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The Effect of Gender Roles on Life Expectancy: A Literature Review

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Abstract
Life expectancy is an important indicator in assessing the health status of a community and is part of the Human Development Index. Globally, women have a higher life expectancy than men. Data shows that in 2025, the average life expectancy for women will reach 76.2 years, while for men it will be 70.9 years. In Indonesia, the Central Statistics Agency (BPS) records the life expectancy of women at around 74.21 years and men at 70.32 years. This paper examines the differences in life expectancy between men and women and identifies the factors causing these differences. This study is a literature review. The results indicate that biological factors such as immune system strength and estrogen hormones only partially explain these differences. Socially constructed gender roles, such as pressure to conform to masculinity, risky lifestyles, and limited access to healthcare services for men are the main causes. Women are more likely to undergo preventive health checkups, while men tend to avoid healthcare services until chronic conditions arise. Social norms also create different pressures that impact stress and mental health. Thus, the difference in life expectancy between men and women is the result of a complex interaction between biological, social, economic, and behavioral factors.

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Introduction

Life expectancy is the average number of years a person lives after reaching their xth birthday, with the most commonly used measure being life expectancy at birth, which reflects health conditions at that time. Life expectancy is one of the health indicators used as a reference in planning health programs and as a tool for evaluating government performance in improving the general well-being of the population and, more specifically, in enhancing health outcomes (Tanadjaja *et al*., 2017) [1]. Individuals who reach advanced age generally have better health, enabling them to live longer. A region with a low life expectancy reflects inadequate progress in health development, whereas a higher life expectancy signifies greater success in advancing health outcomes within that area (Ginting & Lubis, 2023) [2]. A low life expectancy rate indicates the need to implement development programs in the health and social sectors, such as improving nutritional intake, enhancing environmental health quality, and addressing poverty. These programs are designed to enhance community well-being and overall health by preventing illnesses, broadening access to high-quality healthcare services, and alleviating the harmful effects of poverty on people's health. Thus, life expectancy serves as an important tool in supporting the government's efforts to enhance the well-being and health of the community (Simanjuntak *et al*., 2024) [3].

Women have a longer life expectancy than men globally (Dattani & Rodes-Guirao, 2023) [4]. According to a report by the United Nations Population Division, the global average life expectancy for women in 2025 is estimated to reach 76.2 years, while the average life expectancy for men is around 70.9 years. Data from the Indonesian Central Statistics Agency in 2024 also shows a similar pattern, with life expectancy for women at around 74.21 years and for boys at around 70.32 years. The difference in life expectancy between men and women has been consistent for more than a decade.

Historically, women have had longer life expectancies than men worldwide, with the gender gap in life expectancy increasing from 4.5 years in 1950 to 5.4 years in 2012, then decreasing to 5.1 years in 2019 (Wang H *et al*, 2019) [5]. Biological factors, such as sex hormones, partly explain the longer life expectancy of women compared to men (Vina J, 2010) [6].

Gender roles reflected through social norms, division of labor, and lifestyle are one of the significant factors influencing life expectancy. Carmel (2019) [7] states that smoking and alcohol consumption are considered the main risks affecting morbidity and mortality in men. The percentage of women participating in the workforce is usually lower than that of men worldwide (Kinsella *et al*., 2001) [8]. Among employed individuals, women are less likely than men to occupy positions of influence, enjoy job stability, exercise authority, experience autonomy, or access opportunities for career growth. The division of labor places men in high-risk jobs, such as construction, heavy industry, or tasks in hazardous environments, thereby increasing the risk of accidents and work-related illnesses. Numerous studies show that older women experience greater difficulties than men as a result of physical limitations, affecting both their basic self-care tasks and more complex daily activities. This suggests that although women have a longer life expectancy, they also live longer with disabilities and face more challenging years during old age (Carmel, 2019) [7].

To gain a more thorough insight into the connection between life expectancy and gender, a literature review is necessary. A literature review helps to explain existing research, clarify related theories, and identify the factors that determine differences in life expectancy. Meanwhile, statistical data provides quantitative evidence that supports the analysis of trends and patterns in life expectancy differences based on gender over time. The combination of these two approaches is expected to yield a deeper understanding, thereby providing a foundation for the development of more appropriate and sustainable development policies.

Basic Concepts, Relevant Theories, and Previous Studies

1. Basic Concepts

1.1. Definition of Life Expectancy

Life expectancy is a demographic indicator, life expectancy (also known internationally as Life Expectancy at Birth) quantifies the typical duration a newborn can expect to live, provided they encounter mortality risks aligned with their age group's pattern from birth (Todaro & Smith, 2020) [9].

Life expectancy is calculated based on a life table, which is a table that systematically presents mortality and life expectancy figures for each age group in a population. Life expectancy calculations generally use data on population size and mortality by age. According to the Central Statistics Agency (2020) [10], which discusses mortality in Indonesia, life expectancy at birth is obtained from infant mortality figures with reference to the appropriate mortality table. To date, Indonesia continues to use the West model mortality table, which previously consisted of 25 levels (Coale *et al*., 1983) [11] and has been expanded to 27 levels (Coale *et al*., 1983) [11] corresponding to the growth in life expectancy at birth (BPS, 2020) [10].

Life expectancy is formally described as the mean number of years remaining for a hypothetical cohort born in a given year, assuming that prevailing mortality patterns remain unchanged (Preston, Heuveline, & Guillot, 2001) [12]. This understanding confirms that life expectancy not only reflects statistical longevity, but also depends heavily on the quality of available mortality data and the accuracy of the underlying civil registration.

1.2. Life Expectancy as an Indicator of Quality of Life Development

Life expectancy serves as a key metric for assessing the overall quality of life within a population of a given area. Additionally, life expectancy at birth is one of the three fundamental components that make up the Human Development Index (HDI), along with education and decent living standards, which is used by the UNDP to measure the quality of life in a region (UNDP, 2020) [13]. A high life expectancy rate reflects the success of a region in providing good health services, nutrition, sanitation, and environmental conditions.

According to Fadri (2024) [14], life expectancy is an important an indicator that gauges the efficiency of government actions in raising the health status and living standards of the population. A rise in life expectancy indicates advancements in healthcare and also acts as an important indicator for assessing the success of social welfare programs and overall societal development (Sulaeman, E.S., 2020) [15]. Education plays a crucial role in determining life expectancy. It not only imparts health-related knowledge but also facilitates wider access to health information and medical services (Singh & Lee, 2021) [16]. Therefore, life expectancy is often used as an important benchmark in evaluating public policies and development programs.

In the context of Indonesia, the government uses life expectancy as one of the indicators of development performance through the National Medium-Term Development Plan (RPJMN). Data from Statistics Indonesia shows that the increase in life expectancy is in line with improved access to basic health services, and is supported by policies such as the National Health Insurance (JKN), which is an important part of the national development strategy (Bappenas, 2020) [17].

2. Relevant Theory

2.1. The Theory of Demographic Transition

The Demographic Transition Theory explains changes in fertility and mortality patterns in societies undergoing modernization. In the early stages of transition, natality and mortality rates are high, while in the later stages, birth and death rates decline significantly, leading to a rise in life expectancy. This theory is rooted in observations of Western European countries that have experienced significant changes in population dynamics since the industrial revolution.

According to Notestein (1953) [18], demographic transition consists of several stages, beginning with high birth and death rates, then entering a stage where death rates decline first due to improvements in health, nutrition, and sanitation. It is this decline in death rates that marks the beginning of an a rise in life expectancy.

The theory of demographic transition is very important in demography because it links demographic change to factors such as economic development, urbanization, and industrialization. However, the theory of demographic transition has limitations, such as not including migration as a determining factor in population change. Therefore, according to Sukamdi [19], it is more suitable for closed populations.

2.2. Theory of Gender Social Roles

This theory highlights how social constructions of male and female roles impact access to health, nutrition, and educational resources. Gender not only influences individual behavior toward health, but also influences how social systems serve their health needs. Gender roles are social constructions that refer to the expectations, norms, and behaviors that are culturally associated with a particular gender in society. This theory emphasizes that differences between men and women are not only biological, but also shaped by social processes that regulate how individuals act and interact based on their gender categories (Eagly, 1987) [19].

According to Eagly (1987) [20], gender roles are formed from social expectations of men and women that are learned through socialization and experience in society. These expectations then shape behavior that is consistent with gender expectations in various social contexts such as family and work. West and Zimmerman (1987) [21] add the concept of "doing gender," which states that gender is not a fixed status, but rather something that is done or practiced in everyday social interactions. Gender is performative, so individuals continuously "play" their gender roles in accordance with prevailing social norms.

In addition, Connell (2005) [22] introduced the concept of hegemonic masculinity, which is a dominant form of masculinity that becomes the standard and is followed by men in patriarchal societies, while limiting other gender roles. This demonstrates that social gender roles are not static but dynamic and influenced by power structures. Understanding social gender roles is important in various fields of study, including sociology, psychology, and anthropology, as it influences how individuals are treated, how access to resources is distributed, and how gender inequalities are maintained or addressed.

2.3. Health Determinants Theory

The theory of Social Determinants of Health states that various social and economic factors—including education, job opportunities, income levels, living environment, and gender—play a crucial role in influencing an individual's health condition and overall life expectancy. Health determinants are a concept that explains the various Conditions and circumstances that influence the health status and wellness of people and groups. This theory states that health is not only influenced by medical services but also by social, economic, environmental, behavioral, and genetic factors that interact with one another (WHO, 2008) [23]. According to the World Health Organization (2008) [23], social determinants of health refer to the circumstances surrounding an individual's birth, childhood, living environment, employment, and aging process, including the systems and policies that influence the distribution of resources. These factors determine whether a person will be healthy or vulnerable to disease. These determinants include:

a) Individual and genetic factors: age, gender, genetic predisposition.
b) Health behaviors: habits such as smoking, drinking alcohol, engaging in physical exercise, and dietary choices.
c) Socioeconomic factors: level of education, occupation, income.
d) Physical and social environment: sanitation, housing, water and air quality.
e) Access to healthcare: affordability and quality of medical services.

The Lalonde Report (1974) [24], which became one of the early milestones in health determinants thinking, grouped factors affecting health into four main categories: lifestyle, human biology, environment, and healthcare organization. This approach marked a shift in focus from purely medical aspects to a more holistic understanding of public health. Furthermore, Dahlgren and Whitehead (1991) [25] introduced the rainbow model, which depicts health determinants as layers that influence each other, starting from individual factors at the center to macro policies at the outer layer. This model is useful for understanding how public policy interventions can influence social determinants and population health outcomes.

Thus, health determinants theory provides a strong conceptual foundation for understanding that health is the result of complex interactions between biological, behavioral, social, economic, and public policy factors.

3. Previous Studies

Several previous studies have discussed patterns of change in life expectancy in Indonesia and worldwide. The Global Burden of Disease (GBD) Study 2021, published by the GBD Demographics Collaborators (2024) [26], presents a comprehensive analysis of life expectancy (LE) by gender across 204 countries and regions from 1950 to 2021. The study shows that globally, life expectancy increased significantly from 49 years in 1950 to 71.7 years in 2021. However, the COVID-19 pandemic caused a global decline in LE of approximately 1.6 years, with a greater impact on men. The data presented also reveals that men consistently have higher mortality rates than women across nearly all age groups, reinforcing the pattern of gender-based life expectancy gaps. This study emphasizes the significance of taking gender aspects into account in demographic and population health analyses, and provides a strong statistical foundation for comparing global and cross-temporal trends in life expectancy differences between males and females. These findings are highly relevant for supporting research on life expectancy from a gender perspective, both globally and in the Indonesian context.

Another study titled "Gender differences in survival across the ages of life: an introduction" by Zarulli and Salinari (2024) [27] discusses differences in survival between men and women at various stages of life, emphasizing the interaction between biological and social factors. In early life, women tend to have a biological advantage in surviving extreme conditions, such as infections or premature birth. However, as they age, social and behavioral factors begin to play a larger role. Men are more vulnerable to mortality risks associated engaging in dangerous activities, including alcohol use, smoking, or hazardous work, which are often linked to masculine norms. On the other hand, although women generally live longer, they are more likely to experience chronic health conditions in old age. This article highlights the importance of understanding gender role dynamics holistically, not only in biological terms but also in terms of the social and cultural influences that shape life expectancy patterns throughout the life cycle.

Furthermore, Wirayuda and Chan (2021) [28] presented a systematic review of 46 studies from various countries to identify factors that influence life expectancy. This study

grouped the determinants into three main categories, namely socio-demographic factors, macroeconomics, and health resources. The results indicate that education levels, gender inequality, socioeconomic status, and infant mortality rates have a significant relationship with life expectancy. Additionally, economic indicators including per capita earnings, unemployment, and income distribution inequality also influence the longevity of a population. In terms of health, the availability of medical services, public health expenditure, and environmental factors such as pollution and smoking habits are important components. This study emphasizes that life expectancy is not only influenced by biological factors but is closely linked to social, economic conditions, and access to health services, including in the context of gender differences. These findings are highly relevant for supporting research on life expectancy from a gender perspective using a multidimensional approach.

Based on the previous research described above, it can be concluded that life expectancy is an indicator influenced by various interrelated multidimensional factors, both globally and in the Indonesian context. The GBD 2021 study shows a pattern of increasing global life expectancy accompanied by gaps between men and women, as well as the significant impact of global events such as the COVID-19 pandemic. The findings of Zarulli and Salinari (2024) [27] reinforce the understanding that biological factors alone are insufficient to explain gender differences in life expectancy; rather, these differences must also be viewed through the lens of social and cultural roles throughout the human life cycle. Meanwhile, a systematic review by Wirayuda and Chan (2021) [28] emphasizes the importance of considering social, economic, and health determinants comprehensively in explaining variations in life expectancy based on gender. These three studies provide a strong theoretical and empirical foundation for this research in examining life expectancy from a gender perspective, and support the need for an interdisciplinary approach in understanding the longevity gap between men and women.

Methods

This research is a literature study with a quantitative and qualitative approach. This approach is used to obtain a comprehensive picture of the issue of gender differences in life expectancy.

The study utilizes secondary data obtained from the Central Statistics Agency (BPS), WHO, and other official institutions related to life expectancy figures based on gender. It is also sourced from scientific literature such as national and international journals and relevant research reports.

In this study, the main variables observed were life expectancy and gender. In addition to these two main variables, several supporting variables that indirectly affect life expectancy were also taken into account. These variables included education level, economic status, occupation, social role, and lifestyle. These factors are important to consider because they contribute to differences in life expectancy between gender groups.

The quantitative analysis technique in this study was conducted by analyzing statistical data on life expectancy by gender. The data was analyzed by comparing the life expectancy of men and women in various regions and over a certain period of time. The analysis findings are shown through tables and charts to highlight trends, variations, and patterns related to gender disparities in life expectancy.

Meanwhile, qualitative analysis techniques were applied to the literature used. The main focus of this analysis was to identify themes that emerged consistently. This approach complements quantitative analysis by providing a more in-depth explanation of causal factors that cannot be explained solely through statistical figures.

Analysis Stages of this study are:

- Collect relevant statistical data and literature.
- Filter out irrelevant data and literature and group information by theme.
- Presenting data and interpreting study findings.
- Draw conclusions based on quantitative and qualitative analysis results to provide a comprehensive understanding of gender issues and life expectancy.
- Re-examine the conformity of the results with the literature used as a reference, and identify possible limitations or errors in the data and analysis.

Results and Discussion

1. Comparison of Life Expectancy for Men and Women

The comparison of life expectancy between men and women is an important aspect of demographic studies. Based on the global life expectancy graph from 1955 to 2025 sourced from the Worldometer website [29], there has been an increase across all gender groups. This increase is the result of various advancements in health, including nutrition, clean water, sanitation, healthcare, antibiotics, vaccines, technology, improved living standards, economic growth, and poverty reduction (Dattani & Rodes-Guirao, 2023) [4]. Although life expectancy has increased year by year, the difference between men and women remains significant and relatively consistent throughout the period. Globally, women consistently have a higher life expectancy than men each year. This trend indicates that biological factors, as well as behavioral and social roles, significantly contribute to shaping longevity patterns among the two gender groups.

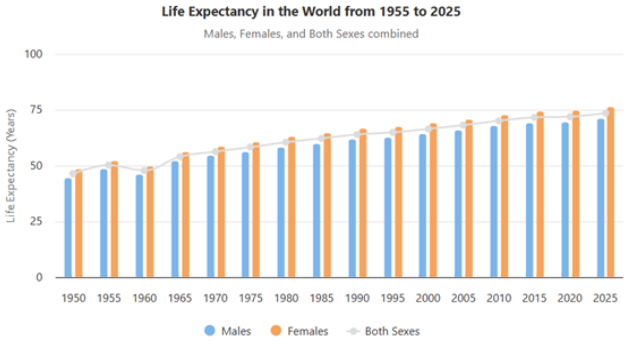

Fig 1: Life Expectancy by Country and in the World (2025) – Worldometer [39]

A similar pattern can also be observed in Indonesia. Based on data from the Central Statistics Agency (BPS), life expectancy in Indonesia has shown a consistent upward trend in recent decades. This means that the health status of the Indonesian population has improved year on year. Life expectancy is used as one of the indicators of the Human Development Index, namely longevity and healthy living (BPS, 2021) [30]. Data from the Central Statistics Agency (BPS) for 2024 shows that the average life expectancy for women in Indonesia is around 74 years, while for men it is around 70 years. This disparity suggests that the life

expectancy gap between genders remains, even with initiatives to enhance healthcare accessibility and encourage healthier ways of living.

2. The Effect of Gender Roles on Life Expectancy

In understanding the differences in life expectancy between men and women, various studies show that social factors and gender norms play an important role that is often more dominant than biological factors. In a qualitative study by Emslie *et al*. (2008) [31], semi-structured interviews with 45 respondents in Scotland revealed that respondents more often associated women's higher life expectancy with social norms and gender roles, such as men's tendency to avoid health checkups and unhealthy lifestyles driven by expectations of masculinity. These lifestyles, including smoking and alcohol consumption, are seen as part of social behavior influenced by culture and gender norms.

Gender relations theory also supports these findings, stating that the mismatch between social expectations of men as the primary breadwinner and economic realities can create chronic stress that negatively impacts physical and mental health. Atkinson *et al*. (2005) [32] and Springer *et al*. (2017) [33] showed that the pressures of masculinity and economic dependence adversely affect men's self-assessment of their health, as well as increase the risk of stress-related diseases, such as chronic lung disease and peptic ulcers.

This finding corresponds with the research outcomes reported by Yu-Tzu Wu *et al*. (2021) [34], who used harmonized data from 12 international cohorts and found that men had a 60% higher mortality risk than women. Interestingly, factors such as smoking and cardiovascular disease only slightly reduced the gap, indicating that gendered social norms, such as pressure to appear strong, healthcare avoidance, and cultural expectations of masculinity, are important determinants in explaining differences in life expectancy between genders.

Research by Lyell *et al*. (2023) [35] reinforces these findings through a cross-country ecological study showing that countries with high levels of gender bias, as measured by the GSNI, show elevated mortality from cardiovascular conditions and decreased longevity among men and women alike. Quantitatively, an increase in gender bias correlates with an increase in cardiovascular mortality by 5.28 points and a decrease in life expectancy by 0.05-0.07 years.

According to UNDP's GSNI 2023 report [36], almost 90% of men and women globally continue to carry strong underlying prejudices toward women. These social norms limit women's choices and opportunities, but also negatively impact men through social constructs that require them to be strong, independent, and not show weakness. Therefore, biased gender social norms not only hinder gender equality, but also create health inequalities and worsen the life expectancy gap between men and women in different countries.

In general, there was a significant association between gender roles and the duration of healthy life expectancy. Gender-constructed social roles shape behavioral patterns, access to health services, and stress levels differently between men and women. Men tend to be more exposed to health risks due to masculinity norms.

3. Factors Causing Differences in Life Expectancy among Men and Women

The gap in life expectancy between males and females is a global phenomenon that is influenced by several interconnected factors, such as biological, social, economic, and health behavior aspects. In general, women live longer than men, both in developed and developing countries. This difference cannot be explained by biological factors alone, but is the result of complex interactions between biological, social, economic, behavioral, and health policy aspects. Therefore, understanding life expectancy inequality from a gender perspective requires a multidimensional and interdisciplinary approach.

From a biological aspect, women genetically have an immune system that tends to be stronger and the hormone estrogen plays a role in protecting the cardiovascular system. This makes women more resistant to infections and degenerative diseases, especially during the reproductive period until middle age. Zarulli and Salinari (2024) [27], explain that female infants have a higher survival rate than male infants, even under conditions of premature birth or health disasters. This advantage is the initial basis for the difference in life expectancy, which is then magnified by other factors as we age.

However, social factors and gender roles are equally influential. In society, men are more often exposed to external risks due to masculinity norms that encourage risky behaviors including habits like smoking and excessive alcohol use, unhealthy diet, and involvement in heavy or hazardous physical labor. Data from the Global Burden of Disease (GBD) Study 2021 shows that men have higher mortality rates than women in almost all age groups. In addition, the impact of the COVID-19 pandemic led to a 1.6-year decline in global life expectancy, with the decline being greater for men (GBD, 2024) [26]. This indicates that men's vulnerability to health crises is also rooted in socially constructed patterns of behavior and gender roles.

Economic and educational aspects also contribute significantly to gender differences in life expectancy. A systematic review by Wirayuda and Chan (2021) [28] identified that higher levels of education and access to formal employment and stable income have a positive impact on increasing life expectancy, especially for women. In societies where women have equal educational and economic access to men, life expectancy gaps tend to be smaller. Conversely, in areas with high social inequality, women tend to lag behind in access to health, which in turn impacts the quality and length of their lives.

In addition, access to health services and environmental factors also reinforce or weaken these differences. According to Davis *et al*. (2024) [37], women are more likely to use preventive and routine health services such as antenatal check-ups and cancer screenings, while men tend to visit health services only in emergencies. This explains why many chronic diseases in men are detected at a more advanced and fatal stage. This difference is also rooted in social constructs that consider “sickness” as a weakness that does not fit the image of masculinity.

From a theoretical perspective, Bird and Rieker (2008) [38] in their book Gender and Health emphasize the concept of “constrained choices”. According to them, individual life choices towards health are influenced by social structures and inherent gender roles. For example, women who carry a double burden (domestic and professional) are likely to experience chronic stress, which, while not directly lowering life expectancy, impacts on the quality of health in old age. This explains the paradox that although women survive for more years, experiencing an extended life living in ill health or with disabilities (morbidity years), compared to men.

Furthermore, data from WHO (2022) [39] also reinforces these findings, showing that women on average have a life expectancy about 4 to 7 years higher than men globally, but with a shorter number of healthy years. This makes it clear that differences in life expectancy should not only be seen from the quantitative aspect (length of life), but also from the qualitative aspect (health in life).

Thus, differences in life expectancy between men and women are the result of complex interactions between biological variables, social norms and gender roles, economic conditions, access to health services, and public policies. The study emphasizes that reducing the gender longevity gap requires gender-sensitive policy interventions, such as increasing equality in education and employment, and providing inclusive and affordable health services for both genders. A cross-sectoral approach that places gender as one of the key dimensions in health development policy will be critical in achieving equity and long-term well-being for the entire population.

Conclusion

1. Life expectancy at the global level and in Indonesia shows a consistent upward trend over time. This increase is the result of advances in various fields such as health, technology, and socio-economic development that support the quality of life of the community. The disparity in life expectancy between men and women has remained evident and consistent over the years. Women typically exhibit higher life expectancy than men, a trend consistently observed at both the global level and within Indonesia.
2. The relationship between gender roles and healthy life expectancy is significant. Gender-constructed social roles shape behavior patterns, access to health services, and stress levels differently between men and women. Men tend to be more exposed to health risks due to masculinity norms.
3. The difference in life expectancy between men and women is not only about biological factors, but also influenced by many other factors and aspects such as social roles, living habits, economic conditions, and access to health services. Women tend to live longer due to biological advantages and greater access to preventive health services, while men are more prone to risky behaviors and delayed treatment. However, women are also more likely to experience chronic health problems in old age. To prevent and reduce this disparity, policies that favor gender equality are needed, for example by providing equitable access to education, employment and health services for all. This way, the quality and length of life can be more equitable for both men and women.

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The authors are grateful to earlier researchers for their contributions to the exploration of life expectancy and gender roles. Thanks to the results of previous research, the author and other readers can obtain comprehensive information about the factors that influence differences in life expectancy between men and women.

The information obtained from these studies is very useful as a basis for compiling literature reviews and analyzing relevant issues. The author hopes that the results of this article can provide a broader picture of the relationship between gender roles and life expectancy, and become a useful reference for future research and policy.

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