school-based group counselling to improve their psychological resilience or self-esteem.^{S218,S230} The remaining six focused on children from rural or poverty-stricken areas. One of them focused on migrant children who relocated from rural to urban areas with their parents, and applied integrated individual, family and teacher education.^{S262} Three studies targeted rural left-behind children, utilizing community- and family-based workshops and services to promote prosocial behaviours and prevent conduct problems.^{S266,S283,S288} The other two studies addressed children in rural and poverty-stricken regions more broadly, and both of them provided parenting training to promote childhood development.^{S273, S287}

Effectiveness

Outcome measures. To demonstrate the effectiveness of applied interventions, most of the included studies (56.2%; N = 73 out of 130 primary studies) employed self-report measures to assess differences in outcomes, either between pre- and post-intervention phases or between experimental and comparison groups.^{S155–S165,S167,S168,S170,S172–S174,S199–S209,S211–S230,S234–S242,S253,S258–S264,S267–S271,S277,S278,S282} Questionnaires completed by parents (28.5%; N = 37)^{S166,S169,S171,S175,S177,S178,S181,S183,S184,S187–S189,S191–S198,S208,S220,S231,S233,S243,S244,S247,S249,S250,S266,S272,S273,S276,S279–S281,S283} and psychiatrists or service providers (17.7%; N = 23)^{S171,S175–S179,S181–S183,S185–S188,S231,S245,S248–S250,S254,S256,S257,S282,S289} were also utilized. Assessments mostly used cognitive measures (N = 10; e.g., executive function tasks)^{S185,S190,S191,S197,S205,S233,S252,S260,S279,S289} and behavioural measures (N = 11; e.g., group play assessments),^{S169,S178,S180,S182,S184,S188,S210,S232,S255,S280,S289} though some studies further employed physiological measures of neural activities (N = 5),^{S236,S243,S246,S251,S275} metabolic blood tests (N = 4),^{S161,S162,S254,S257} and other methods (N = 2; sleep algorithm and respiratory evaluations).^{S265,S274}

Post-intervention effectiveness. Based on these applied measures, the majority of the included intervention studies reported statistically significant effectiveness (N = 133). Only two studies in our review reported no statistically significant effects: one evaluated an integrated therapy combining cognitive, behavioural, and physical training, which failed to significantly improve core ADHD symptoms^{S289}; the other investigated a mobile-delivered mindfulness intervention for college students, which showed no significant reduction in anxiety levels.^{S278} Additionally, while three of the included meta-analyses (on interventions for autism) and one systematic review (on interventions for left-behind children) demonstrate the overall effectiveness of interventions, they highlighted the low quality of more than half of the studies included in their analyses.^{S284–S286,S288}

Five studies reported on interventions addressing multiple mental health issues, showing varied effectiveness across different outcomes. Two of these studies focused on children with ADHD: one evaluated a drawing therapy that was effective for conduct problems and compulsivity but not for anxiety^{S169}; the other examined an online cognitive training that improved working memory but showed no significant impact on other cognitive development aspects.^{S252} Another two interventions targeted college students: one was an exercise intervention that effectively improved depression and sleep quality but showed no significant impact on anxiety and perceived stress^{S253}; the other was a mood induction intervention that reduced anxiety but did not significantly alleviate negative affect.^{S259} The remaining of the five employed an integrated education program

for children, parents, and teachers, which significantly reduced children's depression, anxiety, and stress but had no impact on their life satisfaction.^{S262}

Long-term effectiveness. 23 studies in our review assessed the long-term effectiveness of interventions, with all reporting sustained effectiveness at follow-ups conducted between one and 12 months after implementation.^{S157,S160,S166,S169,S172,S191,S197,S204,S206,S207,S210,S213,S220,S227,}

^{S229–S231,S234,S237,S238,S249,S279,S283} The majority (N = 14) assessed treatments or promotions delivered at schools.^{S160,S169,S172,S197,S204,S206,S207,S210,S213,S227,S229,S230,S234,S279} The

most common strategy was group education or counselling (N = 7),^{S160,S172,S206,S207,S229,S230,S234} and the most studied outcomes were depression (N = 5)^{S160,S204,S206,S207,}

^{S213} and psychological resilience (N = 4).^{S206,S207,S229,S230}

Aside from these school-based interventions, other studies assessing long-term effectiveness utilized individual (N = 4,^{S157,S191,S220,S231} including 2 parenting training^{S220,S231}), community (N = 6),^{S166,S191,S220,S237,S249,S283} and digital (N = 1)^{S238} platforms with varied strategies targeting diverse conditions including depression, autism, academic-related issues (e.g., stress, self-regulation) and early childhood development.

Cost-effectiveness

Only two studies included in our review reported on the cost-effectiveness of interventions.^{S231,S273} Both studies, designed as cluster randomized controlled trials, assessed the cost-effectiveness of interventions aiming at fostering sound parenting behaviours. Conducted in 2014, one study conducted in Beijing (sample size = 140) demonstrated that, when compared to children who only received primary health care, children whose parents additionally received parenting training program had higher scores in communication, fine motor, and overall development after 12 months of the program.^{S231} The incremental cost-effectiveness ratio (ICER) to improve one standard deviation of scores was found to be \$195.7 for communication (\$248.1 in 2023 USD), \$267.7 for fine motor (\$339.5 in 2023 USD), and \$203.5 for overall development (\$258 in 2023 USD), respectively. These values highlighted the cost-effectiveness of the parenting intervention, as the ratios were far below China's per-capita gross demographic product of \$7652 in 2014 (\$9703.6 in 2023 USD). Similarly, another cluster randomized controlled trials (sample size = 258), conducted in a poverty-stricken county in 2019, found that intervention sessions designed to strengthen primary caregivers' knowledge and skills in nurturing care significantly reduced socio-emotional problems among children in the treatment group compared to those receiving only basic public health services.^{S273} With the county's per-capita GDP at \$2151 in 2019 (equivalent to \$2529 in 2023 USD), this intervention demonstrates cost-effectiveness, with an ICER of \$390.6 (\$459.3 in 2023

USD) per unit improvement compared to standard public health services.

Discussion

This study is the first comprehensive scoping review examining the diverse resources and interventions aimed at improving CAMH in China, the most populous country in the WPR. The study provided an overview of legislation and policy, financial resources, physical infrastructure, healthcare workforce, mental health service utilization, and the effectiveness and cost-effectiveness of treatments related to CAMH in China. This effort is essential for identifying potential resource gaps and developing a comprehensive, evidence-based mental health system capable of delivering professional services to schools, communities, and families, ultimately enhancing the mental health and well-being of children and adolescents across the country. Over the past three decades, the mental health and well-being needs of children and adolescents have received increasing attention from researchers, practitioners, and policymakers.^{2,18,S144} However, despite remarkable progress in the development of CAMH-related legislation and policies, a substantial gap remains between population needs and the available resources in China.

In the past three decades, China has undergone a notable shift in government involvement in CAMH promotion with the following features. (1) From single sector to multilateral sector effort. The Ministry of Education used to be the sole department responsible for CAMH-related regulations. Over time, the Chinese government has adopted a whole-of-government approach that emphasizes addressing the multiple determinants of CAMH through coordinated efforts involving the healthcare, education, and social security sectors, as well as families, communities, social workers, and other relevant stakeholders. (2) From focusing on individual disease (e.g., autism) to a comprehensive strategy that emphasizes continuous prevention, promotion, treatment, and social support throughout the entire developmental course of children and adolescents. This includes early screening for psychiatric development issues through government-funded basic public health programs, community-based family education on effective parenting strategies, holistic CAMH education and promotion during the compulsory school years, and the mandatory provision of mental health courses along with enhanced psychological counselling services for college students. Furthermore, China's CAMH policies have placed special focus on the mental health needs of vulnerable groups, such as children with disabilities, rural left-behind children, and children in difficult circumstances, recognizing that these groups may face unique barriers to accessing education and healthcare systems

and often lack adequate resources from their families and society to support their psychosocial development.

China's experience in CAMH policymaking offers valuable insights for other LMICs in the WPR, particularly in its development of both horizontal (multi-sectoral collaboration) and vertical (national-to-local coherence) governance mechanisms. In terms of the horizontal mechanism, China's intra-agency coordination extends well beyond the typical collaboration between ministries of health and education that is commonly observed in some LMICs in the WPR.²⁰ Instead, it involves a wide range of government bodies, such as those responsible for social welfare, social security, justice, public financing, human resources, housing, and emergency management. This multisectoral engagement and collaboration have helped foster broader awareness and commitment among authorities to support CAMH. While LMICs in the WPR may have different political systems and administrative structures, China's experience exemplifies WHO's calls for expanding collaboration beyond health and education ministries to engage multiple governmental sectors to shape the broader social determinants of CAMH.^{40,41}

Vertically, China's CAMH policy system provides space for local governments to adapt and expand upon national priorities in response to context-specific needs. For example, a few local jurisdictions have introduced local service standards for autism rehabilitation to regulate market-based providers. Additionally, some jurisdictions have proactively addressed emerging risks, such as cyberbullying, youth smoking, and drug abuse through locally tailored policy innovations. These developments reflect a growing capacity among subnational actors to translate national CAMH priorities into locally relevant strategies, balancing centralized direction with local flexibility.

Despite these advances in policymaking, effectively implementing these policies is still a daunting challenge in China. For example, although 41% of adolescents aged 15 to 19 in China have reported consuming alcohol,⁴² there is currently no national legislation specifying a minimum legal age for alcohol consumption or purchase. By contrast, several LMICs in the WPR (e.g., the Philippines⁴³) have made progress on setting the minimum age for alcohol purchase and consumption. Establishing age-based regulations could further strengthen China's efforts to address substance-related mental health risks among young people.

Moreover, significant challenges remain in fully translating existing CAMH policies into practice. Many families remain unable to access CAMH services due to inequitable and insufficient financing, shortages of qualified personnel, and limited physical capacity. Even when services are available, families often encounter a substantial financial burden for using CAMH services. In addition, systemic (such as the differentiated

healthcare coverage linked to the *hukou* system) and cultural (e.g., persistent stigma surrounding mental conditions) barriers continue to hinder effective policy implementation. Furthermore, longstanding disparities in urban-rural development have also led to a concentration of healthcare professionals and resources in urban areas, making it difficult to improve the availability and quality of services in rural communities. Moreover, the lack of systematic monitoring and evaluation mechanisms may hinder both the implementation and improvement of policies. In this regard, we strongly advocate for the development of a publicly accessible national data system to monitor progress, with a specific focus on people living in rural or poverty-stricken areas, CAMH financing, workforce and infrastructure development, and service delivery to support well-designed evaluation of policy implementation for continuous improvement.

In terms of CAMH financing, we found very limited publicly available data on how much the national government has invested in implementing legislation and policies. Trend data on adolescent health spending at the national level in China shows that between 2014 and 2020, less than 3% of adolescent health expenditure was on curative care for their mental illness, and the government contributed to 15% or less of that small portion.^{549,550} Without guaranteed investment from the government, implementing the proposed community and school programs, to name one example, can become very difficult.⁴⁴

Out-of-pocket spending remains the dominant source of financing for CAMH services, consistent with findings from both national and subnational studies.^{549,550,579,580} In Beijing and Guizhou, two regions representing opposite ends of China's development spectrum, families face substantial financial burdens when seeking autism-related services.^{579,580} While differences in sampling strategies limit direct comparability, both studies underscore the same message: households bear high CAMH-related costs, regardless of their geographic or economic context.

Several factors contribute to this burden. Firstly, medical insurance typically covers medication-based treatments but often excludes psychotherapy, psychological counselling, and preventive care.⁴⁴ The inclusion of psychotherapy and counselling in insurance packages has only been piloted in a few of China's most developed regions. Furthermore, government subsidies for mental health rehabilitation have been identified only for children and adolescents with autism, with no comparable support available for other CAMH disorders. In some other LMICs in the WPR (e.g., the Marshall Islands, Mongolia, Cambodia, and Viet Nam), adolescents have been fully or partially exempted from user fees for receiving mental health services in public healthcare settings.²⁰ These international examples illustrate that even resource-constrained settings can

adopt targeted financial protection to reduce the economic burden on families when seeking CAMH services. Drawing on these encouraging examples and China's growing recognition of mental health priorities, China may expand medical insurance coverage to psychotherapy and counselling services nationwide and increase financial subsidies to the families suffering from catastrophic CAMH-related expenses.

Secondly, studies have shown that the economic burden of mental disorders mainly stems from non-medical costs (e.g., transportation, accommodation) and family income loss due to job resignation or reduced working hours to care for affected children.^{S77} Thirdly, disparities in service availability and quality across regions further exacerbate the economic burden on families with children who have mental conditions. Evidence shows that the lack of CAMH care or the lower quality of such services in under-developed regions has driven families to relocate to areas with better quality services.^{S77,S79,S151} This relocation imposes significant costs, which are compounded by China's *hukou* system. The *hukou* system links an individual's access to medical insurance and social welfare to their registered place of residence, meaning that families who relocate may still face barriers to access the full subsidies and insurance reimbursement in the new location.⁴⁵ While achieving equitable CAMH service provision nationwide will take time, we recommend taking steps to ease the burden on relocated families by streamlining the transfer of medical insurance benefits and subsidy eligibility to the locations where CAMH services are accessed.

When it comes to the underlying structural limitations in the delivery and utilization of CAMH services, the available literature highlights substantial unmet needs, particularly in infrastructure, human resources, and equitable access. One critical issue, for example, is the insufficient number of beds for children and adolescents in China's top-tier psychiatric hospitals. This shortage led to over 45% of children receiving psychiatric care in the psychiatric hospitals' adult units,^{20,S144} raising concern about the quality and safety of care for this vulnerable population.^{S143}

Shortages in the CAMH workforce compound these physical capacity challenges. While China has made progress in mental healthcare staffing over time, more than two-thirds of China's top-tier hospitals surveyed in 2019 did not meet the government's recommended minimum psychiatric staffing ratio for the general population.^{S142} Additionally, those who provide mental health services in primary care or school settings are often undertrained and lack the necessary expertise. These workforce gaps underscore the need for targeted investments in training and recruitment to build a sustainable pipeline of CAMH professions across China.^{S148} Formalizing professional pathways for CAMH by establishing CAMH certifications and

integrating CAMH education into training programs for child and adolescent teachers and healthcare workers should be considered to address these gaps.

Another issue identified is the socioeconomic and geographic disparities that further hinder China's present state of CAMH capacity and service utilization. While the numbers of CAMH psychiatrists per population in major cities like Beijing and Shanghai have approached the levels seen in HICs, smaller cities and rural areas often lack CAMH services.^{S148} Disadvantaged children like those from rural areas face greater mental health needs but utilize CAMH services less often than children from urban areas.^{S152,S153} In light of these challenges, we call on the government to proactively allocate CAMH-related human resources and infrastructure to less developed regions, strengthen cross-regional collaboration and knowledge-sharing among healthcare institutions, and enhance and streamline referral pathways between resource-limited and resource-rich areas to help reduce service disparities.

Expanding community-based mental health services represents a promising opportunity to bridge these gaps. As shown from international experience, shifting care from specialized psychiatric hospitals to primary care and community settings could facilitate earlier detection and treatment, reduce condition severity, and mitigate geographic and socioeconomic inequities.^{46–49} To this day, China's mental healthcare is mainly delivered through highly specialized psychiatric hospitals.⁵⁰ Primary care and community settings are vastly under-resourced in comparison.⁵⁰ Developing integrated, community-based approaches to CAMH care will require policy prioritization, resource reallocation, and capacity-building at all levels of the healthcare system.⁵¹ Successful models from other LMICs, such as task-shifting initiatives or community health worker programs, could serve as useful templates for China's efforts to strengthen its CAMH services.^{52–55}

With respect to the effectiveness and cost-effectiveness of interventions, although most reviewed studies reported positive effects in reducing mental health issues or promoting overall mental health well-being, the external validity of these findings remains limited. Over two-thirds of the primary studies had sample sizes smaller than 100, raising concerns about the generalizability of results to broader populations and contexts within China. Moreover, evidence of long-term effectiveness is sparse: only 23 studies included post-intervention follow-ups, with durations ranging from one to twelve months. Given that chronic exposure to significant demographic and socioeconomic changes is a major contributor to mental health disorders among children and adolescents in China, short-term outcomes alone are far from sufficient to inform evidence-based policymaking or the design of sustainable mental health programs. In light of this, we call for large-scale, methodologically robust intervention

studies to assess the long-term impact of bio-psycho-social changes on the mental health of children and adolescents.

Furthermore, evidence on the cost-effectiveness of CAMH interventions in China remains extremely limited. Our review identified only two cluster randomized controlled trials that evaluated the cost-effectiveness of parenting interventions delivered alongside basic public health services for early childhood development.^{S231,S273} The two studies, conducted in a poverty-stricken county and Beijing (the capital of China), demonstrated the cost-effectiveness of parenting interventions, suggesting their potential to improve young children's development outcomes. However, we need to be cautious about their generalizability, because neither site reflects the typical development status or service infrastructure found across most regions of China. In addition, our literature review identified a complete absence of cost-effectiveness evidence for interventions targeting school-age children or adolescents, or those delivered through schools, community platforms, or digital tools. As the Chinese government continues to advocate for a multisectoral approach to CAMH, future research is urgently needed to assess the cost-effectiveness of diverse interventions implemented in more representative settings and among broader population groups.

Limitations

Our study has two main limitations. First, in searching for national and local CAMH-related policies, we relied on governments' publicly accessible official websites. This approach depends on the transparency and timeliness with which government agencies upload policy documents. As a result, we may have missed CAMH-related policies that are not publicly available. Second, given the nature of a scoping review, we did not perform a meta-analysis of the intervention identified. Instead, we described the key characteristics of these studies. We recommend that future studies address this gap by statistically assessing the effectiveness of CAMH interventions through meta-analysis.

Conclusions

This scoping review provides the first comprehensive review of the existing legal, financial, human, and infrastructural resources invested in CAMH as well as the existing research on CAMH interventions in China. Over recent decades, China has achieved significant progress through cross-sectoral engagement and collaboration, establishing a robust legislative and policy framework aimed at improving CAMH. This framework provides a strong foundation for continued development. However, effectively translating these policies into practice requires mobilizing more resources from the national government, local

governments, communities, schools, and families to implement the framework effectively. Our review highlights significant challenges in resource investment and capacity building for improving CAMH in China. To address these challenges, the central and local governments need to increase their investment in CAMH, particularly in rural and underdeveloped areas. To relieve households from the heavy economic burden of seeking care, the government should extend basic health insurance coverage to the counselling and rehabilitation of mental health conditions and increase the reimbursement rates for CAMH care. Geographic restrictions on medical reimbursements linked to the *hukou* system should also be lifted to ensure that families can access financial assistance wherever they need to seek care. Furthermore, ensuring an adequate number and equitable distribution of CAMH professionals and facilities is essential for translating CAMH policies into practice. To this end, we call on the government, in collaboration with stakeholders such as professional associations and medical schools, to expand and standardize the training and certification process for CAMH professionals across the healthcare, education, and social services sectors, and to strengthen community-based service capacity for CAMH services such as counselling and early screening. Last but not least, research on CAMH remains limited, as evidenced by the scarcity of data on financial investment, workforce and facility capacity, and the long-term effectiveness and cost-effectiveness of large-scale interventions. We strongly advocate for increased research efforts on CAMH to address these critical knowledge gaps, generate essential evidence for informed policymaking, monitor progress, and evaluate the impact of policies on improving CAMH in the future.

Contributors

CL conceived the study. CL and JL designed the methodology. YL, XF, YW, SZ, LC, CT, ZY, KC, XW, YZ, YW, LG, NJ, JZ, EM, YQ, and JL conducted literature search and data collection. YL, XF, YW, SZ, LC, CT, ZY, KC, XW, YZ, YW, LG, NJ, JZ, EM, YQ, and JL reviewed literature, extracted and cross-checked data. YL, YW, SZ, LC, and JL synthesized the extracted data. YL, XF, YW, SZ, LC, CT, ZY, KC, XW, YZ, EM, YQ, and JL contributed to data interpretation. YL, YW, LC, and SZ wrote the first draft. YL, XF, YW, SZ, LC, NZ, MZ, GL, JL, FJ, and CL critically edited the draft. JL, GL, and CL supervised the study. YL, YW, LC, and SZ verified the data. YL, YW, LC, SZ, GL, JL, and CL had full access to all the data in the study. GL and JL had the final responsibility for the decision to submit for publication. All authors read and approved the final manuscript.

Data sharing statement

All data relevant to this scoping review are included in the article or uploaded as [Supplementary Information](#).

Declaration of AI and AI-assisted technologies in the writing process

During the preparation of this work the authors used ChatGPT in order to check grammar and refine wording. After using this tool, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

Editor note

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Declaration of interests

All the authors declare no competing interests.

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Appendix A. Supplementary data

Supplementary data related to this article can be found at <https://doi.org/10.1016/j.lanwpc.2025.101635>.

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