

## Application of the WHO Mental Health Gap Action Programme (mhGAP) Intervention Guide to Chinese General Practice: A Delphi Study Post-print

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### Abstract

Background Chinese general practitioners increasingly expect to be able to identify and prevent depressive disorders, yet they receive limited mental health training, and community health centers (CHCs) also lack diagnostic and service standards for depressive disorders. The WHO's Mental Health Gap Action Programme Intervention Guide version 2 (mhGAP-IG.v2) is a decision-support tool for non-mental-health professionals that can be used to assess, manage, and follow up patients with mental, neurological, and substance use disorders. Given the universality of mhGAP-IG.v2, its application in China should be adjusted according to the cultural differences of depressive disorders and the characteristics of China's mental health system.

Methods Two rounds of web-based Delphi surveys were conducted. A panel of general practitioners from Shenzhen was invited to rate 199 statements related to depressive disorders in mhGAP-IG.v2 on a five-point agreement scale, i.e., "whether they would agree to adjust its content and structure if the statement were to be used in Shenzhen." If >80% of general practitioners "somewhat/definitely agreed" to adjust a statement, consensus was considered reached on adjusting that statement; if >80% of general practitioners "somewhat/definitely disagreed" with adjusting a statement, consensus was considered reached on not adjusting that statement.

Results General practitioners reached consensus on the need to adjust 79% of the statements, with an average score of 4.26, indicating that general practitioners "somewhat agreed" to adjust relevant statements related to depressive disorders in mhGAP-IG.v2. Specific adjustment recommendations included: depression assessment methods should consider broader depressive symptoms and

take into account the stage of illness progression; increase guidelines for the use of depression screening tools; clarify the role of general practitioners, as well as referral pathways for family involvement and inter-sectoral services; medication recommendations should be consistent with Chinese medication standards; all sections of the guideline should emphasize suicide prevention; contextualize health education; and emphasize a “person-centered” service approach. General practitioners believed that diagnostic and treatment recommendations for patients with bipolar disorder experiencing depressive episodes in mhGAP-IG.v2 should be maintained.

**Conclusion** The adjustment study of the depression section of mhGAP-IG.v2 reflects that guideline evaluation should consider cultural and national contexts, including China’s primary health care system with Chinese characteristics, health priorities, treatment availability, and diverse psychosocial education needs. The adjusted mhGAP-IG.v2 can provide references for general practice education and general medical services in China, and can also offer beneficial lessons for non-psychiatric professionals in other countries to carry out mental health services.

## Full Text

### Preamble

#### **ChinaXiv Cooperative Journal • World General Practice Research • Applying WHO’s *Mental Health Gap Intervention Guide* to Chinese General Practice Services: A Delphi Study**

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## Abstract

**Background:** Primary care doctors in China are increasingly expected to identify and prevent depressive disorders, yet they receive limited mental health training, and community healthcare centers (CHCs) lack standardized protocols for depression diagnosis and care. The World Health Organization's *Mental Health Gap Intervention Guide* version 2 (mhGAP-IG.v2) is a decision-support tool for non-specialist health workers to assess, manage, and follow up patients with mental, neurological, and substance use disorders. Given its generic nature, mhGAP-IG.v2 requires adaptation to account for cultural variations in depression presentation and the unique features of China's mental health system.

**Methods:** We conducted a two-round, web-based Delphi survey. A panel of general practitioners (GPs) from Shenzhen was invited to rate 199 statements related to depression in mhGAP-IG.v2 on a five-point scale regarding whether they agreed that the statement's content and structure should be adapted for use in Shenzhen. Consensus was predefined as >80% of GPs selecting "somewhat agree/definitely agree" (to adapt) or "somewhat disagree/definitely disagree" (to not adapt).

**Results:** GPs reached consensus on adapting 79% of statements, with a mean score of 4.26, indicating they "somewhat agreed" that mhGAP-IG.v2's depression-related content required adaptation. Specific recommendations included: broadening depression assessment to consider a wider spectrum of symptoms and disease progression; adding guidance on screening tool usage; clarifying GP roles and referral pathways for intersectoral care with family involvement; aligning medication recommendations with Chinese prescribing norms; emphasizing suicide prevention throughout all sections; contextualizing health education; and promoting a "person-centered" care approach. GPs recommended retaining diagnostic and treatment advice for bipolar patients experiencing depressive episodes as currently presented in the guide.

**Conclusion:** Adaptations to mhGAP-IG.v2's depression component reflect the need to evaluate guidelines within cultural and national contexts, including China's unique primary healthcare system, health priorities, treatment availability, and diverse psychosocial education needs. An adapted mhGAP-IG.v2 could inform general practice education and service delivery in China while offering a valuable resource for non-specialist mental health providers in other countries.

**Keywords:** Depressive disorder; Mental Health Gap Intervention Guide; Delphi; Adaptation; Conceptualization; Primary care; Intersectoral care; World Health Organization; China; Shenzhen

## 1. Background and Rationale

As one of China's first special economic zones, Shenzhen—home to nearly 18 million people—is renowned for its advanced socioeconomic development and reform initiatives. The city has steadily built an extensive network of community health service centers (CHCs) where general practitioners serve as the first point of contact for residents' healthcare needs. Given rising overall prevalence of mental disorders and elevated depression rates among priority and vulnerable populations, health authorities have mandated strengthened identification and prevention of common mental disorders in primary care. One specific initiative involves enhancing GPs' mental health competencies, requiring each CHC to have at least one GP with mental health certification. However, qualitative research with mid-level general practice leaders in Shenzhen revealed that as this work progresses, GPs need better access to diagnostic guidelines and protocols for depression services.

Clinical guidelines synthesize evidence into recommendations that give providers the best opportunity to deliver highest-quality care. Sharing guideline information across settings avoids duplicative research and optimizes resources, particularly where funding is limited—a principle widely accepted in global healthcare. WHO's mhGAP-IG.v2 provides Shenzhen CHCs with a rigorously developed, internationally endorsed resource to support trained GPs in assessing, managing, and following up patients with depression and other major mental health conditions. The guide incorporates evidence-based, economically feasible treatment options suitable for community and resource-limited settings.

As a generic tool, mhGAP-IG.v2 requires adaptation for China's primary healthcare environment and cultural context. In some countries, GPs can independently use screening scales, diagnose depression, and initiate pharmacological treatment. In China, however, only psychiatrists have legal authority to diagnose depression, while hospitals or specialized institutions are responsible for prescribing treatment plans and medications, leaving primary care physicians with limited therapeutic autonomy. Furthermore, historical events influence residents' current attitudes and behaviors, creating barriers to depression expression and help-seeking. Although mhGAP-IG.v2 aligns closely with international classification systems like ICD-10 and DSM-IV, it was originally developed based on clinical presentations in Western hospital settings and may not align well with other cultural contexts or facilitate recognition of subtle depression manifestations in community settings.

Methods for standardizing mhGAP-IG.v2 adaptation remain under development. Consulting end-users is essential to ensure guideline applicability and promote implementation. Since Chinese primary care representatives did not participate in drafting mhGAP-IG.v2, the guide may overlook actual practices or referral information relevant to China's context. This study asks: What adaptations to mhGAP-IG.v2's depression-related content do CHC doctors believe are necessary to enhance its applicability? We aimed to adapt mhGAP-IG.v2

to be both knowledge-relevant and practically acceptable to Chinese GPs using the Delphi method. This represents the first primary care guideline adaptation study conducted in China, with the unique focus on examining an international guideline's applicability for depression diagnosis and treatment in Chinese primary care.

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## 2. Methods

### 2.1 Participant Recruitment

GPs voluntarily participated in this study. Seven GPs working across five Shenzhen districts facilitated recruitment by disseminating study information through their district's primary healthcare systems, distributing concise written statements per ethics requirements, and collecting informed consent forms. The principal investigator registered each consenting GP and provided password-protected access to the online survey.

### 2.2 Inclusion and Exclusion Criteria

Invited physicians worked in CHCs providing primary care, seeing at least 50 patients weekly. Doctors needed to self-report interest in mental health or hold a primary care mental health service certificate. Recruitment across urban, suburban, and border district CHCs enhanced participant heterogeneity. Survey materials were provided in Chinese; English proficiency was not required.

### 2.3 Participant Size and Geographic Distribution

Seventy-five GPs (51% female) participated in Round 1, with most working in near-suburban CHCs (55%), followed by urban areas (35%), and remote/border districts (10%). Fifty-nine GPs completed Round 2 (79% retention). Despite attrition, overall percentages by region and gender remained similar across both rounds. GPs with mental health service certificates were more likely to complete both survey rounds.

### 2.4 Delphi Questionnaire Development

Statements for GP evaluation were generated through thematic analysis from prior qualitative research that consulted GPs about mhGAP-IG.v2's acceptability, applicability, and transferability for CHC use. The resulting 199 statements covered ten domains: (1) "person-centered" guidance; (2) depression presentation features; (3) screening tool access and use; (4) healthcare and social system relationships; (5) pharmacological treatment options; (6) manic and depressive episodes in bipolar disorder; (7) depression communication; (8) follow-up; (9) patient information management; and (10) overall guide structure. These

statements were extracted from mhGAP-IG.v2, translated into Chinese, back-translated for verification, and iteratively refined through pre-testing with three Shenzhen CHC doctors and two Australian GPs.

## 2.5 Survey and Analysis Process

Two survey rounds were conducted on the Qualtrics platform: Round 1 (December 2019–January 2020) and Round 2 (December 2020–February 2021). The lead researcher analyzed each round’s data and provided feedback to participants. In Round 1, GPs reached consensus on adapting 152 statements (76%). Evaluation of open-ended responses revealed no new statements. In Round 2, researchers resubmitted the 47 non-consensus statements with Round 1 mean scores, yielding consensus on six additional statements (13%). Ultimately, 158 statements (79% of all statements) reached consensus for adaptation, while 41 statements (21%) remained without consensus. The Delphi process from questionnaire development to consensus is illustrated in [Figure 1: see original paper].

Consensus was predefined as >80% of GPs selecting “somewhat agree/definitely agree” (to adapt) or “somewhat disagree/definitely disagree” (to not adapt) on a 5-point Likert scale. Participants could also propose additional statements or express reservations through open-ended questions.

## 2.6 Ethics Approval

This study received approval from the University of Melbourne’s School of Population and Global Health Human Ethics Advisory Group (HEAG) in November 2019 (ethics approval number: 1,852,773.1).

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## 3. Results

### 3.1 Participant Characteristics

Participants averaged over six years of general practice experience. Mental health service certificate holders comprised 15% in Round 1 and 24% in Round 2, indicating certified GPs were more likely to complete the Delphi survey. Participants’ CHCs had at least one other mental health-certified GP. During Round 2, which coincided with the COVID-19 pandemic, participants reported seeing fewer patients weekly (176) compared to Round 1 (275), and documented fewer depression cases (1.9 vs. 2.7 per week).

### 3.2 Main Findings

Building on prior research with Shenzhen GPs, this study confirmed CHC doctors’ preference for depression diagnosis based on “a spectrum of symptoms

rather than core symptoms.” Participants agreed to adapt 158 of 199 mhGAP-IG.v2 depression statements, with mean scores increasing from 4.25 in Round 1 to 4.26 in Round 2. The ten thematic domains averaged 4.05–4.65, with “person-centered guidance” receiving the highest mean score (indicating strongest support for adaptation) and “follow-up” receiving the lowest. In Round 1, both “person-centered guidance” and “bipolar disorder episodes” achieved 100% consensus for adaptation. Given the high initial consensus, Round 2 yielded limited new consensus (only six of 47 statements). The most significant shift occurred in “follow-up,” where consensus for adaptation increased from 61% to 73% across rounds. No statements in any domain were outright rejected (i.e., no statement received >80% “somewhat/definitely disagree” votes) (see ).

A key finding was GPs’ unanimous agreement to adapt mhGAP-IG.v2 overall, with particular emphasis on strengthening suicide risk supervision responsibilities in primary care. This requires reorganizing decision-making algorithms to check suicide attempt history during early consultations, identify suicidal ideation in symptom lists, and direct physicians to mhGAP-IG.v2’s self-harm module. These adaptations align with China’s goal to reduce suicide rates by 30% by 2030 and address local concerns about high suicide rates among certain occupational and vulnerable groups. Internationally, similar approaches include Tunisia’s contextualization study, which also prioritized self-harm and suicide as key management areas.

Although validated depression scales exist for Western GPs, mhGAP-IG.v2 lacks guidance on screening tool usage in primary care. Prior research shows CHCs lack standardized depression screening instruments. Delphi participants identified an opportunity to supplement mhGAP-IG.v2 with screening tool guidance (assuming appropriate training) and emphasized nurse involvement in depression screening (see , item 5.3). This open attitude toward depression management reflects demand for task-sharing within CHC team-based services, with GPs willing to adopt collaborative models rather than individual approaches.

Participants did not recommend adapting all mhGAP-IG.v2 content. They advocated preserving all bipolar disorder-related guidance. Reportedly low bipolar disorder prevalence in China and limited primary care knowledge about the condition led GPs to view it as a severe mental illness requiring specialist treatment. They respected mhGAP-IG.v2’s recommendation to enhance training to bridge knowledge gaps and supported retaining guidance on identifying and supporting family members managing patients with mental health conditions (i.e., assisting with medication management, ensuring clinic attendance, monitoring mood). Other public health interventions (e.g., emergency mental health assistance) also legally require family involvement. Currently, mhGAP-IG.v2’s management and follow-up sections emphasize physician responsibilities, which contrasts with China’s community-integrated mental health approach.

## 4. Discussion

### 4.1 Specific Contextual Needs for Assessment Guidelines

Participants agreed that mhGAP-IG.v2's symptom list should integrate core and additional symptoms (see , item 8.3), reflecting primary care pragmatism. This approach avoids premature exclusion of potential diagnoses and facilitates ongoing monitoring and service provision. It also enables GPs to move beyond diagnostic criteria developed solely by specialists, instead adopting a life-course approach more suitable for primary care (i.e., recognizing depression as a complex, multidimensional condition whose symptoms can appear in any sequence throughout life). While participants rejected earlier proposals to include somatic symptoms, anxiety, and behavioral indicators, they broadly supported recommending that physicians explore risk factors triggering potential depression and clarify how depression changes over time.

### 4.2 Addressing Health System Differences

Comparing our findings with prior research and other contextualization studies reveals mhGAP-IG.v2's suitability regarding referral options and professional role delineation across countries. China has proposed integrating mental health into primary care, yet key policy documents lack detailed implementation guidance. While Western GPs actively participate in depression diagnosis and treatment, China remains psychiatrist-dominant, creating significant inter-system variation. Adapting mhGAP-IG.v2 provides opportunities for mental health-certified CHC doctors to expand their roles and strengthens CHC, general hospital, and family involvement in mental health services (see , items 4.1–4.4).

This in-depth study enables GPs to endorse guideline content related to emergency mental health services, particularly linking primary care with community agencies (e.g., social services, public security, schools, volunteer sectors, disability federations), employers, and families. GPs' preference for strong community and family integration reflects both cultural and legal precedent—China's Mental Health Law mandates family responsibility for caring for relatives with mental health conditions. Other public health interventions (e.g., emergency mental health assistance) also require legal compliance.

### 4.3 Considering Locally Available Pharmacological Treatments

Like other contextualization studies, our research emphasizes that antidepressant medication lists should align with national formulary requirements. Where CHCs lack antidepressant prescribing standards, the guide should identify institutions that can prescribe and specify reimbursement regulations. GPs also recommended using updated first-generation selective serotonin reuptake inhibitor (SSRI) lists with brand name examples to enhance currency. However, mhGAP-IG.v2 should avoid brand names to maintain neutrality and prevent conflicts of interest, while health authorities aim to avoid over-prescription and potential medication dependency.

Participants also recommended including benzodiazepines in mhGAP-IG.v2, despite their unsuitability for depression treatment, because they are appropriate for anxiety management. Given that anxiety patients outnumber depression patients and GPs must manage comorbid cases, providing benzodiazepine information in mhGAP-IG.v2 is warranted.

#### 4.4 Contextualized Health Education

GPs recommended adapting most mhGAP-IG.v2 statements on “improving psychosocial communication,” indicating substantial room for improving patient education information. Adaptations mean providing better patient information (see , items 3.1–3.4) and raising community depression awareness using local participation models (i.e., previous success stories). This requires GPs to master professional “soft skills” (e.g., listening, empathy) often neglected in medical education despite evidence of positive treatment outcomes. A recent study examining communication between Asian (including Chinese) health professionals and patients found that Asian practitioners need more diverse communication methods than Western counterparts to provide culturally appropriate care. In Shenzhen—a new “immigrant city”—patient psychoeducation needs vary by residential area and origin, requiring more tailored approaches.

#### 4.5 Person-Centered Care Approach

This study uniquely explored GPs’ perspectives (as end-users) on incorporating “person-centered” recommendations into mhGAP-IG.v2. WHO’s person-centered integrated care framework emphasizes equitable access to quality health services that meet life-course needs, respect social preferences, are coordinated throughout care processes, and are comprehensive, safe, effective, timely, efficient, and acceptable. The core of “person-centered” care is patient empowerment, respecting treatment preferences during patient-led consultations, and “co-producing” management plans.

Participants universally accepted mhGAP-IG.v2’s person-centered theme and endorsed developing patient management plans (PMPs). GPs preferred action-oriented plans with checklists enumerating person-centered practices over the current version’s principle-based terminology (e.g., “assess improvement,” “evaluate treatment participation and experience”). They wanted mental health-certified GPs to develop PMPs, offering potential benefits for guideline contextualization and long-term sustainability.

Developing depression PMPs by GPs offers additional advantages. China is accelerating establishment of community mental health rehabilitation services, which may overlap or collaborate with GP services, necessitating proactive avoidance of communication and coordination gaps. Having the most proximal and familiar GPs develop “person-centered” management plans can effectively share patient records across providers and streamline referral processes.

## 5. Limitations and Future Directions

### 5.1 Study Limitations

Study limitations relate to COVID-19, which overlapped with our research timeline and reduced feasibility of original designs, directly impacting results: (1) Round 2 was delayed from a planned one-month to nearly one-year interval, making it difficult to control for time-related health system changes and shifting GP perspectives (e.g., increased mental health certification, internal changes among CHC leaders). (2) GP retention rate declined by 21%. Fortunately, the study design anticipated attrition, allowing for additional recruitment, and the final participant number met research needs. Our actual sample size still far exceeded recommended minimums (10–18 participants) and Delphi stability requirements. (3) The study concluded after two online survey rounds, with 21% of statements remaining without consensus. While many Delphi studies conduct three rounds to achieve methodological consensus, two-round mental health Delphi studies are not uncommon. Given minimal consensus change between rounds, further research would likely yield negligible perspective shifts.

Additionally, 79% consensus provided rich, specific, and detailed guidance for adaptation. While GPs provide depression care, they are not the sole providers. Future guideline research should seek input from additional stakeholders, including specialist referral teams, other community rehabilitation agencies, and patients. Finally, GPs may have struggled with some concept translations from prior workshops. To minimize translation issues, all items were back-translated by an experienced translator and pre-tested by two bilingual Shenzhen CHC doctors before formal surveying.

### 5.2 Recommended Further Research

1. Develop training software/online modules to meet local needs and pilot results with study sites for further consultation and testing.
2. Formulate patient management plans with multiple collaborative partners (including families) sharing service delivery, engaging all parties in community rehabilitation. Consult people with lived experience to determine interaction nature and content.
3. Conduct qualitative research exploring how general practice can better educate communities about depression and improve treatment adherence.
4. Expand research scope to address anxiety and comorbid anxiety-depression diagnosis and treatment.
5. Explore transferability of findings to other Chinese community health service settings.
6. Critically, submit revised mhGAP-IG.v2 to international healthcare researchers for evaluation, enabling other countries to share similar (or different) findings and contribute to ongoing dialogue for updating global service standards.

## Conclusion

Adaptations to mhGAP-IG.v2 align with Shenzhen CHC doctors' decision-making processes and algorithm refinement. GPs agreed that implementable guidelines should differ from generic versions and must accommodate local depression contexts, health system organization, primary care treatment priorities and accessibility, and China's 21st-century aspirations for person-centered health services. This study's uniqueness lies in GPs' preference for guidelines reflecting disease progression and documenting broader mental health team and family involvement. GPs believed mhGAP-IG.v2 should retain key diagnostic and treatment measures for bipolar patients, even if beyond current practice standards. Contextualizing mhGAP-IG.v2 for Shenzhen provides not only a relevant training tool for local CHCs but also an additional resource for other countries to improve depression care and services.

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## Author Contributions

Kendall Searle designed, coordinated, and conducted the Delphi study, analyzed data, and drafted the manuscript. Grant Blashki, Ritsuko Kakuma, and Harry Minas advised on study design and supported the research process. YANG Hui facilitated ongoing engagement with Shenzhen community health service institutions and provided valuable cultural adaptation guidance. LYU Shurong offered methodological and software training for the Delphi method and provided culturally sensitive translation support. LI Baoqi and XIAO Yingying translated project reports and developed specific recruitment and implementation protocols. All authors contributed to the initial manuscript draft and approved the final version.

This article has no conflicts of interest.

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## References

[References are preserved in their original format as provided in the source text.]

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