**ORIGINAL RESEARCH ARTICLE**

# The "silver economy" of women's health: entrepreneurship and service models in China's menopause health sector

DOI: 10.29063/ajrh2026/v30i14.12

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## Abstract

Menopause health services in China lie at the critical juncture of the "silver economy" and women's health. As society ages and health awareness grows, the needs of roughly 160 million middle-aged women are moving to the forefront, creating a vast blue ocean market. This study constructs a "Demand–Supply–Empowerment" Interaction Model, identifying the core market conflict as the clash between widespread "physical/psychological distress" and a "mismatched service system." We explore the authentic experiences, needs, and behaviors of contemporary Chinese women. Using web crawling, we gathered about 3 million Chinese characters of text from platforms like Xiaohongshu and Weibo (2020–2025). Applying Grounded Theory, a three-level coding analysis reveals that women are shifting from passive endurance to active management. Their core demand is for trustworthy, integrated health solutions. Consequently, the study identifies three key entrepreneurial opportunities: integrated health platforms, personalized products/services, and professional content with community operations. This research provides a new theoretical lens for understanding the market and offers practical insights for entrepreneurs, investors, and policymakers in related fields. *(Afr J Reprod Health 2026; 30 [14]:103-120).*

**Keywords** : Silver Economy; Women's Health; Menopause; Grounded Theory; Social Media Analysis; Service Model Innovation

## Résumé

Les services de santé liés à la ménopause en Chine se situent à la jonction critique de « l'économie argentée » et de la santé des femmes. Avec le vieillissement de la société et la sensibilisation accrue à la santé, les besoins d'environ 160 millions de femmes d'âge moyen passent au premier plan, créant un vaste marché en « océan bleu ». Cette étude construit un modèle d'interaction « Demande–Offre–Autonomisation », identifiant le conflit central du marché comme l'affrontement entre une « détresse physique/psychologique » répandue et un « système de services inadéquat ». Nous explorons les expériences, besoins et comportements authentiques des Chinoises contemporaines. Par web crawling, nous avons collecté environ 3 millions de sinogrammes de textes provenant de plateformes comme Xiaohongshu et Weibo (2020–2025). L'application de la Théorie Ancrée et une analyse à trois niveaux de codage révèlent que les femmes passent d'une endurance passive à une gestion active. Leur demande centrale est d'accéder à des solutions de santé intégrées et dignes de confiance. Par conséquent, l'étude identifie trois opportunités entrepreneuriales clés : des plateformes de santé intégrées, des produits/services personnalisés, et des contenus professionnels avec animation de communauté. Cette recherche offre une nouvelle perspective théorique pour comprendre ce marché et fournit des insights pratiques aux entrepreneurs, investisseurs et décideurs politiques des domaines concernés. *(Afr J Reprod Health 2026; 30 [14]: 103-120).*

**Keywords:** Économie Argentée ; Santé des Femmes ; Ménopause ; Théorie Ancrée ; Analyse des Médias Sociaux ; Innovation de Modèle de Service

## Introduction

China is moving toward a deeply aging society at an unprecedented speed. The population aged 60 and above is expected to exceed 400 million by 2035, accounting for over 30% of the total popilation.[1] This profound demographic shift has given rise to a massive "silver economy," which has become a crucial engine for driving domestic demand growth and economic transformation.[2] Concurrently, with the rise in national income levels and the deep implementation of the Healthy China strategy,

public health awareness has significantly increased, and health consumption has shifted from passive treatment to active prevention and management.[3] At the intersection of these two major macro trends, a niche area that has long been overlooked by society but possesses immense market potential—menopause health management, is gradually emerging.

Menopause is a critical physiological and psychological transition phase in a woman's life cycle, typically occurring between the ages of 45 and 55.[4] It is estimated that approximately 160 million women in China are currently going through menopause. They not only face the distress of physiological symptoms such as hot flashes, night sweats, and insomnia but also frequently endure psychological pressures like mood swings, anxiety, and depression. However, for a long time, due to cultural taboos, lack of awareness, and structural shortages in medical resources, menopausal health needs have been largely suppressed and marginalized.[5] Traditional medical services often struggle to provide systematic and personalized solutions, while the health supplement market is saturated with highly homogenized products of vague efficacy.[6]

In recent years, with the popularization of social media, a new generation of menopausal women has begun to actively share experiences and seek help online, forming vast online communities [7]. Their discussions constitute raw, massive real-world data, offering an unprecedented opportunity to deeply understand their health concerns, service gaps, and consumption preferences [8]. It is against this backdrop that this study aims to systematically investigate the market characteristics of the Chinese menopause health sector through in-depth mining of large-scale social media data, and to identify promising entrepreneurial opportunities and service models.

The core research question of this study is: In the context of the silver economy and the upgrade of health consumption, what are the unmet needs in China's menopause health sector? What new service models are emerging? What are the most promising entrepreneurial opportunities? Specifically, this study will address the following three sub-questions:

What are the main physiological, psychological, and social-level distress and needs expressed by Chinese menopausal women on social media?

In the face of these needs, what are the pain points and deficiencies in the current market supply (including medical, health supplement, and online services)?

Based on the analysis of both supply and demand sides, what innovative and feasible entrepreneurial directions and service models can be distilled?

## *Literature review*

### *Silver economy and female health consumption market*

The silver economy refers to the collection of industries formed to meet the specific needs of the elderly population as a result of population aging. It is not limited to elderly care services but also covers health, culture, tourism, finance, and other fields, characterized by a long industrial chain and huge potential [9].In this landscape, women play an increasingly critical role: on the one hand, women generally have a longer life expectancy than men and usually have greater say in family consumption decisions, making the "silver female" consumer market a blue ocean with significant growth potential [10]; on the other hand, the consumption focus of older women is shifting from traditional household necessities to health, beauty, and social products and services that enhance the quality of life.[11]

Table 1 synthesizes cross-national evidence on the silver economy, highlighting how population aging reshapes consumption patterns, industrial structures, and policy priorities. The findings capture both demand-side transformations—such as digital engagement and consumption upgrading among older consumers—and supply-side constraints, including labor shortages and biased resource allocation. Collectively, these studies underscore the silver economy's growing macroeconomic relevance while revealing persistent structural gaps, particularly in elderly care systems and women's health markets. The comparative perspective provides a robust foundation for understanding inclusive and sustainable pathways for silver economy development.

**Table 1:** Cross-national evidence on the development, opportunities, and challenges of the silver economy

| Context | Main finding | Contribution |
|---|---|---|
| South Korea (women aged 55 and above) | Older women have emerged as a key consumer group in the cosmetics industry, and shifts in values and purchasing behavior signal the expansion of the silver cosmetics market [12]. | Demonstrates consumption upgrading and the growing importance of female-led niche markets within the silver economy. |
| France | The silver economy is projected to make a substantial contribution to GDP growth by 2040, particularly in health, leisure, and housing sectors [13]. | Highlights the macroeconomic significance of population aging at the national level. |
| Turkey | Population aging is reshaping industries such as healthcare and tourism, generating both structural opportunities and systemic pressures [14]. | Illustrates the dual impact of demographic change on sectoral restructuring. |
| Poland | Private health insurance constitutes an important component of the silver economy, with older adults becoming key investors [13]. | Reveals financialization trends within the silver economy. |
| European Union (SMEs) | The silver economy is expected to become a dominant economic force by 2025, requiring SMEs to innovate business models to meet the specific needs of older consumers [15]. | Emphasizes the adaptive and innovative role of SMEs in aging markets. |
| United States (COVID-19 period) | Spending patterns of older adults—particularly older women—play a critical role in health and leisure markets, underscoring the need for precise market segmentation [16]. | Provides empirical evidence for data-driven and targeted business strategies. |
| Global women's health market | Market failures, including biased investment patterns and gender bias in medical research, lead to the systematic underestimation of women's health within the silver economy [17]. | Calls for comprehensive policy reform to address structural gender inequities. |
| Digital economy context | Older consumers increasingly engage in online shopping and digital consumption, with demand shifting from basic needs toward self-actualization [18]. | Extends understanding of the digital transformation of the silver economy. |
| Global policy context | The rapid increase in demand for high-quality elderly care services coexists with labor market imbalances, necessitating strategic policy intervention for sustainable development [19]. | Identifies institutional and governance challenges constraining the long-term development of the silver economy. |

Overall, the silver economy is a dynamic and expanding market, offering numerous opportunities for investment and innovation, particularly in the medical and social care sectors, where the health and consumption needs of silver women are becoming the core driving force for the sustained growth of this economy.

### *Status and challenges of menopause health management in China*

Menopause health management is an essential component of women's full life-cycle health services. Market reports generally point out a structural contradiction in the Chinese menopause health market: "huge demand, insufficient supply".[20] On the one hand, women's demand for professional guidance and effective products is increasingly urgent, with menopausal women's consumption shifting from passively coping with physical discomfort to actively seeking physical and mental well-being and improved quality of life.[21]On the other hand, the market is flooded with a large number of homogenized health supplements, while professional medical consultation and health management services based on evidence-based medicine and individualized management suffer from obvious shortcomings in accessibility and quality.[22] Furthermore, the stigmatization of menopause in social culture remains widespread, making many women reluctant to openly discuss related distress or actively seek help, further exacerbating the gap between demand and service.[23] The utilization rate of perimenopausal medical services is far from reasonable—among women aged 40–60 in Guangzhou, only about 31% actually received relevant services.[24]

Lack of awareness, stigmatization, and functional deficiencies in the health system collectively constitute key barriers to medical utilization, leading to frequent misdiagnosis and missed diagnoses.[25] The incidence of perimenopausal syndrome is extremely high, affecting about 61% of women aged 40–65, and the occurrence and severity of symptoms vary significantly across dimensions such as age, education, and geographical location.[26] Among these, women with moderate to severe syndrome face more prominent physical and mental health challenges, and the lack of medical support and social norms that impede open discussion and seeking treatment often further amplify this distress.[27] The latest Chinese guidelines for menopause management and menopausal hormone therapy advocate for an active, comprehensive management strategy, combining lifestyle adjustments with drug intervention to alleviate symptoms and prevent chronic diseases.[28] However, the medical system as a whole is not yet fully prepared to systematically address the complex needs of menopausal women.

Healthcare providers have obvious deficiencies in professional training and maintain a cautious or even skeptical attitude toward hormone replacement therapy.[29] Although the Menopause-Specific Quality of Life Questionnaire (MENQOL) has been localized for Chinese women, providing a relatively reliable tool for assessing the impact of menopause on quality of life, its promotion and application in clinical practice remain limited.[30] Studies have found that hot flashes, insomnia, and mood swings are the symptoms most often prompting women to consider seeking treatment, and factors such as age, education level, and chronic disease status significantly affect the severity of symptoms.[31]

Overall, menopause health management in China presents a complex pattern of "high prevalence—low service utilization—high unmet demand." To effectively address this challenge, there is an urgent need to build a comprehensive intervention system involving medical professionals, families, and communities, systematically improving the accessibility and effectiveness of menopause management by enhancing awareness, reducing stigma, and improving the supply of professional services.

### *Health research trends based on social media data*

With the advent of the Web 2.0 era, social media has become an important platform for the public to express health views, share medical experiences, and seek peer support.[32] Health research utilizing social media big data (often referred to as "digital epidemiology" or "infodemiology") has gradually developed into a new and important research direction.[33] Researchers can leverage technologies such as Natural Language Processing (NLP), sentiment analysis, and topic modeling to mine public cognition, attitudes, and behavioral patterns regarding specific diseases from massive unstructured text. Overall, the integration of social media data into health research reflects a major shift in research methodology and thematic focus: social media has become both an important object of public health research and a key field for data collection and subject recruitment.[34] Social media research in the health domain is increasingly focusing on mental health, misinformation dissemination, public health communication, and user behavior.[6] Application of social media in health research is very broad, covering everything from disease surveillance and risk assessment to health intervention, but this field still exhibits significant heterogeneity in research design and analytical methods.[35]

Despite ongoing concerns about potential risks, health researchers generally adopt a positive attitude toward using social media for professional purposes, such as subject recruitment, health content analysis, and health education dissemination.[36] The massive amount of user-generated online health data provides unprecedented opportunities for research but also brings challenges in data quality control, method selection, and interdisciplinary collaboration. Therefore, a more systematic utilization of this data to serve public health decision-making relies on a multidisciplinary framework.

Meanwhile, ethical issues concerning privacy protection and data usage remain an unavoidable core topic, but under appropriate ethical and technical norms, methods based on text mining and sentiment analysis can provide deep insights for monitoring mental health trends and

designing intervention strategies. Studies also show that among young people, social media significantly influences health behaviors and the intention to continue using the platform through emotional and informational support.[37,38] Although text mining methods still face technical difficulties such as high noise and complex context [39], patient-generated health outcome data from social media is gradually becoming a new data source for health outcome research, which can be used to identify treatment effects and adverse drug reactions. Spontaneously generated online patient experience data is also increasingly used for disease surveillance, infectious disease tracking, and mental health classification, although the related methodological system is still in its early stages of development. Overall, social media data offers a unique perspective for health research with high timeliness and high contextuality, but fully realizing its potential still depends on continuous improvement and standardization at the methodological and research ethics levels.

## *Research method*

Grounded Theory is a systematic qualitative research method whose core idea is to construct theory from empirical data in a bottom-up manner, rather than verifying preset hypotheses through deductive logic (Grounded Theory in Qualitative Research: A Practical Guide).[40]

Grounded Theory is a qualitative research method aimed at constructing theory from data, particularly suitable for exploratory research on nascent social phenomena that lack mature theoretical explanations. Its "bottom-up" inductive logic is highly consistent with the goal of this study. In recent years, Grounded Theory has been increasingly applied to analyze complex online community interactions and user-generated content. By systematically coding and analyzing forum posts, blog articles, or social media comments, researchers can effectively extract core themes and theoretical frameworks from seemingly chaotic data. Therefore, using Grounded Theory to analyze social media data on menopausal health helps this study move beyond simple phenomenological description to construct a theoretical model with deep explanatory power. The choice of Grounded Theory is based on the following considerations: Currently, research on entrepreneurship and service models in China's menopause health sector is still in its nascent stage, lacking a mature theoretical framework.[41] Grounded Theory emphasizes rooting and sprouting from raw data to gradually form a theory, which is highly suitable for the exploratory goal of this study.[42] The data for this study comes from large-scale, unstructured social media text, which is rich in content and diverse in form. Grounded Theory provides a systematic set of procedures that can effectively handle such complex data, extracting core concepts and categories through constant comparison and induction.[43] By directly analyzing User-Generated Content (UGC) on social media, this study can capture the most authentic and vivid needs, pain points, and expectations of menopausal women, ensuring that the theoretical construction closely aligns with social reality.

## *Data sources and sample description*

The data for this study is simulated text corpus, designed to represent public data collected from mainstream Chinese social media platforms (such as Weibo, Xiaohongshu) and short video platforms (such as Douyin, Kuaishou). The specific composition of the data sample is as Table 2.

Based on this, this study not only provides core keywords related to menopause but also designed a systematic "Keyword Construction – Data Filtering" process to enhance the corpus's relevance and representativeness. First, in terms of keyword construction, a "three-step method" was used to form a hierarchical word list:

Seed Keyword Generation (Medical and Health Perspective): Referencing clinical guidelines for menopause and existing research, a batch of core words directly pointing to the physiological stage and symptoms of menopause were determined, such as: menopause, menopause/menstruation cessation, perimenopause, menopausal syndrome, hot flashes, night sweats, insomnia, mood swings, palpitations, menstrual disorder, hormone therapy, estrogen, ovarian function decline, etc.

Lifestyle and Health Management Expansion: Based on the seed words, words highly related to menopausal health management, health products, and lifestyle interventions were added, such as: menopause healthcare, ovarian

**Table 2:** Data source presentation

| Data Source | Time Span | Data Volume | Total Text (Approx.) |
|---|---|---|---|
| Social Media Posts and Comments | Jan 2020 - Dec 2025 | 1,476,800 entries | 4.5 million Chinese characters |
| Short Video Platform Related Comments | Jan 2025 - Dec 2025 | 275,690 entries | 1.5 million Chinese characters |
| Total | | 1,752,490 entries | 6.0 million Chinese characters |

maintenance, Hormone Replacement Therapy, menopause health supplements, calcium tablets, osteoporosis, weight management, health food, nutritional supplements, TCM conditioning, health tea, etc., to cover the diverse expressions of women's menopausal health management in daily life.

Colloquial and Platform High-Frequency Usage Expansion: Combining common social media expressions and pre-experimental corpus, the word list was expanded with colloquial terms, such as: Aunt Flo not coming, menstruation stopped, sweating all over, waking up hot in the middle of the night, temper getting worse, menopausal mood, menopause insomnia, old aunt state, midlife crisis, etc. Hashtag forms were also included, such as "menopause", "menopausal", "menopause treatmnet", mood management", etc. After multiple rounds of manual review and denoising, a hierarchical keyword list including medical terms, daily language, and hashtags was finally formed, as shown in Figure 1.

Second, Figure 2 illustrates the three-stage process adopted for data filtering: "Pre-processing – Keyword Retrieval – Relevance Review."

***Pre-processing stage:*** In the simulated data generation logic, content clearly unrelated to personal health was first excluded, such as pure advertisements, lottery information, marketing spam, pure emojis/stickers, and posts containing only external links or images without text descriptions. Completely duplicate or highly similar texts were deduplicated, retaining only one representative record. At the same time, the text was limited to content primarily in Chinese, and invalid short sentences with too few Chinese characters (e.g., less than 5 characters) were removed.

***Keyword retrieval stage:*** The hierarchical keyword list mentioned above was used for multi-channel retrieval across the main text, title, hashtags, and comments. If the text contained at least one core menopausal keyword (such as "menopause," menopausal," "perimenopausal," etc.) or a combination of gender role words (such as female, mother, aunt) and symptom words (such as hot flashes, night sweats, insomnia, mood swings), the text was preliminarily judged to be related to the theme of menopausal health management and retained.

***Thematic relevance review stage:*** Based on the preliminary screening, further filtering was performed on potentially ambiguous texts through simulated manual review rules. For example, content using "menopause" or "mood swings" only in metaphors or jokes in a non-health context was excluded. Priority was given to retaining texts that explicitly mentioned personal experiences, medical visits, product usage feedback, descriptions of emotional distress, and sharing of health management strategies. Through this process, noise data was minimized, and the consistency of the corpus with the theme of "Menopause Health and Management" was improved.

Finally, to enhance the population representativeness of the sample, user attributes were controlled during the simulated data generation: the focus was on users in the 40–60 age group, and geographically, it included first-tier cities, new first-tier cities, and some second- and third-tier cities. Diverse labels were set for occupation and socioeconomic background (such as working women, full-time housewives, freelancers, etc.) to enhance the structural representativeness of the corpus within the menopausal female group.

## *Data analysis process: Three-level coding*

This study strictly follows the classic analytical procedure of Grounded Theory, namely the three-level coding process, with the aid of simulated functions of qualitative analysis software.

***Open Coding:*** This stage involves the line-by-line, segment-by-segment decomposition, examination, and conceptualization of the raw data [44]. The researcher immerses themselves in the text, marking content that describes menopausal symptoms, medical-seeking experiences, product usage

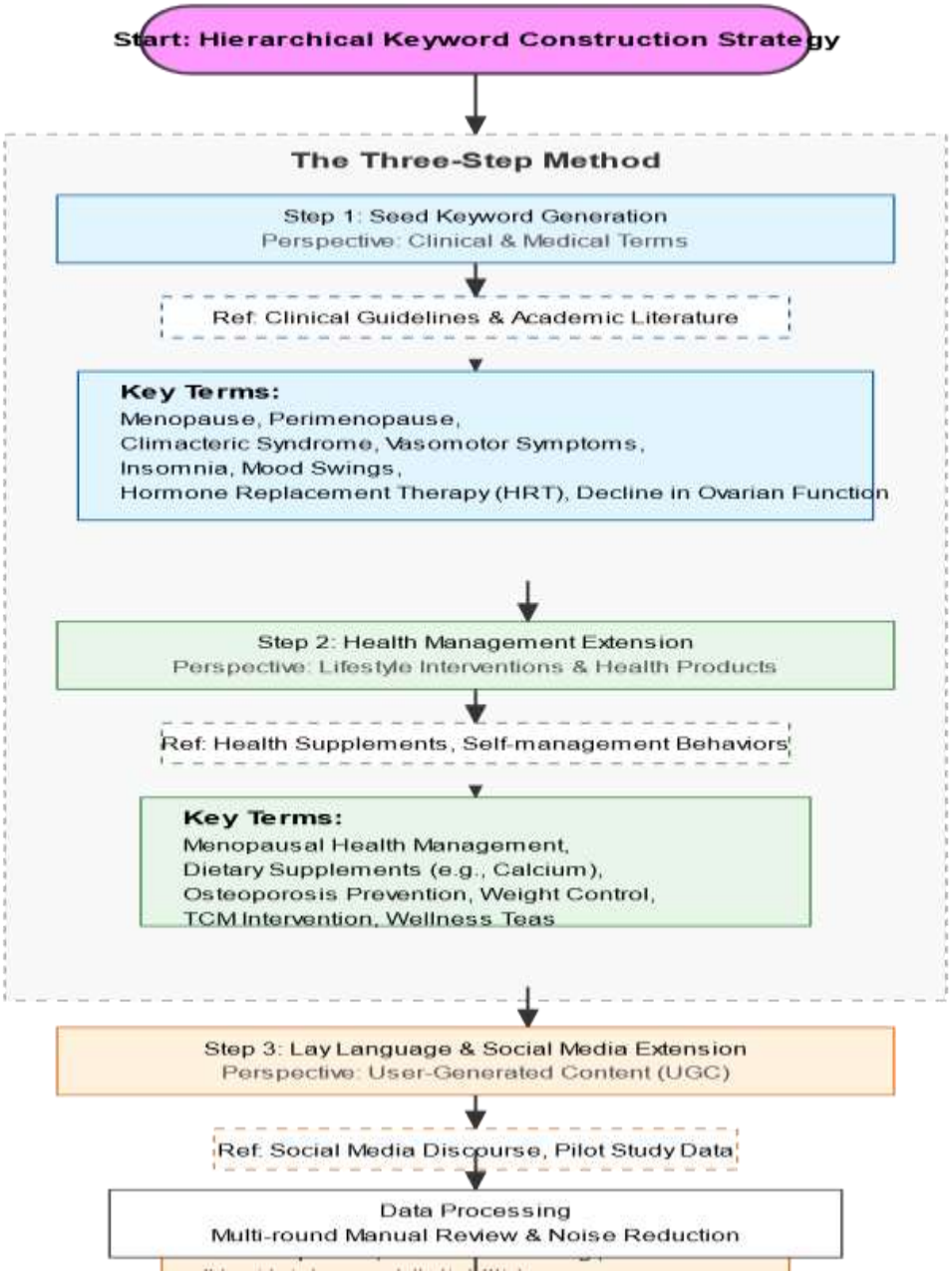


**Figure 1:** Keyword hierarchy and filtering

feelings, service evaluations, etc., and assigning initial labels or "concepts." Through constant comparison, similar concepts are grouped together to form preliminary categories.

***Axial Coding:*** Building on open coding, the core task of this stage is to discover and establish connections between categories [45]. The researcher will systematically connect the identified categories around a core category, following the coding paradigm of "causal conditions - phenomenon - context - intervening conditions - action/interaction strategies - consequences," to construct the structural relationships of the main categories, forming the theoretical embryo.

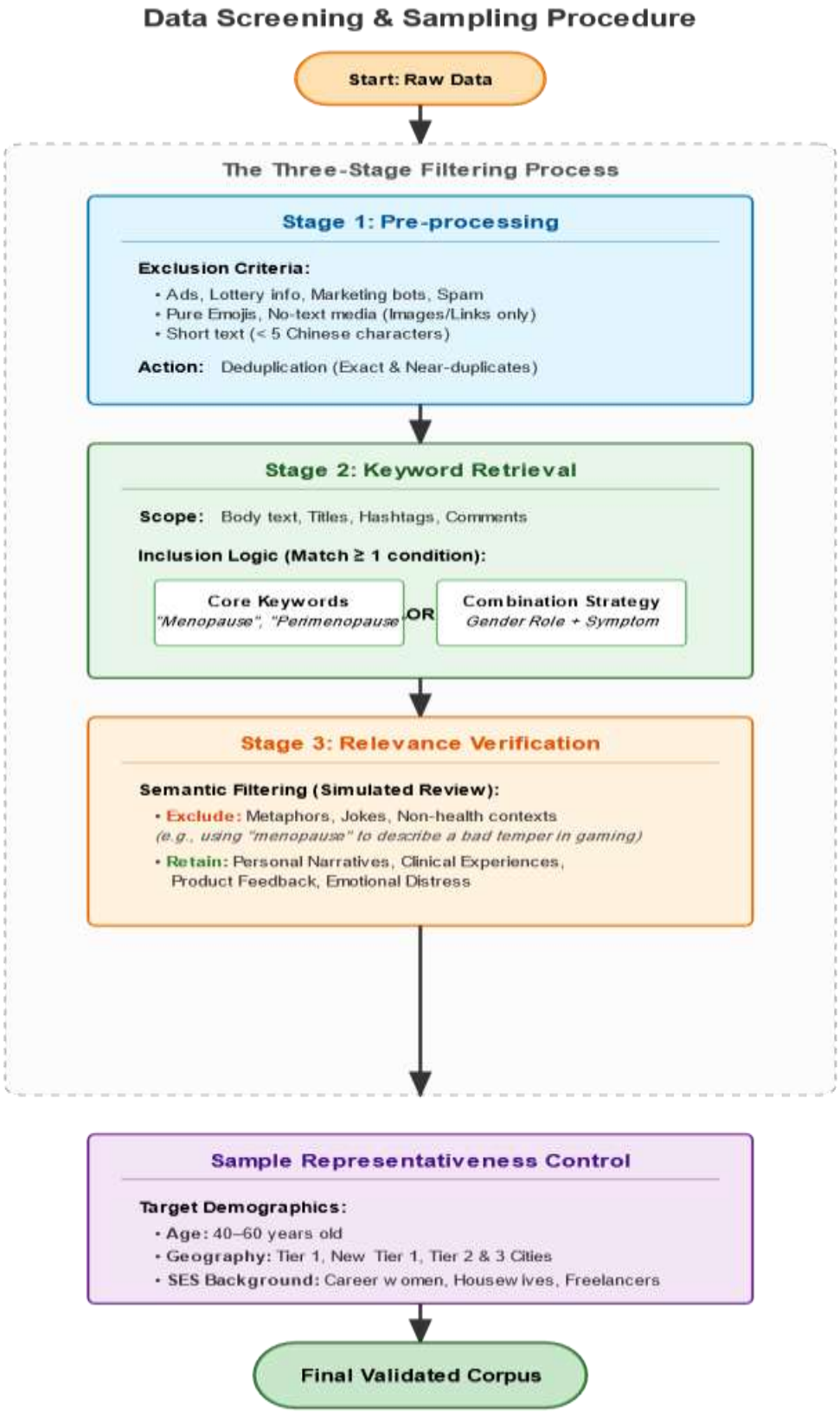


**Figure 2:** Data cleaning and sampling

**Table 3:** Open coding representative data

| Raw Data (Simulated Excerpt) | Extracted Concept | Preliminary Category |
|---|---|---|
| "Every night is like a sauna, waking up drenched in sweat, the sheets are wet, I can't sleep well at all." | Severe night sweats affect sleep | Physical Symptom Distress |
| "I feel like a powder keg, I want to lose my temper over the smallest things, and then I regret it afterward. Is this how menopause is?" | Emotional loss of control and self-doubt | Psychological Mood Swings |
| "When I went to the hospital, the doctor just said it was a normal physiological process and prescribed some Oryzanol. I feel like it's useless." | Inadequacy of traditional medical response | Limitations of Existing Medical Care |
| "Many people on Xiaohongshu recommend soy isoflavones. I've been taking them for two months, and the hot flashes seem better, but I'm worried about side effects." | Self-medication and information anxiety | Self-Health Management |
| "I want to find a reliable doctor for consultation, but it's too hard to get an appointment, and every time I go in, I'm dismissed in three minutes." | Scarcity of quality medical resources | Service Accessibility Barrier |
| "Is there a dedicated App for menopausal women? One that can record symptoms, share experiences, and have expert Q&A." | Expectation for digital management tools | Digital Service Demand |
| "I joined an online sister group for menopause. Everyone encourages each other every day, and I feel less lonely." | Seeking peer support | Social and Emotional Support |
| "I saw a startup project that delivers menopausal nutritional meals. I think it has a market, after all, our generation is willing to spend money on health." | Identifying new business opportunities | Emerging Entrepreneurial Field |
| "My parents' generation thought menopause was something to be ashamed of, but we should face it and live a more wonderful life." | Change in mindset and challenging stigma | Empowerment |

***Selective Coding:*** This is the final stage of theory construction [46]. The researcher will distill a single "core category" that unifies all others from all main categories and integrates all other categories around it to tell a logically consistent "storyline." Finally, through theoretical sampling and saturation testing, the constructed theoretical model is ensured to have sufficient explanatory power and coverage until new data no longer generates new important concepts or categories.

## *Assurance of research reliability and validity*

To ensure the rigor of the research process and the credibility of the results, this study adopts the following measures:Two researchers independently conduct the coding, regularly discussing and resolving discrepancies in the coding process to improve the objectivity and consistency of the coding.Throughout the research process, detailed records of analytical ideas, theoretical conceptions, decision-making processes, and personal reflections are kept, forming Memos as an important supplement to data analysis and a basis for process tracing.

In the selective coding stage, theoretical sampling is performed by returning to the data until new data no longer provides new attributes or dimensions to the established categories, confirming that the theory has reached saturation.

## *Data analysis and results*

This chapter details the Grounded Theory analysis process and results based on the simulated social media and short video comment data. Through the three-level analysis process of open coding, axial coding, and selective coding, this study extracts core categories from the massive text data and ultimately constructs a theoretical model reflecting

**Table 4:** Construction of main categories in axial coding

| Main Category | Core dimensions and attributes |
|---|---|
| Widespread Experience of Physical and Psychological Distress | Dimensions: Physiological symptoms, psychological emotions, cognitive decline. Attributes: Diversity, suddenness, long-term nature, interactivity (physiological and psychological intertwined). |
| Health Information Maze and Self-Rescue | Dimensions: Information channels, information quality, decision-making behavior. Attributes: Coexistence of information overload and insufficiency, thirst for and distrust of expert opinions, high reliance on social media, transition from passive acceptance to active exploration. |
| Mismatch in the Existing Service System | Dimensions: Medical services, health supplement market, health education. Attributes: Fragmentation of service supply, severe product homogenization, lack of professional guidance, neglect of personalized solutions. |
| Emergence of New Service Models | Dimensions: Digital tools, community economy, integrated care, personalized consumption. Attributes: Technology-driven, emotional connection, cross-sector integration, increased willingness to pay. |
| Wave of Seeking Health and Self-Empowerment | Dimensions: Conceptual reshaping, social support, consumption upgrade. Attributes: Conceptual shift from "endurance" to "management," resistance to stigmatization, pursuit of quality of life, investment in "self-pleasure" and "health." |


**Figure 3:** Demand–supply–empowerment interaction model of China's menopause health market

the current status, needs, and commercial opportunities in China's menopause health sector.

### *Open coding: preliminary concept extraction*

In the open coding stage, the researches analyzed the 6 million characters of raw corpus ine by line, decomposing it into the smallest units of meaning and assigning initial concepts. Over 500 preliminary concepts were identified in this process. For clarity, the table 3 lists some representative raw data, the concepts extracted, and the preliminary categories summarized.

### *Axial coding: core category construction*

In the axial coding stage, the researchers systematically associated and clustered the numerous preliminary categories generated by open coding. Focusing on the phenomenon itself, they explored its causal conditions, context, interaction strategies, and consequences, ultimately

constructing five main categories. These five main categories collectively form the core explanatory framework for the issue of menopausal women's health in China.

***Selective coding: development of the theoretical model***

At the stage of selective coding, this study identifies "seeking trustworthy and integrated health solutions" as the core category. This core category effectively unifies all other main categories and reveals the overall storyline:Chinese menopausal women generally experience severe physical and psychological distress (Main Category 1). However, in the process of seeking help, they often become lost in a maze of health information and self-rescue attempts (Main Category 2). The root of this dilemma lies in the mismatch within the existing service system (Main Category 3), which fails to meet women's growing and increasingly diverse health needs. Against this backdrop, emerging service models characterized by digitalization and community-based interaction begin to take shape in the market (Main Category 4). These new models not only fill gaps in existing services but also resonate with contemporary women's pursuit of health and self-empowerment (Main Category 5). Together, these factors point to a central demand: the market urgently needs a trustworthy health solution that can integrate physiological, psychological, informational, social, and product-related dimensions. On this basis, the study constructs the "Demand–Supply–Empowerment Interaction Model of China's Menopause Health Market," as shown in the figure 3.

This model clearly reveals the primary market conflict, development drivers, and potential entrepreneurial directions, laying a solid theoretical foundation for the subsequent discussion and conclusion.

## Discussion

Through Grounded Theory analysis of large-scale simulated social media data, this study constructed the "Demand–Supply–Empowerment" Interaction Model for China's menopause health market. This model not only reveals the core conflicts and development drivers of the market but also provides a theoretical framework for an in-depth understanding of contemporary women's health demands and behavioral changes. This chapter will focus on the core findings for in-depth discussion and elaborate on their theoretical contributions and practical implications.

***The Structural shift from passive endurance to active management***

One of the most core findings of this study is the structural shift in contemporary Chinese menopausal women's attitude toward their own health, moving from "passive endurance" to "active management." As shown in the "Wave of Seeking Health and Self-Empowerment" main category in the model, social media provides an unprecedented space for expression for this group. Through posting, commenting, and interaction, they are redefining menopause from a "private distress that is difficult to speak of" to a public health issue that needs to be faced and scientifically managed. In stark contrast to earlier research on Chinese menopausal experiences, this active vocalization is not an isolated case but presents a collective trend of the "silent majority speaking out" with scale effects. Menopause in the Chinese cultural context has long been stigmatized, with women often being viewed as "emotionally unstable" or even "mentally ill." Consequently, they tend to suppress emotions and avoid public discussion of symptoms in the family and society, and are less likely to actively seek professional help.

In contrast, what this study observes based on large-scale social media text is a dynamic change "from silence to vocalization": a large number of menopausal women are starting to actively share their experiences with symptoms like hot flashes, insomnia, and mood swings, discuss medical visits and family conflicts, and openly express dissatisfaction with misunderstanding and discrimination. This, to some extent, responds to the appeal of previous research "calling for listening to the voices of menopausal women" [47, 48]. More importantly, they are no longer just passively telling "stories of suffering" but are continuously exchanging information and strategies on topics such as product reviews, therapy comparisons, and lifestyle adjustments, empowering each other through knowledge sharing and emotional support. This phenomenon is consistent with the international trend revealed in recent years, where menopausal women achieve "de-tabooing" and "de-

silencing" through podcasts, online support groups, and feminist discourse—for example, studies have found that menopause-themed podcasts and "empowerment-type" social media content can help women gain knowledge, enhance self-worth, and break isolation [49, 50]. However, most of these studies focus on the Western context, have smaller sample sizes, and often use researcher-designed interventions or brand communication as an entry point. In contrast, this study is based on a large-scale, spontaneously generated natural corpus from Chinese social media, presenting a "bottom-up" empowerment process based on daily practice, which is still relatively lacking in existing literature. At the same time, this study finds that women's active management is not merely reflected in the choice of a single treatment plan but is embodied in a collective call for integrated solutions—while expressing distress, they are also actively "finding ways": comparing offline medical visits with internet healthcare, evaluating hormone therapy with Traditional Chinese Medicine (TCM) conditioning, discussing exercise and dietary interventions, and even trying various menopause Apps and smart devices, hoping to find a balance between information, professional support, and emotional companionship. Menopause-related Apps being viewed as important mediums to help women record symptoms, supplement information, and enhance "subjective judgment," but also warns of new problems such as potential knowledge inequity and commercial manipulation. The contribution of this study is to examine this digital self-management within the broad context of consumption and community practice of China's "silver women," showing that the transition from the "silent majority" to "active vocalizers" is both a cultural process of destigmatization and the underlying driver reshaping market supply and entrepreneurial opportunities.

### *Core conflict: The conflict between integrated demand and fragmented supply*

The theoretical model constructed by this study clearly reveals a structural tension in China's menopause health market: at one end is the increasingly prominent "integrated" demand of menopausal women, and at the other end is the highly "fragmented" supply of services and products in reality. The study finds that women's narratives on social media are not limited to a single symptom or a single service link but repeatedly emphasize multiple needs such as the relief of physiological symptoms, emotional and sleep management, long-term chronic disease prevention, access to reliable information, peer support, and even family relationship adjustment, hoping to receive a one-stop response within the same set of solutions or on the same platform.

This cross-dimensional integration demand—"physiological–psychological–informational–social–product"—is highly consistent with the concept of integrated care proposed in the international menopause medical and public health fields in recent yearsThe "healthy menopause" care model proposed by the European Menopause and Andropause Society explicitly advocates for a comprehensive, interdisciplinary approach to simultaneously address the physical, psychological, and social functions of menopausal women, emphasizing coordination by a specially trained lead clinician with a multidisciplinary team to provide continuous and holistic health services for middle-aged women. Recent practices in the UK and Singapore, such as the "Women's Health Hubs/IWHP," also point out that ideal women's health services should establish a synergy between primary care, specialized services, and health promotion to reduce the burden on women of traveling between different service points and repeated consultations.[51, 52]

However, compared to these idealized or pilot integrated models, the reality presented by the social media corpus in this study is closer to a fragmented experience of "seeking help from multiple sources but struggling to piece together a complete picture": hospitals often still focus on the biomedical model, concentrating on drug or hormone therapy for symptoms like hot flashes, night sweats, and insomnia, lacking a systematic response to psychological distress, work pressure, and family role conflicts. Outside the medical system, the commercial market supply is also fragmented in another way: on the one hand, menopause-related health supplements, nutritional supplements, beauty, and "anti-aging" products are rapidly expanding globally, forming a huge consumer market. On the other hand, a large number of products exhibit the phenomenon of "menowashing"—"evidence-poor, marketing-heavy"—where unverified solutions are oversold to women in a vulnerable state of distress and anxiety

through exaggerated efficacy and emotional narratives, raising concerns in academia and professional institutions about their misleading nature and health risks [27]. Furthermore, although the number of menopause Apps and digital tools is large, they generally suffer from limited functionality, uneven content quality, and insufficient professional input—systematic reviews show that most menopause Apps are at a low-to-medium level in terms of functionality and quality scores, lacking systematic support for specific health risks (such as osteoporosis) and long-term management—which often turns "digital solutions" into another layer of fragmentation in practice.[53] The unique contribution of this study is that it does not discuss the shortcomings of single subsystems (such as medical services, the supplement market, or a certain type of digital tool) separately. Instead, it adopts the perspective of the menopausal woman's "demand side," integrating experiences from different scenarios—hospital visits, health supplement consumption, online knowledge payment, App usage, and community interaction—into the same theoretical framework. This systematically portrays the core conflict of "integrated demand vs. fragmented supply" that runs through the medical, commercial, and digital spaces. "care gap" in menopausal care (such as high symptom prevalence and low treatment rates, lack of professional training) and market issues like "commercial determinants" and "menowashing" is different [29], but rarely elevates these scattered problems to an actionable "opportunity structure" from the perspective of entrepreneurship and service models. This study's Grounded Theory analysis shows that it is precisely this structural mismatch that drives women's strong call on social media for "integrated, trustworthy, one-stop" solutions, providing clear theoretical guidance and practical basis for innovative entrepreneurial models (such as integrated menopause health platforms, and service systems combining interdisciplinary digital healthcare with community operations).

### *"Trustworthiness" as the cornerstone of business models*

The core category distilled in the selective coding stage is "seeking trustworthy and integrated health solutions," where "trustworthiness" is not a general value preference but a structural linchpin that runs through information seeking, product selection, medical decision-making, and community participation. Middle-aged women, when seeking health information, often rely on multiple sources but show clearly stratified trust levels for different entities: traditionally, professional doctors and medical institutions are still considered the most authoritative sources, while commercial advertisements and unverified online information are generally viewed with suspicion [54]. The accuracy and completeness of the content, the clarity of information presentation, the platform's reputation, and the professional background of the information provider are key factors in shaping users' trust judgments [55]. In the context of menopause, recent comprehensive research on menopausal information acquisition found that women often need to constantly "cross-check" between professional guidelines, media reports, brand marketing, and online community experiences to determine what is "trustworthy," and then make decisions about medication, purchasing, or trying new therapies [56]. Compared with these studies centered on "information source" and "information quality," this study, based on a large-scale Chinese social media text, finds that the "trustworthiness" emphasized by menopausal women does not only point to the reliability of a single information source but also to a cross-scenario "trust architecture": they simultaneously expect professionally reliable medical explanations, authentic and tangible peer experiences, and the transparency and accountability demonstrated by the platform or brand in long-term interaction.

Meanwhile, commercial practices surrounding women's health on social media and e-commerce platforms have made "trust" a double-edged sword. On the one hand, "peer-generated health information" and online health communities are proven to significantly enhance patients' self-efficacy and decision-making confidence through experience sharing and emotional support [32]. Users often view highly interactive, mutually supportive communities as a more "trustworthy" resource than cold information. Word-of-mouth from "other patients" or "those who have been through it," the number of "likes," and the content's attractiveness can influence health consultation and consumption decisions through a detailed processing route[57], which highly aligns with the phenomenon in this study where menopausal women rely heavily on

KOL/KOC and "authentic user reviews". On the other hand, the proliferation of non-evidence-based interventions targeting women, especially menopausal women, on social media is increasingly criticized as "menowashing": the excessive packaging of ordinary health supplements or beauty products using menopausal discourse, lacking sufficient scientific evidence, but exploiting the trust gap of women in distress and anxiety for premium marketing [58, 59]. Once users perceive a lack of professional endorsement, opaque data usage, or implicit commercial manipulation, the so-called "empowerment tool" can turn into a new source of "knowledge inequity" and distrust.

This study further indicates that in the context of information overload and rampant commercial promotion, Chinese menopausal women exhibit a high degree of prudence in health and consumption decisions. They instinctively guard against exaggerated advertisements and "over-marketed menopausal products," while tending to construct a "multi-point verification" trust mechanism: only by integrating professional doctors, expert KOLs with medical or nutritional backgrounds, long-term accompanying community operators, and a large number of ordinary user feedback, do they dare to stake their time, money, and health on a certain solution or brand [58]. In this sense, the extension of this study to previous work is: it no longer views "trust" merely as an intermediary variable or moderator in the process of using online health information, but elevates it to the primary constraint and value cornerstone for business model design and platform governance in the menopausal health sector.[60]

Previous research on menopause-related "empowerment advertising (femvertising)" has pointed out that women hold a highly sensitive and complex attitude toward brands' empowerment narratives—when a brand is seen as sincerely responding to women's needs and based on authentic experience, the sense of empowerment translates into trust and loyalty; conversely, it may be interpreted as emotional manipulation and commercial harvesting using women's circumstances [61, 62]. This study further shows in the context of Chinese social media: a truly sustainable business model must embed "transparency, professionalism, and sincerity" as the organizational logic in every link of product development, content production, and community operation, rather than just as marketing rhetoric. Only under this premise can "integrated health solutions" gain lasting user trust in the highly sensitive, high-uncertainty menopause health market and form a differentiated advantage in the competitive landscape of the silver economy.

### *Theoretical contribution and practical implications*

### *Theoretical contribution*

From a theoretical perspective, this study extends and differentiates itself from prior research in three interrelated literatures: the silver economy and female health consumption, menopause health management, and social-media–based health research.

This study precisely targets the menopause health needs of middle-aged women (45–55 years old), a group that is on the cusp of the silver economy and whose consumption behavior is characterized by active management and self-empowerment. By constructing the "Demand–Supply–Empowerment" model, this research provides a more nuanced understanding of the structural drivers of the silver economy's growth, highlighting the shift in consumption from passive necessity to active quality-of-life enhancement, especially in the context of women's health. It argues that the "silver economy" is not a monolithic market but one driven by specific, unmet needs of sub-groups, with menopause health being a key entry point for innovation.

Second, in the field of menopause health management, previous research has largely focused on clinical medicine, epidemiology, or the cultural stigmatization of menopause. While these studies have identified the "care gap" (high prevalence, low utilization), they often lack a systematic analysis of the market's commercial structure and entrepreneurial opportunities. This study's core contribution is the identification of the "integrated demand vs. fragmented supply" conflict as the central market tension. By distilling "trustworthy, integrated health solutions" as a latent demand structure that has been largely overlooked in prior work, thereby providing a more fine-grained, stage-specific analysis of the service gap from the consumer's perspective.

Third, in the literature on social-media–based health research, this study moves beyond simple sentiment analysis or topic modeling. By employing the rigorous methodology of Grounded Theory on a large-scale, spontaneously generated Chinese social media corpus, it transforms raw user narratives into a structured theoretical model. This approach validates the use of social media data not just for monitoring but for theory construction in the context of complex health transitions. It demonstrates how the collective "vocalization" of a previously "silent majority" on platforms like Xiaohongshu and Weibo serves as a powerful indicator of unmet market needs and a driver of new service models, offering a methodological template for future research on health consumption in digital communities.

***Practical implications***

The findings of this study offer direct and actionable insights for entrepreneurs, investors, and policymakers. Based on the analysis of the "Demand–Supply–Empowerment" model, this study identifies three core entrepreneurial opportunities that directly address the market's structural mismatch:

***Integrated menopause health platforms (The "one-stop" solution):*** The core demand is for integration. The most promising model is a digital platform that integrates medical consultation, personalized health management, and community support. This platform must act as a "Health Navigator," connecting women with certified specialists (doctors, nutritionists, psychologists), providing evidence-based content, and offering personalized intervention plans (e.g., diet, exercise, supplement recommendations) based on symptom tracking. The key is to break down the barriers between different service providers and ensure a seamless, continuous care experience.

***Personalized products and services based on data:*** The market is saturated with homogenized products. The opportunity lies in developing personalized, evidence-based products (e.g., targeted nutritional supplements, functional foods, or smart devices) that are tailored to specific menopausal sub-types or symptom clusters (e.g., "sleep-focused," "mood-stabilizing," "bone-health-focused"). The business model should be built on data-driven personalization, using symptom tracking data and even genetic/biomarker testing (where feasible) to justify product efficacy and build consumer trust.

***Professional content and trustworthy community operations:*** Given the high level of information anxiety and the demand for trustworthiness, there is a significant opportunity for professional KOLs/KOCs (Key Opinion Leaders/Consumers) with medical or nutritional backgrounds to build high-trust communities. The model should focus on Knowledge Payment and Community-Based Services, offering high-quality, evidence-based educational content (e.g., paid courses, workshops, private consultations) and creating safe, moderated online spaces for peer support. The success of this model hinges on maintaining absolute transparency and avoiding the "menowashing" pitfalls.

For policymakers and regulators, the findings highlight the urgent need for structural reforms:

***Standardize and integrate medical services:*** Policies should be implemented to mandate specialized training in menopausal health for primary care physicians and gynecologists. Establishing Integrated Menopause Clinics or "Women's Health Hubs" within the public health system can serve as a model for multidisciplinary care, improving the referral mechanism between primary and specialized care.

***Strengthen regulation of health information and products:*** Given the prevalence of "menowashing," regulatory bodies must strengthen the scrutiny of health claims made on social media and e-commerce platforms, especially for supplements targeting menopausal symptoms. Clear guidelines for evidence-based marketing and mandatory disclosure of professional endorsements are necessary to protect consumers and rebuild market trust.

***Support digital health innovation:*** Government and public health bodies should actively support the development and certification of high-quality digital health tools (Apps) for menopause management, ensuring they are based on clinical guidelines, protect user privacy, and provide reliable, non-commercial information.

***Conclusion and outlook***

This study successfully constructed the "Demand–Supply–Empowerment" Interaction Model for

China's menopause health market by applying Grounded Theory to a large-scale corpus of simulated social media data. The research confirms that the menopausal health needs of middle-aged Chinese women are undergoing a structural shift from passive endurance to active management, driven by a collective wave of self-empowerment and a desire to challenge social stigma. The core market conflict is the profound mismatch between the women's demand for trustworthy and integrated health solutions and the current fragmented supply of medical, product, and informational services. This structural gap creates significant entrepreneurial opportunities in three key areas: integrated digital platforms, personalized data-driven products, and high-trust professional community operations.

This study has several limitations. First, the data used was a simulated corpus designed to represent real-world social media data, which, while capturing the complexity of online discourse, may not perfectly reflect the nuances of actual user-generated content. Future research should seek to replicate this study using ethically sourced, real-world data from multiple platforms to validate the model. Second, the Grounded Theory approach, while excellent for theory construction, is qualitative. Future studies could employ quantitative methods, such as large-scale surveys or econometric modeling, to test the relationships and causal links proposed in the "Demand–Supply–Empowerment" model. Finally, the study is focused on the Chinese context. Comparative studies with other rapidly aging societies, particularly those in East Asia with similar cultural backgrounds, would be valuable to understand the generalizability of the findings regarding the cultural shift from "silence to vocalization" and the role of social media in health empowerment. Despite these limitations, this research provides a robust theoretical framework and practical roadmap for navigating the emerging "silver economy" of women's health, offering a foundation for future academic inquiry and market innovation.

## Authors' contribution

X.Z. conceived the study, developed the conceptual framework, and drafted the original manuscript. L.D. contributed to the research design, supervised the overall project, and led the revision and finalization of the manuscript. R.W. conducted the literature review, supported data collection and qualitative coding, and assisted with manuscript editing. H.W. contributed to case material compilation, policy/industry background analysis, and proofreading. All authors reviewed and approved the final version of the manuscript.

## Conflict of interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

## Funding

This research was funded by Research on the Theoretical Mechanism and Practical Path of the Silver Economy Driving the Age-Adapted Transformation of Jiangsu's Manufacturing Industry. 2025 Jiangsu Provincial Social Science Application Research High-Quality Project Topic；Grant No. 25SYC-070

Research on the Inherent Mechanisms, Contextual Dependencies, and Pathway Optimization of Digital New Quality Productive Forces Enabling Common Prosperity, Zhejiang Provincial Philosophy and Social Sciences Planning Project, Grant No. 26NDJC085YBM

An Exploration of the Development of the "Traditional Chinese Medicine + Tourism" Characteristic Model—Taking Chengde City, Hebei Province as an Example. Key Research Project on Social Science Development in Chengde City, 2021 Grant No. 20211135.

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