

RESEARCH PAPER

Exploring Regional Disparities in India through a Comprehensive Index of Women Empowerment

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ABSTRACT

Women empowerment, often defined as the process by which women gain autonomy, control over resources, and decision-making power, is a key determinant in the socio-economic advancement of a country. In regions where women enjoy higher levels of empowerment characterized by factors such as greater participation in the workforce, political engagement, access to financial resources, and freedom from traditional patriarchal constraints, the correlation between empowerment and improved educational access and health outcomes is markedly positive. This paper explores to quantify the regional disparity in women empowerment by constructing a comprehensive women empowerment index (WEI) for 17 major states of India, based on three broad indicators i.e., women socio-economic empowerment, health outcomes, and access to education. For this, the study uses secondary data namely, NFHS-5 for the year 2019-21, published by Ministry of Health and Family Welfare, Government of India. With the ranking of states in WEI, a clear and concrete picture of disparities is found unwaveringly, thus making it a critical focus for policymakers aiming to achieve balanced regional development across the country.

HIGHLIGHTS

- ① Access to education ensures a greater participation of women in decision-making and economic activities.
- ① Improved maternal health and reproductive rights indicate higher empowerment levels, leading to better overall well-being for women.
- ① Workforce participation and financial independence also serve as critical indicators of women's autonomy and their ability to influence societal structures.
- ① The paper attempts to measure Women Empowerment Index (WEI) in terms of three broad indicators: socio-economic empowerment, health outcomes, and access to education.
- ① The study constructs a Women Empowerment Index (WEI) to quantify the regional disparities across 17 major Indian states.
- ① The study uses NFHS-5 (2019-21) data from the Ministry of Health and Family Welfare, Government of India.

Keywords: Women empowerment, autonomy, access, freedom, regional disparity

Women empowerment is considered to be the principal criterion for country's socio-economic development which is commonly understood as the process by which women acquire autonomy, control over resources, and decision-making authority. Women who are empowered typically achieve job opportunities, higher levels of education, are more aware of health issues, and

can easily obtain healthcare for their families as well as themselves. Empowerment is positively correlated with improved health and educational outcomes in areas

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where women experience higher levels of freedom from traditional patriarchal constraints, greater political engagement, greater participation in the workforce, and access to financial resources.

However, if we examine the data at the disaggregate level, we frequently observe a significant gap between the areas with lower levels of women's empowerment, where women still face challenges related to inadequate access to education and vulnerable health outcomes. Gender inequality is deeply ingrained in many domains, as seen by women's reduced ability to make decisions, their limited mobility, and their poor access to healthcare and education. Because of this, cycles of poverty and illness are perpetuated in these areas since women are less likely to send their daughters to school and to seek healthcare services, particularly interventions for maternal and child health.

Addressing regional differences in women's empowerment is thus essential to enhancing decision-making, access to education, and health outcomes in India. Reducing these discrepancies requires policy initiatives including raising female literacy, encouraging female participation, and advocating for gender equality in the workplace. Additionally, to promote more inclusive and equitable development, region-specific initiatives aimed at removing the socio-cultural obstacles impeding women's empowerment in states that are falling behind could bridge the disparities in access to healthcare and education.

Within this purview, the present paper attempts to quantify the regional variations in women empowerment by constructing a comprehensive women empowerment index (WEI) for 17 major states of India, based on three broad indicators i.e., women's socio-economic empowerment, health outcomes, and access to education. For this, the study uses secondary data namely, NFHS-5 for the year 2019-21, published by Ministry of Health and Family Welfare, Government of India. The paper is divided into four sections. Section-I explains the conceptual issues relating to the disparity in women empowerment in India. Section-II gives the list of sub-indicators chosen from NFHS and a detailed methodology for constructing Women Empowerment

Index (WEI). Section-III provides the ranking of 17 states in Women Empowerment Index and findings. Finally, section-IV suggests some policy implications to ensure more inclusive and equitable development.

Section-I: Disparity in Women Empowerment in India: Conceptual Issues

Women empowerment is a multifaceted concept, encompassing economic, social, political, and personal dimensions, making it difficult to define and quantify universally. It varies across cultural, regional, and individual contexts, raising the challenge of developing policies that account for these differences. Keeping this in view, the extant literature can be divided into three sections:

1. Empowerment through Access to Education

Education enables women to acquire skills and knowledge that can help them to earn a better income. Education also helps to improve women's social status. Educated women are more likely to be involved in their communities, participate in decision making, and have a greater voice in society, also have a positive impact on women's health and well-being. Educated women are more likely to have better health outcomes, and their children are more likely to be healthy and well-nourished. Education can help to promote gender equality by challenging gender norms and stereotype (Reshi *et al.* 2022).

Access to education is milestone of women empowerment because it enables them to responds to the challenges, to confront their traditional role and change their life (Bhat, 2015). It helps women to come forward with courage for future and also will be able to wipe out gender inequality and injustice (Basheer, 2018). It further enables women build their views, understanding and help families, societies and nation as a whole to gain competitiveness. It plays an important role in enhancing the livelihood conditions for women (Yousuf, 2019)

As a matter of fact, education facilitates emancipation of women in a multifarious way. It equips women in such a way that they may get directions to grow their

personality (Jaysawal & Saha, 2023). It helps the exercise of women's rights and responsibilities. It gives them the chance to make more meaningful decisions in terms of political engagement and making choices about life. Thus, education can benefit from building self-confidence, self-efficacy, decision-making power and increase gender parity in organizations and institutions (Engida, 2021).

It is the most important tool for empowering women in the society. Being an educated mother women can enhance the literacy skill of the family, provides better hygiene, increases the financial status imparting vocational education, conquers disadvantages, discrimination and fight against exploitation (Kaur, 2018).

2. Empowerment through Health outcomes

Self-help group is a useful platform to enhance women's health through increased knowledge and awareness on health issues, and financial security during health emergencies (Narshimha *et al.* 2016). Low women autonomy, early age of marriage, pressure to prove fertility early in marriage and preference for a male child, contribute to adverse maternal and neonatal health outcome (Diamond Smith *et al.* 2024). Family planning decision such as contraception and timing of pregnancy are couple- level choices and cannot be made alone, nor can women be expected to change and fight against entrenched gender norms on their own such as mothers-in-law and husbands, in efforts to enhance contraception uptake and promote women's empowerment (Mitchell A *et al.* 2022).

Participation and adoption of better management programs among WSHGs, leading to increased productivity and income. Carp mola polyculture systems showed higher productivity and consumption rates, contributing to improved nutrition among WSHGs and their communities (Dubey *et al.* 2024). Men who were above poverty line and educated had good involvement in family planning (Parija, P. *et al.* 2022). Sex education should include social and moral behaviour more than biological specifics this may affect reduction in unplanned and early pregnancies and their associated complications, fewer unwanted children,

reduced risks of sexual abuse, greater completion of education and later marriages, reduced recourse to abortion and the consequences of unsafe abortion, and curb the spread of sexually transmitted diseases including HIV (Najmabadi *et al.* 2019).

Women Empowerment in reproductive health, especially in the past years, concentrated more on "power", where power structures limit women's sexual and reproductive health capabilities (Vizheh *et al.* 2021). Being a member of SHGs women are able to work in group in very civilized way. Women actively participated in SHG which made them realize their inner strength, gain self-confidence, social and economic empowerment and capacity building (Kaushal *et al.* 2010).

3. Socio-economic Empowerment

Empowered women are able to create a society and generations. As a matter of fact, social-economic women empowerment is the back-bone of our nation (Jain *et al.* 2015). Being a member of SHGs women are able to work in group in very civilized way. Women actively participated in SHG which made them realize their inner strength, gain self-confidence, social and economic empowerment and capacity building (Kaushal *et al.* 2010). Major socio-cultural factors are educational barriers, decent work and access to property. All of these socio-cultural factors are potential barriers and create hurdles for women to become empowered (Choudhry *et al.* 2019).

Socio-economic empowerment of an individual is assessed through multiple proxies' such as sustainable livelihood, social development, growth in living standards, and multidimensional poverty reduction (Chompa, 2022). Garment sector contribute to enhance the female worker's ability so that they can contribute financially in family as well as society, participate in decision making & able to get access to resources (Nayana *et al.* 2022). SHGs have helped women to change their social status and activities. In order to reduce poverty by enabling the poor household to have access to beneficial self-employment and employment opportunities based on their skill (Neelaiah *et al.* 2022).

The report prepared by UN Women and UNDP (2023), highlights the global challenges faced by women and provides a roadmap for targeted interventions and policy reforms. The report introduces two new indices- the Women's Empowerment Index (WEI) which measures women's power and freedoms to make choices and the Global Gender Parity Index (GGPI) which assesses gender disparities in key dimensions of human development. Combined, these indices offer a comprehensive assessment of countries' progress in achieving gender equality. Globally, women are empowered to achieve, on average, only 60 per cent of their full potential, as measured by the WEI, and women achieve, on average, 28 per cent less than men across key human development dimensions, as measured by the GGPI.

Studies show that when women are empowered, all of society benefits. Women's empowerment is an essential component of The Hunger Project's programs (2017). The Hunger Project created the custom Women's Empowerment Index (WEI), designed to measure progress in the multi-dimensional aspects of women's empowerment. Empowerment is considered a factor of both women's achievements as well as of gender parity with men. WEI measures progress on women's empowerment by aggregating results across five key areas (or "domains") namely, agency, income, leadership, resources and time. Each domain is comprised of a series of metrics (or "indicators") which quantifies performance in this domain.

Section-II: Methodology & Choice of Indicators

The present paper attempts to quantify the regional disparity in women empowerment by constructing a comprehensive women empowerment index (WEI) for 17 major states of India, based on three broad dimensions i.e., women's socio-economic empowerment, health outcomes, and access to education. This is depicted with the help of a flow chart given in chart 1.

The study has used secondary data namely, NFHS-5 for the year 2019-21, published by Ministry of Health and Family Welfare, Government of India.

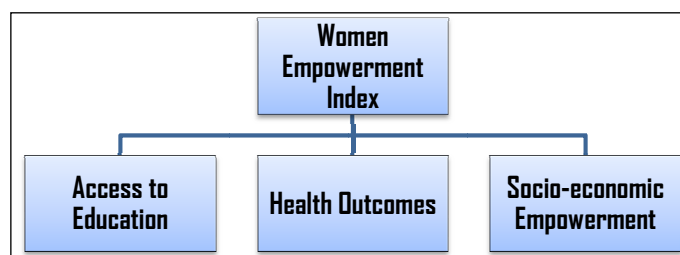


Chart 1: Three Broad Indicators of Women Empowerment Index

The methodology followed here for measuring Women Empowerment Index is the same as is used in the estimation of Educational Development Index by NUEPA. The methodology has been discussed in detail below:

Computation of Women Empowerment Index (WEI)

There are few steps for computing WEI which have been described as follows:

- ❖ Based on the three dimensions of WEI i.e., access to education, health outcomes and socio-economic empowerment, the raw data for all the major 17 states of India is computed.
- ❖ Secondly, a group index is developed for each dimension of women empowerment i.e., access to education index, health outcome index and socio-economic empowerment index. For this, each of these dimensions which depend on a number of sub-indicators is first normalised.
- ❖ Upon receiving normalised values, the next step has been to assign factor loadings and weights to different group-indices, using Factor Loadings and Eigen Values from the Principal Component Analysis (PCA).
- ❖ Thus, the indices for all the three indicators have been computed.

The Composite Women Empowerment Index has been finally computed based on three group indices. The following formula is used to determine the Index—

$$I = \frac{\sum_{i=1}^n X_i \left(\sum_{j=1}^n |L_{ij}| \cdot E_j \right)}{\sum_{i=1}^n \left(\sum_{j=1}^n |L_{ij}| \cdot E_j \right)}$$

Where I is the Index, X_i is the i^{th} Indicator; L_{ij} is the factor loading value of the i^{th} variable on the j^{th} factor; E_j is the Eigen value of the j^{th} factor.

Finally, all the 17 states are ranked as per their WEI so as to find out the relative position of each state *vis-a-vis* others. This also helps us to know that which dimension is exactly responsible for the low empowerment in different states.

Choice of Indicators

The sub-indicators chosen for three group indices i.e., access to education index, health outcome index and socio-economic empowerment index in given in the following tables 1, 2 and 3 respectively-

Table 1: Sub-Indicators of Access to Education

Sl. No.	Sub-Indicators
1	Female population age 6 years and above who ever attended school (%)
2	Children age 5 years who attended pre-primary school during the school year 2019-20 (%)
3	Women (Age 15-49 years) who are literate (%)
4	Women with 10 or more years of schooling (%)
5	Women who have ever used the internet (%)

Source: Chosen by author from NFHS-5.

Table 2: Sub-Indicators of Health Outcomes

Sl. No.	Sub-Indicators
1	Women age 20-24 years married before age 18 years (%)
2	Total fertility rate (children per woman)
3	Current Use of Family Planning Methods in currently married women age 15-49 years (%)
4	Mothers who received postnatal care from a doctor/nurse/LHV/ANM/midwife/other health personnel within 2 days of delivery (%)
5	All women age 15-49 years who are anaemic (%)
6	All Women whose Body Mass Index (BMI) is below normal (BMI
7	All Women whose Blood sugar level is high (141-160 mg/dl) 23 (%)

- 8 All Women having Elevated blood pressure (Systolic ≥ 140 mm of Hg and/or Diastolic ≥ 90 mm of Hg) or taking medicine (%)
- 9 All Women who have comprehensive knowledge 24 of HIV/AIDS (%)

Source: Chosen by author from NFHS-5

Table 3: Sub-Indicators of Socio-economic Empowerment

Sl. No.	Sub-Indicators
1	Currently married women who usually participate in three household decisions (%)
2	Women who worked in the last 12 months and were paid in cash (%)
3	Women owning a house and/or land (alone or jointly with others) (%)
4	Women having a bank or savings account that they themselves use (%)
5	Women having a mobile phone that they themselves use (%)
6	Women age 15-24 years who use hygienic methods of protection during their menstrual period (%)
7	Sex ratio at birth for children born in the last five years (females per 1,000 males)

Source: Chosen by author from NFHS-5.

Section-III: Comprehensive Index of Women Empowerment and State's Ranking

This section analyses the position of different states in terms of women empowerment. The evolved factor structure of the three indicators of women empowerment that are interconnected based on the Kaiser criterion of Eigen value is presented in Table 1, 3 and 5. The initial Eigen Values (Total) which are more than the value of one have been identified from the data set. After this the same number of components has been extracted for each variable as shown in Rotational Component Matrix. Based on the presence of Eigen values, components have been extracted. Table 2, 4 and 6 gives the group indices of all the three dimensions of women empowerment. Table 4 shows the ranking of 17 states of India in terms of women empowerment.

The table 4 presents the Women Empowerment Index (WEI) across various Indian states, revealing significant

Table 4: Comprehensive Women Empowerment Index and Ranking of 17 States

State	AEI*	AEI_Rank	HOI**	HOI_Rank	SEEI***	SEEI_Rank	WEI****	WEI_Rank
Andhra Pradesh	0.17	14	0.62	8	0.59	5	0.46	8
Arunachal Pradesh	0.34	7	0.66	6	0.71	3	0.57	6
Bihar	0.04	17	0.10	17	0.20	17	0.11	17
Chhattisgarh	0.20	12	0.60	9	0.42	8	0.41	9
Gujarat	0.26	9	0.46	13	0.30	14	0.34	11
Haryana	0.44	5	0.64	7	0.38	10	0.49	7
Jharkhand	0.14	16	0.12	16	0.32	12	0.19	16
Karnataka	0.41	6	0.72	5	0.77	1	0.63	5
Kerala	0.98	1	0.94	1	0.61	4	0.85	1
Madhya Pradesh	0.15	15	0.47	12	0.26	16	0.29	15
Odisha	0.20	11	0.53	10	0.42	9	0.39	10
Punjab	0.52	4	0.84	2	0.52	6	0.63	3
Rajasthan	0.17	13	0.49	11	0.30	13	0.32	12
Tamil Nadu	0.63	2	0.77	4	0.75	2	0.72	2
Uttar Pradesh	0.20	10	0.41	14	0.29	15	0.30	14
Uttarakhand	0.58	3	0.79	3	0.52	7	0.63	4
West Bengal	0.33	8	0.27	15	0.38	11	0.32	13

Source: Author's Calculation from NFHS-5 (2019-21).

*Access to education Index, **Health Outcomes Index, ***Socio-Economic Empowerment Index, ****Women Empowerment Index

disparities in women's empowerment levels. As the table 4 reveals, the performance of states can be understood in the form of three categories:

❖ **Top Performer States:** The Women Empowerment Index of Kerala is highest i.e., 0.85 followed by Tamil Nadu (0.72) and Punjab (0.63) while the state of Madhya Pradesh, Jharkhand and Bihar show lowest index i.e., 0.29, 0.19 and 0.11, respectively. Since Kerala has the highest literacy rate, health infrastructure is well developed and females are empowered to take decisions within the family, Kerala achieves the top rank in WEI. It reflects strong policies and social indicators supporting women's rights, education, and health. By far the highest score, it's near-perfect index reflects its long-standing commitment to education, resulting in high literacy rates and robust educational infrastructure (0.98). Tamil Nadu (0.72) also demonstrates high empowerment levels, likely due to effective educational initiatives and economic participation of women. It has made significant

strides in expanding access to education (0.63), supported by various government initiatives. Karnataka (0.63), Punjab (0.63), and Uttarakhand (0.63) exhibit a commendable empowerment metrics, suggesting progressive measures in gender equality and women's involvement in various sectors. Uttarakhand (0.58) and Punjab (0.52) show reasonable access to education, indicating effective policies that have led to improvements in enrollment and retention rates, though there is still room for growth. As far as health outcome is concerned, Kerala (0.94) stands out with an exceptional score, reflecting its robust healthcare system, high life expectancy, low infant mortality rates, and successful public health initiatives. Also, Punjab (0.84) benefits from better healthcare infrastructure and services, contributing to strong health outcomes among its population. Despite its strong healthcare and education systems, Kerala's Socio-Economic Empowerment Index (SEEI) is lower than expected (0.61), suggesting

potential challenges in employment and economic opportunities that need addressing. Leading the index, Karnataka showcases strong socio-economic indicators (0.77), reflecting robust economic growth, high literacy rates, and effective social policies that promote empowerment. Close behind, Tamil Nadu (0.75) also demonstrates strong socio-economic empowerment through various initiatives in education, healthcare, and economic opportunities, particularly for women and marginalized groups.

- ❖ **Medium Performer States:** Andhra Pradesh (0.46) and Haryana (0.49) show moderate levels of women empowerment, with potential for improvement through targeted programs addressing women's rights and participation. Chhattisgarh (0.41) and Odisha (0.39) are slightly below the median, indicating that while there are some initiatives, they may not be sufficiently impactful. Arunachal Pradesh (0.34) and West Bengal (0.33) indicate significant gaps in educational access, potentially due to geographical barriers and socio-economic factors affecting enrollment. Gujarat (0.26) has a concerning score, suggesting that despite some advancements, access to education remains limited for many populations. However, Haryana (0.44) and Karnataka (0.41) demonstrate moderate access, yet they face challenges in ensuring equitable education, particularly in rural and marginalized communities. Uttarakhand (0.79) and Tamil Nadu (0.77) show solid health outcomes, likely due to effective healthcare policies and programs focused on maternal and child health, nutrition, and disease prevention. Karnataka (0.72) although being a good performer, it still faces challenges related to rural healthcare access and health inequities. Arunachal Pradesh (0.66) and Haryana (0.64) also exhibit moderate health outcomes, indicating ongoing efforts to improve healthcare services but also highlighting the need for more targeted interventions. Andhra Pradesh (0.62) and Chhattisgarh (0.60) have moderate health outcomes but still struggle with access and quality of healthcare services, particularly in rural areas. Odisha (0.53) and Rajasthan (0.49) with lower scores, these states face significant public health

challenges, including malnutrition and maternal and child health issues. Madhya Pradesh (0.47) and Gujarat (0.46) also demonstrate concerning health outcomes, suggesting inadequate healthcare access and infrastructure. Uttar Pradesh (0.41) being a large state with significant health disparities, it needs urgent attention to improve healthcare access and outcomes. Arunachal Pradesh (0.71) ranks well in SEEI, indicating positive socio-economic developments, although it may still face challenges related to infrastructure and access to services. Andhra Pradesh (0.59) reflecting moderate socio-economic empowerment, it has made progress, but further efforts are needed to address regional disparities. Punjab (0.52) and Uttarakhand (0.52) exhibit average empowerment levels, indicating reasonable socio-economic conditions but also the need for focused policies to enhance opportunities for all citizens.

- ❖ **Low Performer States:** Gujarat (0.34) and Rajasthan (0.32) rank lower in WEI, highlighting potential cultural and economic barriers that may hinder women's empowerment. Uttar Pradesh (0.30) and Madhya Pradesh (0.29) are among the lowest, facing significant challenges, including socio-economic issues, limited access to education, and healthcare for women. Bihar (0.11) shows a very discouraging figure in women empowerment. Being the lowest performer by a wide margin, indicates severe deficiencies in women's empowerment across various domains, necessitating urgent and comprehensive policy interventions. Uttar Pradesh (0.20), Odisha (0.20), Chhattisgarh (0.20) are at the lower end, highlighting systemic issues such as poverty, infrastructure deficits, and lack of awareness about educational opportunities. The states like, Rajasthan (0.17), Andhra Pradesh (0.17), Madhya Pradesh (0.15) illustrate critical challenges in accessing education, emphasizing the need for targeted interventions to improve enrollment and educational quality. With alarmingly low scores, Jharkhand (0.14) and Bihar (0.04) require urgent and comprehensive efforts to address educational access, including infrastructure development, teacher training, and community engagement. The

low score of West Bengal (0.27) indicates critical public health issues, possibly linked to socio-economic challenges and insufficient healthcare resources. Jharkhand (0.12) and Bihar (0.10) also show the lowest rank, reflecting severe deficiencies in healthcare access, quality, and outcomes. Immediate and comprehensive interventions are essential to address these challenges. Chhattisgarh (0.42) and Odisha (0.42) show low empowerment levels, likely due to socio-economic challenges, including poverty and limited access to education and healthcare. Haryana (0.38) and West Bengal (0.38) face considerable socio-economic barriers, which may hinder empowerment efforts, particularly for disadvantaged groups. With significant challenges, Jharkhand's low score (0.32) indicates a need for substantial intervention in education, employment, and health services. Rajasthan (0.30) and Gujarat (0.30) demonstrate critical socio-economic issues that require immediate attention, particularly in terms of employment opportunities and social equity. One of the lowest performers, Uttar Pradesh (0.29) needs urgent and comprehensive strategies to tackle poverty and enhance socio-economic conditions. At the bottom of the index, Madhya Pradesh (0.26) and Bihar (0.20) face severe socio-economic challenges, necessitating focused efforts on education, health, and employment to improve the overall empowerment of their populations.

Section-IV: Policy Implications

For ensuring women empowerment in real sense, it is an urgent need to incorporate diverse strategies with a proper focus on education and healthcare countering all cultural and economic barriers by implementing a multi-pronged empowerment initiative. States with high WEI should share best practices with lower-performing states to foster a more equitable environment for women. Investments in education and healthcare are crucial, especially in states with low indices, to address fundamental barriers to empowerment. Understanding and addressing local cultural norms and economic conditions will be vital for implementing effective empowerment programs. Continuous monitoring and evaluation of empowerment initiatives can help identify

successful strategies and areas needing adjustment. States with low indices must prioritize interventions that focus on infrastructure, teacher recruitment, and retention, as well as community outreach to raise awareness about the importance of education. Efforts should be made to address the underlying socio-economic challenges that hinder access to education, particularly in rural and underserved areas. Sustainable educational reforms that include investments in technology, vocational training, and adult education could help elevate the Access to Education Index over time. Low-performing states must prioritize targeted health programs that address specific issues such as maternal and child health, infectious diseases, and nutrition. Investments in healthcare infrastructure, especially in rural and underserved areas, are critical for improving health outcomes. Engaging local communities in health initiatives can improve awareness and utilization of healthcare services. So, there is a need for targeted socio-economic policies focusing on education, health, and job creation, particularly in low-performing states.

CONCLUSION

The disparities highlighted in the Women Empowerment Index underscore the urgent need for tailored interventions that respect regional contexts while promoting gender equality and women's rights across India. The Access to Education Index highlights the pressing need for concerted efforts to improve educational access across India. Bridging the gap between high and low-performing states is essential for ensuring that all individuals have the opportunity to benefit from education, ultimately contributing to broader socio-economic development. The Health Outcome Index highlights significant inequalities in health access and outcomes across India. Addressing these disparities requires a multi-faceted approach, focusing on enhancing healthcare infrastructure, implementing targeted health programs, and fostering community involvement to ensure that all individuals have the opportunity to achieve better health outcomes. The Socio-Economic Empowerment Index highlights critical disparities across Indian states, underscoring the urgent need for tailored interventions to enhance socio-

economic conditions. Addressing these inequalities is essential for fostering an inclusive society where all individuals can achieve their full potential.

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