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Health Disparities In Aging Based On Gender

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Abstract: In India, rapid population aging—projected to reach 20% elderly by 2050—highlights stark gender-based health disparities among older adults. Elderly women endure disproportionate challenges compared to men, rooted in lifelong caregiving roles, lower workforce participation, economic dependence, limited education, and restricted healthcare access. These factors contribute to higher prevalence of chronic conditions like osteoporosis, anemia, cardiovascular diseases, and mental health issues, often exacerbated by delayed treatment due to financial constraints and patriarchal norms. Cultural expectations further compel women to prioritize family over personal health, fostering isolation and poorer outcomes.This study examines gender-specific determinants of elderly health disparities in India, aiming to inform targeted policies for equitable healthcare, empowerment programs, and support systems to promote dignified aging for women.

Keywords - Elderly health, Gender disparities, Chronic illness, Men, Women

I. INTRODUCTION

Aging is a universal biological process that brings profound changes in individuals' physical health, mental well-being, and daily functioning. With global populations aging rapidly due to declining birth rates and increased life expectancy, health disparities among older adults have become increasingly visible and concerning [1]. While some elderly individuals maintain good health and active lifestyles, others face chronic illnesses, functional limitations, and social isolation. These inequities—commonly referred to as health disparities—emerge from complex interactions among biological, social, economic, and environmental factors. Understanding these disparities is essential for designing equitable healthcare systems that promote healthy aging and dignity in later life [4].

Gender represents a critical lens through which aging-related health disparities can be examined. Research consistently shows that elderly women experience a disproportionate burden of morbidity compared to men, despite having longer life expectancy [1]. This disparity is shaped by lifelong social roles such as caregiving responsibilities, lower lifetime earnings, limited access to education, and structural barriers to healthcare. As a result, women are more susceptible to chronic and non-fatal conditions such as osteoporosis, arthritis, cardiovascular disease, and mental health disorders. Delayed health-seeking behavior—often driven by economic constraints or social expectations—further exacerbates these outcomes [2].

Socioeconomic status significantly amplifies gender-based health differences in aging. Lower income levels restrict access to nutritious food, safe housing, preventive healthcare, and social support systems, increasing vulnerability to malnutrition, depression, and untreated medical conditions among elderly populations [3]. Educational attainment also plays a crucial role in shaping health literacy, influencing individuals' ability to understand medical advice, manage chronic illnesses, and navigate healthcare services effectively [4].

Cultural and traditional norms add another layer of complexity to these disparities. In many societies, particularly in developing regions, elderly women often prioritize family needs over their own health, neglecting routine medical check-ups and relying on traditional beliefs rather than evidence-based care [3]. This pattern of self-sacrifice frequently leads to delayed diagnosis, poor disease management, and increased health risks.

This study explores how gender, socioeconomic conditions, and cultural influences intersect to shape health disparities in aging populations. By examining self-reported health data and patterns of morbidity among elderly men and women, the research aims to provide evidence-based insights that can support policymakers, healthcare professionals, and community stakeholders in developing inclusive interventions to reduce health inequities and improve the quality of life for older adults.

The remainder of the paper is organized as follows: **Section II** presents a review of related literature, **Section III** describes the methodology and analytical approach, and **Section IV** concludes the paper.

II. LITERATURE REVIEW

Health disparities in aging refer to systematic differences in health outcomes, disease burden, and access to healthcare among older adults. Gender has emerged as a critical determinant in these disparities, influencing longevity, morbidity patterns, and quality of life. While women generally live longer than men, they experience higher prevalence of chronic non-fatal conditions such as arthritis, osteoporosis, back pain, and depression. In contrast, men exhibit higher mortality rates and are more prone to fatal conditions including cardiovascular diseases, liver disorders, and renal failure [1]. These differences are shaped by biological factors, health behaviours, occupational exposures, and social roles accumulated over the life course.

A. Gender-Specific Patterns of Morbidity

Previous epidemiological studies suggest that hormonal changes, especially post-menopause, contribute to musculoskeletal and metabolic disorders among elderly women [2]. Additionally, caregiving roles and delayed health-seeking behaviour intensify functional limitations in women. Elderly men, on the other hand, often demonstrate higher risk-taking behaviours, substance use, and lower utilization of preventive healthcare, leading to late diagnosis of severe illnesses such as heart disease and organ failure [3].

B. Understanding Health-Disparities using Sentiment Analysis

Sentiment analysis has emerged as an effective approach for understanding health disparities by examining subjective health experiences expressed in textual data such as open-ended survey responses. Unlike traditional clinical and statistical methods, sentiment analysis captures emotional and perceptual differences in how aging-related health issues are experienced by different groups. In gender-based aging studies, this technique helps reveal variations in health burden, with elderly women often expressing negative sentiment related to chronic conditions and functional limitations, while elderly men more frequently reflect concerns associated with severe and life-threatening illnesses [1], [5]. By incorporating sentiment analysis, researchers gain a more holistic understanding of health disparities beyond quantitative indicators.

C. Survey-Based and Data-Driven Approaches in Aging Research

Recent research increasingly employs survey-based methodologies and data analytics to understand aging-related health issues. Large-scale surveys combined with statistical and machine learning techniques allow researchers to identify patterns across gender, age groups, and socio-economic status [4]. Sentiment analysis and perception-based studies have also been applied to assess self-reported health status and quality of life among older adults, offering insights beyond clinical indicators [5].

D. The Importance of this Study

This study is important as it highlights gender-based health disparities in aging by combining self-reported health data with sentiment analysis to capture both physical and emotional dimensions of health. While many existing studies focus on clinical outcomes or mortality rates, this research emphasizes everyday health challenges and lived experiences that significantly affect quality of life, particularly among elderly women. By providing gender-sensitive and evidence-based insights, the study supports the development of more inclusive healthcare policies and targeted interventions for aging populations.

III. METHODOLOGY

The research data workflow is a structured approach that transforms raw data into meaningful insights through systematic steps. Figure 1 shows the research data workflow.

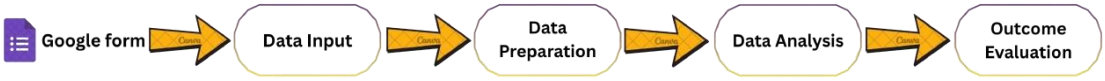
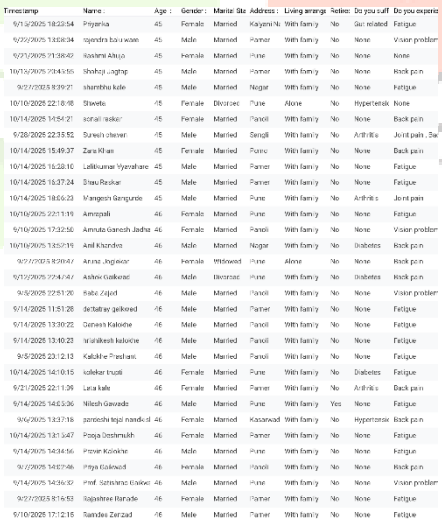


Fig.1. Research Data Workflow

A. Data Input

The data for this study was collected using a structured Google Form survey designed to capture health-related information from elderly people. The questionnaire included demographic variables(age, gender), lifestyle factors, and multiple-choice questions related to common age-associated health conditions. People were asked to report specific health issues such as joint pain, back pain, cardiovascular pain, etc. a total of 800+ responses were collected, ensuring sufficient representation of both male and female participants.



Timestamp	Name :	Age :	Gender :	Marital Sta	Address :	Living arrange	Retire	Do you suff	Do you experie
9/13/2025 18:23:54	Priyanka	45	Female	Married	Kayani Nc	With family	No	Gur related	Fatigue
9/22/2025 14:58:04	rajendra bapu wase	45	Male	Married	Kamer	With family	No	None	Vision problem
9/27/2025 21:38:42	Rashmi Ahuja	45	Female	Married	Pune	With family	No	None	None
10/14/2025 20:43:55	Shahaji Jagtap	45	Male	Married	Kamer	With family	No	None	Back pain
9/27/2025 8:39:27	shambhu kale	45	Male	Married	Nagar	With family	No	None	Fatigue
10/10/2025 22:18:48	Shweta	45	Female	Divorced	Pune	Alone	No	Hypertensk	None
10/14/2025 14:54:21	sonali reskar	45	Female	Married	Panoli	With family	No	None	Back pain
9/28/2025 22:35:51	Suresh chavan	45	Male	Married	Sangli	With family	No	Arthritis	Joint pain , Ba
10/14/2025 15:49:37	Zaira Khan	45	Female	Married	Punne	With family	No	None	Back pain
10/14/2025 16:28:10	Lalitkumar Nyavahare	45	Male	Married	Kamer	With family	No	None	Fatigue
10/14/2025 16:37:24	Shau Reskar	45	Male	Married	Kamer	With family	No	None	Fatigue
10/14/2025 18:06:23	Mangesh Gangurde	45	Male	Married	Pune	With family	No	Arthritis	Joint pain
10/10/2025 22:11:19	Amrapali	46	Female	Married	Pune	With family	No	None	Fatigue
9/10/2025 17:32:56	Amruta Ganesh Jadha	46	Female	Married	Panoli	With family	No	None	Vision problem
10/10/2025 18:57:19	Anil Khandke	46	Male	Married	Nagar	With family	No	Diabetes	Back pain
9/27/2025 8:39:47	Aruna Jagtkar	46	Female	Widowed	Pune	Alone	No	None	Back pain
9/13/2025 17:47:47	Ashok Gaikwad	46	Male	Divorced	Pune	With family	No	Diabetes	Back pain
9/8/2025 12:51:20	Baba Zajad	46	Male	Married	Panoli	With family	No	None	Vision problem
9/14/2025 11:51:28	dattatray gaikwad	46	Male	Married	Kamer	With family	No	None	Fatigue
9/14/2025 13:30:22	Ganesh Kalokhe	46	Male	Married	Panoli	With family	No	None	Fatigue
9/14/2025 13:40:23	harishkesh kalokhe	46	Male	Married	Panoli	With family	No	None	Fatigue
9/5/2025 23:12:13	Kalokhe Prashant	46	Male	Married	Panoli	With family	No	None	Fatigue
10/14/2025 14:10:15	kolekar trusti	46	Female	Married	Pune	With family	No	Diabetes	Fatigue
9/21/2025 22:11:09	Lata kale	46	Female	Married	Kamer	With family	No	Arthritis	Back pain
9/14/2025 14:53:36	Nilesh Gawade	46	Male	Married	Pune	With family	Yes	None	Fatigue
9/6/2025 13:37:18	pardeshi tejal nandkis	46	Female	Married	Kasarwad	With family	No	Hypertensk	Back pain
10/14/2025 13:13:47	Pooja Deshmukh	46	Female	Married	Kamer	With family	No	None	Fatigue
9/14/2025 14:34:16	Pravin Kolokhe	46	Male	Married	Pune	With family	No	None	Fatigue
9/27/2025 14:07:46	Priya Gaikwad	46	Female	Married	Panoli	With family	No	None	Back pain
9/14/2025 14:36:02	Prof. Sahadeo Gaikwa	46	Male	Married	Pune	With family	No	None	Vision problem
9/27/2025 8:16:53	Rajashree Ranade	46	Female	Married	Kamer	With family	No	None	Fatigue
9/10/2025 17:12:16	Ramdas Zarzad	46	Male	Married	Kamer	With family	No	None	Fatigue

Fig.2. Collection of Data through online survey

B. Data Preparation

The collected dataset was cleaned to ensure reliability and accuracy. Missing values and incomplete responses were removed. Duplicate entries were identified and eliminated. Categorical variables such as gender and health conditions were encoded into numerical form to facilitate analysis. Data normalization techniques were applied, where required to maintain consistency across variables [6].

	Gender	Joint_Issues	Organ_Issues
0	Female	1	0
1	Male	0	1

Fig.3. Categorical Variables

C. Data Analysis

Exploratory Data Analysis(EDA) was performed to understand the distribution of health conditions across genders. Bar charts and frequency plots were used to compare the prevalence of musculoskeletal issues in women and critical organ-related diseases in men. Statistical comparisons were carried out to identify significant differences between male and female respondents. Visualization tools were used to present findings in an interpretable and comparative manner.

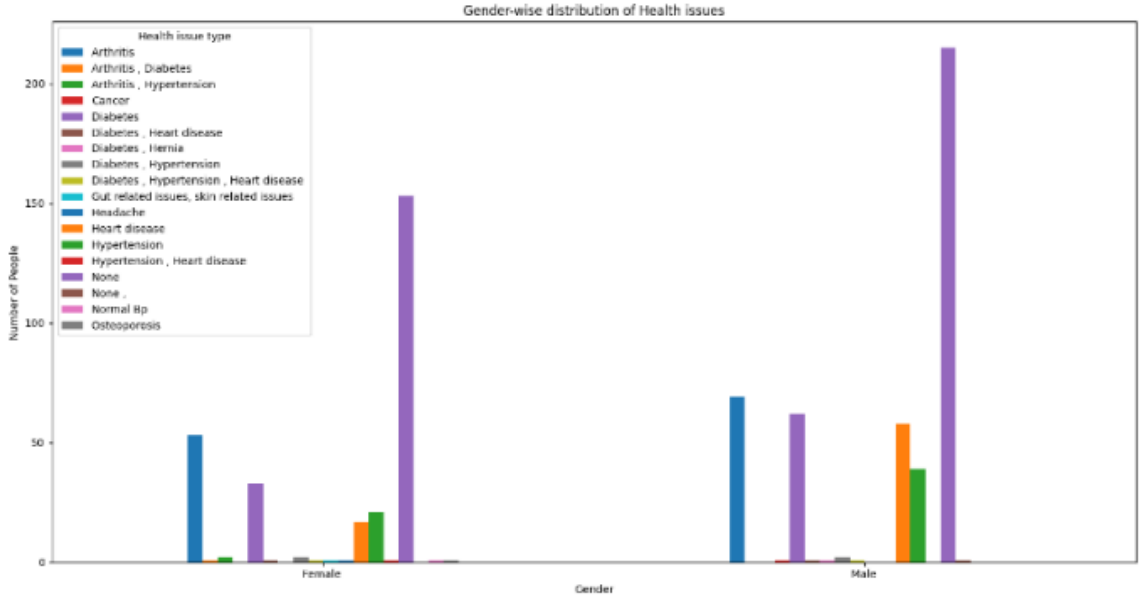


Fig.4. Gender-wise distribution of health issues

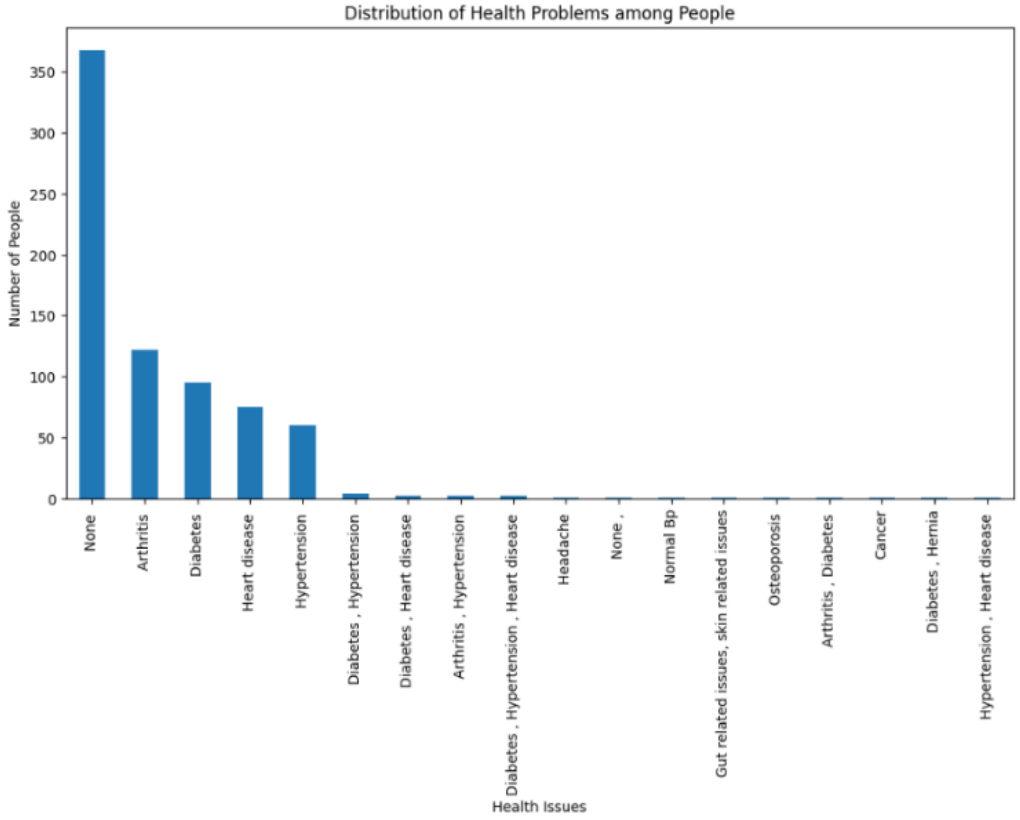


Fig.5. Distribution of health problems among people

Fig.6. Word Cloud

IV. CONCLUSION

This study examined gender-based health disparities in aging using survey data and systematic analysis. The findings indicate that elderly women are disproportionately affected by chronic, non-fatal conditions such as joint pain, back pain, and mobility-related issues, which significantly impact their quality of life. Conversely, elderly men exhibit higher prevalence of severe and life-threatening conditions including heart disease, liver failure, and kidney disorders. These results reinforce the need for gender-sensitive healthcare strategies that address both longevity-related morbidity in women and high mortality risks in men.

The study highlights the importance of early intervention, preventive care, and targeted health policies tailored to gender-specific needs in older populations. By focusing on both functional health and fatal disease outcomes, healthcare systems can move toward more equitable and effective aging care.

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