GLOBAL VOICES

Global voices on atrial fibrillation care in China

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An aging population, coupled with the high prevalence of physical inactivity, obesity, dyslipidemia, hypertension, and diabetes mellitus, has led to a significant increase in the incidence and prevalence of atrial fibrillation (AF) in China. Managing clinical complexity of AF patients poses significant challenges. Current guidelines advocate for holistic or integrated management using the ABC (Atrial fibrillation Better Care) pathway. Compliance with the ABC pathway has demonstrated promising benefit in improving clinical outcomes. The mAFA II trial (the mHealth technology for improved screening, patient involvement, and optimized integrated care in Atrial Fibrillation) explores the potential of a mobile health technology–supported integrated care approach in reducing the risks of rehospitalization and clinical adverse events. However, disparities persist between urban and rural areas, with the likelihood of rural older individuals by themselves using intelligent devices being extremely low. Therefore, the application prospects of the mobile AF application strategy in rural areas are greatly limited. The ongoing MIRACLE-AF trial (A Novel Model of Integrated Care of Older Patients With Atrial Fibrillation in Rural China) aims to address unique healthcare challenges faced by rural older patients with AF through a novel integrated care model, which is led by village doctors and supported by a digital health platform. In conclusion, innovative integrated care approaches using digital technologies offer promising solutions to enhance AF care across diverse settings in China, catering to the needs of both urban and rural populations.

KEYWORDS Atrial fibrillation; Integrated management; Digital health; Mobile health Technology; Rural; Urban; China

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Introduction

China is transitioning from rapid aging, in which 7% of the population is over 65 years of age, to deep aging, with approximately 14% over that age by 2021.[1] Populations have a high prevalence of physical inactivity, obesity, and dyslipidemia (87%, 65%, and 34%, respectively); also, there are 300 million with sleep apnea, 245 million with hypertension, and 129 million with diabetes mellitus.[2] This has led to an increase in the prevalence and incidence of atrial fibrillation (AF) in China.[3] The most recent nationwide cross-sectional epidemiological study revealed that the age-standardized AF prevalence was 1.6% overall, with comparable prevalence rates between urban and rural residents.[3] AF identified with wearable electrocardiography monitors increased from 0.2% in 2019 year to 0.4% in 2022 year across China.[4] Taken together, AF is a significant health concern in China.

Here, we summarize the current situation of treating AF in China, highlighting challenges in AF care in rural settings. We discuss 2 cluster randomized controlled trials regarding the AF care model conducted in China and the future directions for AF management in China.

Treatment of AF in China

Multimorbidity and clinical complexity of AF patients have major implications for treatment and outcomes.[5] In addition to international guidelines, those from the Chinese Society of Cardiology, Geriatric Society of Chinese Medical Association, and Chinese Society of Geriatric Health Medicine support holistic or integrated AF management,[6–10] using the Atrial fibrillation Better Care (ABC) pathway as an integrated care approach for AF patients.[11] Compliance with the ABC pathway has been associated with improved clinical outcomes.[12,13]

Nevertheless, there are also differences between urban and rural areas. Urban areas generally have better healthcare infrastructure, including specialized AF clinics and dedicated clinics for managing comorbidities such as diabetes, sleep

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KEY FINDINGS

- Atrial fibrillation (AF) is a significant health concern in China.
- Disparities in AF management between urban and rural areas exists in China.
- A mobile AF application–supported ABC (Atrial fibrillation Better Care) pathway optimization has been proved to reduce the primary composite outcome of ischemic stroke/systemic thromboembolism, all-cause death, and rehospitalization for patients with AF.
- However, the likelihood of rural older individuals by themselves using intelligent devices is extremely low. Therefore, the application prospects of the mobile AF application strategy in rural areas are greatly limited. The ongoing MIRACLE-AF trial (A Novel Model of Integrated Care of Older Patients With Atrial Fibrillation in Rural China) aims to address unique healthcare challenges faced by rural older patients with AF through a novel integrated care model, which is led by village doctors and supported by a digital health platform.

apnea, and obesity, which are important risk modifiers for AF. However, rural areas face distinct challenges in providing AF care. The older population in rural China tends to have low educational levels, limited pension coverage, insufficient knowledge about diseases, poor health consciousness, and limited support from their adult children.[14–16] Additionally, due to age-related frailty and an inefficient transportation system, older patients in rural areas are less motivated to seek out better medical care in township hospitals or other tertiary hospitals.[17,18] Hence, village clinics still serve as the most accessible medical resources for them (Figure 1). However, village doctors who practice in their village clinics only receive nonstandardized medical training, and their capability to provide long-term chronic disease care is limited.[19] Taken together, the population aging in rural China brings unique healthcare challenges for chronic long-term conditions, including AF.

The rising uptake of smartphones and smart wearables further enhances the potential for innovative solutions in managing AF. Therefore, with the increasing aging population and the surging development of digital technologies, there are great challenges and new opportunities for AF care in China.

Mobile health technology to improve care for patients with atrial fibrillation: The mAFA II trial

Digital technologies, including wearables,[20] artificial intelligence,[21] and mobile health (mHealth),[22] have been employed for the prediction, screening, diagnosis, and management of AF. Utilization of the wearables has proliferated among health-conscious consumers and is likely to continue to be integrated into more clinical medical settings.[4]

The use of mHealth technology has been shown to improve patient knowledge on AF, quality of life, and oral

Village doctors seeing patients in the village clinic

A village clinic in China

Figure 1 Photographs showing a village clinic in China and village doctors seeing patients in their village clinic.

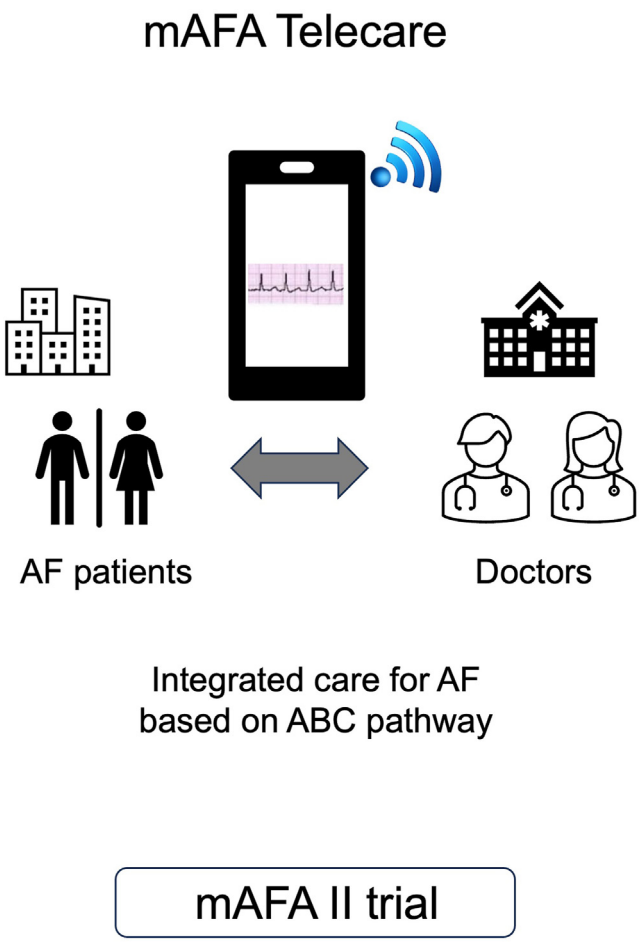

Figure 2 The mAFA II trial. Mobile health technology for improved screening, patient involvement and optimizing integrated care in atrial fibrillation (AF): the mAFA (mAF-App) II randomized trial. ABC = Atrial fibrillation Better Care; mAFA = mobile atrial fibrillation application.

anticoagulation adherence.[23] The mAFA II trial (the mHealth technology for improved screening, patient involvement, and optimized integrated care in Atrial Fibrillation) was a prospective, cluster randomized controlled trial. A total of 40 sites were randomized to either a integrated care based on a mobile AF application (mAFA) or usual care. This trial explored the potential of this mHealth technology–supported integrated care approach in reducing the risks of rehospitalization and clinical adverse events in AF patients. It has demonstrated that the mHealth-supported ABC pathway optimization reduced primary composite outcome of ischemic stroke/systemic thromboembolism, all-cause death, and rehospitalization for general patients with AF (Figure 2).[22] This benefit, mostly driven by rehospitalization, was observed in older AF patients,[24] with heart failure,[25] multimorbidity,[26] and a high-risk population for secondary prevention of thromboembolism.[27]

Nonetheless, when prioritizing fatal events, the mHealth technology–implemented integrated care approach was still effective in reducing the risk of the primary composite outcome.[28] One modeling analysis demonstrated the cost-effective use of mHealth apps in streamlining and integrating care via the ABC pathway for AF in China.[29] Therefore, the Chinese guidelines advocate for the mAFA approach in AF management.[9]

A novel model of integrated AF care for older patients with AF in rural China: The MIRACLE-AF trial

The Jiangsu Province Rural Community AF Project investigated the quality of AF care in rural China for the first time.[30] The findings of this project underscore the need for innovative healthcare solutions tailored to the specific needs of rural communities.[31] Therefore, a cluster randomized controlled trial was designed to evaluate a novel model of integrated AF care for older patients with AF in rural China (MIRACLE-AF trial [A Novel Model of Integrated Care of Older Patients With Atrial Fibrillation in Rural China]; NCT04622514). In this novel model, a digital health support platform was developed to empower village doctors to

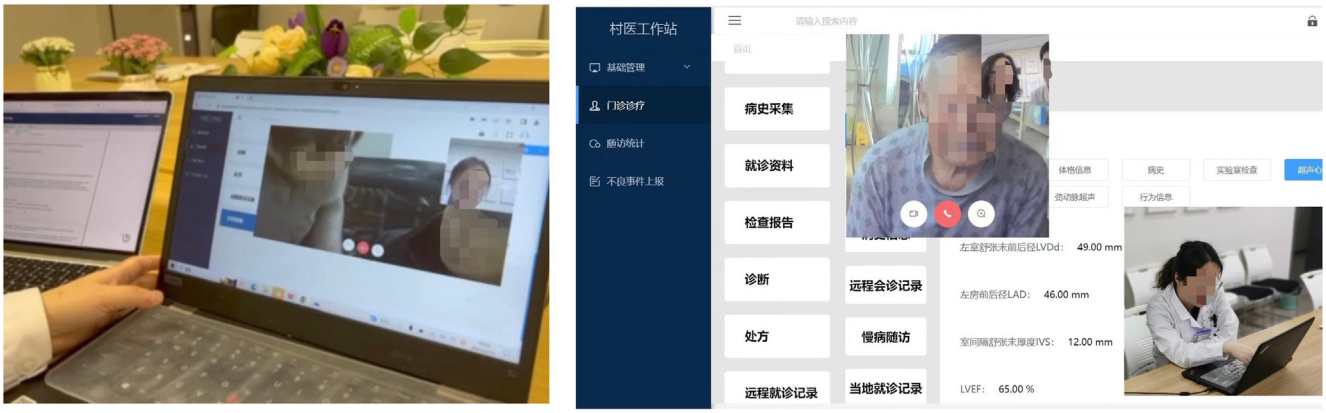

Figure 3 Photograph showing remote consultations in the MIRACLE-AF trial. Atrial fibrillation (AF) specialists conducting remote consultations with rural older AF patients with the assistance of village doctors through a digital health support platform in the MIRACLE-AF trial.

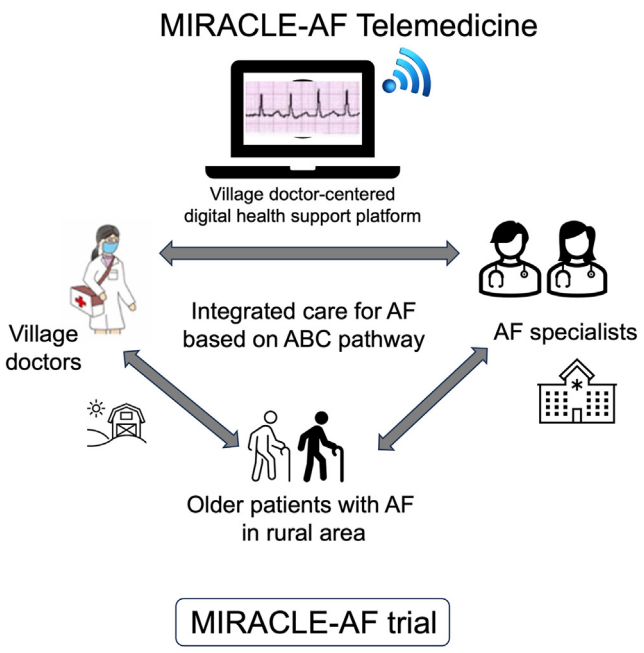

Figure 4 The MIRACLE-AF trial. A novel model of integrated care of older patients with atrial fibrillation (AF) in rural China: the MIRACLE-AF cluster randomized controlled trial. ABC = Atrial fibrillation Better Care.

enhance the delivery of integrated AF management for the rural older population. This platform facilitates remote consultations with AF specialists, stores patient data, and provides training resources. It also allows AF specialists to evaluate village doctors' performance and offer real-time support to village doctors. Through this platform, a tight link would be established among village doctors, AF patients, and AF specialists (Figure 3). Therefore, this novel model emphasizes patient-centered care through enhanced communication and support, leveraging digital tools to overcome the barriers faced by rural older patients and village doctors (Figure 4). In the MIRACLE-AF trial, village clinics were randomly assigned to either village doctor–led telemedicine integrated care (intervention group) or usual care (control group). In this ongoing trial, the impact of this novel model on compliance with the ABC pathway and clinical outcomes in rural elderly patients with AF will be assessed.

Future approaches

Increasing investment in healthcare resources and enhancing healthcare infrastructure will be crucial in improving outcomes for AF patients across the country. Future efforts in AF management in China should focus on expanding the use of digital health technologies and continuing to develop integrated care models.

Conclusion

AF care in China is facing significant challenges and opportunities. Innovative integrated care approaches utilizing digital technologies may offer promising solutions to improve outcomes for AF patients across urban and rural areas in China.

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