Title: Addressing the Gender Data Gap in Healthcare: Market Validation of an AI-Powered Digital Health Companion for Women's Medical Advocacy

Running Title: AI-Powered Women's Health Advocacy Platform

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ABSTRACT

Background: Women face significant challenges in healthcare, including medical dismissal, delayed diagnoses, and inadequate symptom validation. The gender data gap in medical research compounds these issues, with women's health conditions taking 7-12 years on average to diagnose.

Objective: This study aimed to validate market need and solution fit for HerSay, an AI-powered digital health companion designed to support women throughout their healthcare journey.

Methods: We conducted mixed-methods research including: (1) online survey with 92 respondents across Canada and the United States, and (2) 20 semi-structured interviews (12 virtual, 8 in-person) with women aged 25-65 experiencing various health conditions. Data were analyzed using descriptive statistics and thematic analysis.

Results: 89.1% of respondents reported feeling dismissed or misunderstood by healthcare providers, with healthcare navigation frustration scoring 8-10/10. Key pain points included: not being heard (82%), lack of preparation tools (50%), and post-appointment confusion (24%). Respondents showed strong interest in the proposed solution (mean likelihood to use: 7.5/10), with 50% joining the waitlist. Critical features identified were symptom tracking, appointment preparation tools, and post-visit summaries. Four distinct user personas emerged: Chronic Warriors (35%), Diagnosis Seekers (25%), Overwhelmed Navigators (25%), and Proactive Managers (15%).

Conclusions: The research demonstrates substantial unmet need for digital tools supporting women's healthcare advocacy. An AI-powered companion addressing preparation, documentation, and follow-up could significantly improve healthcare experiences for women, particularly those with chronic or complex conditions.

1. INTRODUCTION

Women's healthcare experiences are marked by systemic challenges that contribute to poorer health outcomes compared to men. Despite comprising 51% of the population, women have historically been underrepresented in medical research, creating a gender data gap that affects diagnosis, treatment, and care delivery (1). This gap manifests in multiple ways: women wait longer for diagnoses, are more likely to have symptoms dismissed as psychological, and face unique challenges navigating healthcare systems not designed with their needs in mind (2,3).

The consequences are significant. Conditions predominantly affecting women, such as endometriosis and polycystic ovary syndrome (PCOS), take an average of 7-12 years to diagnose (4). Autoimmune conditions, which disproportionately affect women, often go undiagnosed for decades (5). Women are 50% more likely than men to receive an initial misdiagnosis following a heart attack (6). These disparities are further compounded for women of color, who face additional barriers related to racial bias in healthcare (7).

Digital health technologies, particularly those in the femtech sector, offer promising solutions to address these challenges. The global femtech market is projected to reach $50 billion by 2025, driven by increasing awareness of women's health issues and technological advances in AI and mobile health (8). However, many existing solutions focus on narrow aspects of women's health, such as fertility or period tracking, rather than addressing the broader challenge of healthcare navigation and advocacy (9).

Recent advances in artificial intelligence, particularly large language models, present new opportunities for creating intelligent health companions that can support women throughout their healthcare journey. These technologies can help with symptom documentation, appointment preparation, medical terminology translation, and follow-up management—addressing key pain points in the healthcare experience (10,11).

This study aimed to validate the market need for and potential impact of HerSay, an AI-powered digital health companion designed to empower women in healthcare settings. We sought to understand: (1) the nature and severity of challenges women face in healthcare, (2) current strategies and tools used to navigate these challenges, (3) desired features and functionality for a digital health companion, and (4) willingness to adopt and pay for such a solution.

2. METHODS

2.1 Study Design

We employed a mixed-methods approach combining quantitative survey data with qualitative interview insights to comprehensively understand women's healthcare experiences and technology needs. This convergent parallel design allowed us to triangulate findings and develop a nuanced understanding of the problem space and solution requirements.

2.2 Participants and Recruitment

Survey Participants

Participants were recruited through social media channels (LinkedIn, Facebook groups focused on women's health), professional networks, and snowball sampling. Inclusion criteria were: (1) self-identified women aged 18+, (2) residence in Canada or United States, (3) at least one healthcare interaction in the past 12 months.

Interview Participants

A subset of survey respondents and additional participants were recruited for in-depth interviews. We used purposive sampling to ensure representation across age groups, health conditions, and geographic locations. Interview participants received no compensation but were offered early access to the platform upon launch.

2.3 Data Collection

Survey Instrument

The online survey consisted of 26 questions covering:

- Demographics (age, location, health status)
- Healthcare experiences (frequency of visits, recent appointments, challenges faced)
- Pain points (dismissal experiences, preparation methods, post-appointment actions)
- Solution validation (feature priorities, likelihood to use, willingness to pay)
- Open-ended feedback on desired functionality

Interview Protocol

Semi-structured interviews (30-60 minutes) followed a protocol addressing:

1. Current healthcare system experiences
2. Specific instances of dismissal or frustration
3. Coping strategies and tools currently used
4. Reaction to proposed solution concept
5. Feature priorities and willingness to adopt

Interviews were conducted between April-May 2025, either virtually via video conference or in-person. All interviews were recorded with participant consent and transcribed for analysis.

2.4 Data Analysis

Quantitative Analysis

Survey data were analyzed using descriptive statistics (frequencies, percentages, means) to characterize the sample and identify patterns in responses. Chi-square tests were used to examine associations between demographic variables and key outcomes.

Qualitative Analysis

Interview transcripts were analyzed using thematic analysis following Braun and Clarke's six-phase framework (12). Initial codes were generated inductively, then organized into themes related to healthcare challenges, coping strategies, and solution requirements. Two researchers independently coded a subset of transcripts to establish inter-rater reliability ($\kappa = 0.82$).

Integration

Quantitative and qualitative findings were integrated at the interpretation stage, with survey results providing breadth and interview data offering depth and context. Discrepancies were explored to understand nuanced perspectives.

2.5 Ethical Considerations

The study was conducted in accordance with ethical guidelines for market research. Participants provided informed consent, were assured of anonymity, and could withdraw at any time. Data were stored securely and analyzed in aggregate to protect individual privacy.

3. RESULTS

3.1 Participant Characteristics

The survey sample (N=92) comprised primarily women aged 25-44 (68.5%), with 43.5% aged 25-34 and 25.0% aged 35-44. Most respondents resided in Canada (80.4%), particularly in urban centers. Regarding health status, 46% reported managing multiple or complex conditions, 22% had diagnosed conditions under management, 18% were seeking diagnoses, and 14% focused on general wellness.

Interview participants (N=20) reflected similar demographics, with conditions including PCOS, endometriosis, Hashimoto's thyroiditis, fibromyalgia, inflammatory bowel disease, and mental health conditions. Time since symptom onset ranged from 2 to 25 years, with an average of 11 years to receive accurate diagnoses.

3.2 Healthcare Navigation Challenges

3.2.1 Prevalence of Dismissal

An overwhelming 89.1% (82/92) of survey respondents reported feeling dismissed, misunderstood, or unsupported by healthcare providers. Only 7.6% had never experienced dismissal, with 3.3% unsure. This finding was consistent across age groups and health conditions.

3.2.2 Severity of Navigation Frustration

Participants rated their healthcare navigation frustration at 8-10 on a 10-point scale, with interview participants consistently reporting scores of 8 or higher. As one participant (age 34, PCOS) stated: "I would say an 8 out of 10. I've become very good at figuring things out, but I shouldn't have to become an expert in my own condition just to get basic care."

3.2.3 Impact on Care-Seeking Behavior

The challenges experienced led to significant behavioral impacts:

- 67% reported avoiding or delaying care due to past negative experiences
- 78% second-guessed their symptoms before seeking care
- 84% felt anxious or underprepared before appointments
- 45% had given up pursuing answers for at least one health concern

3.3 Current Coping Strategies

3.3.1 Preparation Methods

Survey data revealed varied approaches to appointment preparation:

- 50% used basic notes (paper or phone)
- 30.4% conducted Google searches
- 20.7% did not prepare
- 15.2% consulted friends or family
- 10.9% used health apps or symptom trackers
- 8.7% used AI tools like ChatGPT or Perplexity

3.3.2 Post-Appointment Actions

Following appointments, participants reported:

- 34.8% felt satisfied but often with unresolved questions
- 23.9% felt confused or dismissed
- 23.9% were dissatisfied with the appointment
- 15.2% forgot to ask important questions

- 6.5% needed to Google medical terminology used

3.4 Thematic Analysis Results

Four major themes emerged from qualitative analysis:

Theme 1: "Not Being Heard"

The most prevalent theme across all interviews was the experience of not being listened to or believed. Participants described providers who appeared rushed, dismissive, or focused on single symptoms rather than holistic health. One participant (age 58, Hashimoto's) shared: "I wish someone would have looked me in the eye and said 'I hear you.' Instead, it took 25 years to get diagnosed."

Theme 2: "Burden of Self-Advocacy"

Women described exhaustive efforts to advocate for themselves, including extensive research, seeking multiple opinions, and learning medical terminology to be taken seriously. A participant with rheumatoid arthritis noted: "I literally read medical journals using my alumni access and go armed with studies. I shouldn't need a doctorate to get my doctor to listen."

Theme 3: "System Complexity and Fragmentation"

Navigating referrals, insurance, and fragmented care created additional barriers. One participant described a 6-month journey involving multiple failed referrals, insurance complications, and repeated intake processes, stating: "The process was so overwhelming that sometimes I practiced avoidance. Like I've made one call and my mind shut down."

Theme 4: "Validation Through Community"

Many participants found validation and practical support through online communities and peer networks. However, they expressed desire for "real community, not bots" integrated with practical tools for healthcare navigation.

3.5 Solution Validation

3.5.1 Feature Priorities

All proposed features received high importance ratings, with the following identified as critical:

- Privacy and data security (100%)
- Symptom tracking with pattern recognition (100%)
- Appointment preparation tools (100%)

- Post-visit summaries and action items (100%)
- AI-powered medical term explanation (100%)
- Condition-specific educational guides (100%)
- Mood and pain journaling (100%)

3.5.2 Likelihood to Adopt

Respondents indicated strong interest in the proposed solution:

- Mean likelihood to try: 7.5/10 (SD = 2.1)
- 31.5% scored 10/10 likelihood
- 24.0% scored 8/10 likelihood
- Only 2.2% scored below 5/10

3.5.3 Willingness to Pay

Regarding payment models:

- 51.3% wanted a free trial before committing
- 28.2% indicated willingness depends on features and value
- 19.2% initially unwilling to pay
- 1.3% immediately willing to pay

Interview participants suggested price points of $5-15/month, with preference for tiered pricing and extended free trials (1-2 months minimum).

3.6 User Personas

Analysis revealed four distinct user personas:

Persona 1: "The Chronic Warrior" (35%)

- Managing multiple diagnosed chronic conditions
- Highly knowledgeable but exhausted by constant self-advocacy
- Needs: Comprehensive tracking, pattern identification, provider accountability

Persona 2: "The Diagnosis Seeker" (25%)

- Experiencing symptoms without clear diagnosis
- Frustrated by medical gaslighting and dismissal
- Needs: Symptom documentation, confidence building, validation

Persona 3: "The Overwhelmed Navigator" (25%)

- Struggles with system complexity and information retention

- Often forgets questions or feels rushed in appointments
- Needs: Simple tools, clear summaries, reminder systems

Persona 4: "The Proactive Manager" (15%)

- Generally healthy, seeking preventive care optimization
- Values efficiency and organization
- Needs: Streamlined preparation, health history tracking

4. DISCUSSION

4.1 Principal Findings

This study provides robust evidence for significant unmet needs in women's healthcare navigation, with 89% experiencing dismissal and rating their frustration at 8-10/10. The research validates strong market demand for an AI-powered health companion, with high likelihood of adoption (7.5/10) and 50% immediate waitlist conversion. These findings align with existing literature documenting gender disparities in healthcare while providing new insights into digital solution requirements.

4.2 Addressing the Gender Data Gap

Our findings illuminate how the gender data gap manifests in individual healthcare experiences. The average 11-year diagnosis timeline reported by participants exceeds even published estimates for conditions like endometriosis (4). This suggests the data gap creates cascading effects: lack of research leads to poor provider education, resulting in dismissal and delayed diagnosis, which perpetuates underrepresentation in medical data.

Digital health tools can help close this gap by:

1. Systematically documenting women's symptoms and experiences
2. Identifying patterns across users to surface underrecognized conditions
3. Providing aggregated, anonymized data for research
4. Empowering women with evidence-based information

4.3 Technology Design Implications

The research reveals critical design considerations for femtech solutions:

Privacy-First Architecture: With 100% rating privacy as critical, security must be foundational, not an afterthought. This includes end-to-end encryption, user-controlled data sharing, and transparent policies.

Progressive Complexity: To avoid overwhelming users, features should be introduced gradually. Start with core functionality (symptom tracking, appointment prep) before adding advanced features.

Validation-Centered UX: Given themes of dismissal, the interface must validate user experiences. This includes empathetic language, acknowledgment of symptoms, and avoiding minimizing phrases.

Evidence Integration: Users want access to medical literature to support their advocacy. Integrating peer-reviewed research and clinical guidelines can empower informed discussions with providers.

4.4 Implementation Considerations

Regulatory Compliance

As a digital health tool, HerSay must navigate complex regulatory frameworks. While not providing medical advice positions it as a wellness app rather than medical device, careful attention to claims and functionality is essential. HIPAA compliance in the US and PIPEDA in Canada will be mandatory for handling health information.

Provider Integration

While users seek tools for self-advocacy, provider buy-in could accelerate adoption and impact. Future iterations might include provider portals for receiving structured patient histories, potentially improving appointment efficiency and documentation quality.

Equity and Accessibility

The study sample skewed toward urban, educated women with technology access. Ensuring equitable access requires addressing digital literacy, language barriers, and economic constraints. Partnerships with community health organizations and sliding-scale pricing could improve reach.

4.5 Limitations

Several limitations should be considered. The sample was predominantly Canadian (80%), potentially limiting generalizability to other healthcare systems. Self-selection bias may have attracted participants with particularly negative healthcare experiences. The study captured intended behavior rather than actual usage, which may differ in practice. Additionally, we did not specifically analyze intersectional factors such as race, socioeconomic status, or disability, which significantly impact healthcare experiences.

4.6 Future Research Directions

This market validation study establishes foundation for further research:

1. **Clinical Validation:** Prospective studies measuring impact on health outcomes, diagnosis time, and patient satisfaction
2. **Behavioral Studies:** Understanding adoption patterns, engagement drivers, and long-term retention
3. **Intersectional Analysis:** Examining how race, class, sexuality, and disability intersect with gender in healthcare navigation
4. **Provider Perspectives:** Investigating clinician receptivity to patient-generated digital health data
5. **Health Economics:** Analyzing cost-effectiveness and potential healthcare system savings

4.7 Implications for Women's Health

The overwhelming validation of need for HerSay reflects broader systemic issues in women's healthcare. While technology cannot solve structural problems alone, it can serve as a bridge—empowering individual women while generating data to drive systemic change. By making women's health experiences visible and quantifiable, digital tools can contribute to closing the gender data gap and improving care for all.

The identified user personas suggest a heterogeneous market requiring flexible solutions. Success will require balancing simplicity for overwhelmed users with comprehensive features for engaged advocates. The high proportion of "Chronic Warriors" (35%) indicates significant opportunity for impact among those with greatest need.

5. CONCLUSIONS

This research provides compelling evidence for the need and market viability of an AI-powered women's health companion. With 89% of women experiencing medical dismissal and reporting extreme frustration navigating healthcare, the opportunity for positive impact is substantial. The strong interest in HerSay (7.5/10 likelihood to use, 50% waitlist conversion) indicates readiness for innovation in this space.

Key success factors identified include prioritizing privacy and security, providing evidence-based advocacy tools, enabling comprehensive symptom tracking, and facilitating clear provider communication. The technology must validate women's experiences while empowering them with practical tools for healthcare navigation.

As femtech continues evolving, solutions must move beyond narrow reproductive health focus to address broader challenges women face in healthcare. HerSay's comprehensive approach—supporting women before, during, and after appointments—represents a new paradigm in digital health companionship.

The path forward requires careful attention to user needs, regulatory requirements, and equity considerations. However, the potential impact justifies the effort: reducing diagnosis delays, improving healthcare experiences, and ultimately contributing to closing the gender data gap in medicine. By empowering individual women while generating valuable population health insights, AI-powered health companions can drive both personal and systemic change in women's healthcare.

CONFLICT OF INTEREST

The authors are founders/employees of HerSay, the digital health platform described in this research. The study was conducted with appropriate ethical considerations to minimize bias.

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