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Comparative Study Of The Education Sector In Kerala And Madhya Pradesh

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Abstract
This Study Presents A Comparative Analysis Of The Education Sector In Kerala And Madhya Pradesh, Two States Representing Stark Contrasts In Educational Development Within India. Kerala, Known For Its High Literacy Rate And Well-Developed Educational Infrastructure, Has Consistently Outperformed Other States Due To Strong Public Investment, Social Awareness, And Policy Interventions. In Contrast, Madhya Pradesh Faces Significant Challenges, Including Lower Literacy Rates, Inadequate Teacher Availability, And Limited Budget Allocations. Using Statistical Analysis, This Paper Examines Key Indicators Such As The Number Of Teachers, Education Budget, And Pupil-Teacher Ratios. The Findings Reveal A Positive Correlation Between Budgetary Allocations And The Number Of Teachers In Both States, With Kerala Showing A Stronger And Statistically Significant Relationship. The Study Underscores The Importance Of Sustained Investment In Education And Equitable Policy Implementation To Bridge Regional Disparities.

Keywords: Educational Development, Literacy, Policy Interventions, Statistical measures

1. Introduction

Education Sector In India: An Overview

India's Education Sector Has Witnessed Significant Transformation Over The Decades, Shaped By Policies, Regional Disparities, And Socio-Economic Factors. While The Country Has Made Substantial Progress In Literacy Rates And Educational Infrastructure, Stark Differences Persist Between States. Kerala And Madhya Pradesh Represent Two Contrasting Trajectories In The Indian Education Landscape.

Kerala, Often Hailed As A Model State, Boasts The Highest Literacy Rate In India, Driven By Strong Public Investment, Social Reforms, And Community Participation In Education. Its Emphasis On Universal Primary Education, Gender Inclusivity, And Quality Schooling Has Contributed To Impressive Educational Outcomes. In Contrast, Madhya Pradesh Continues To Grapple With Challenges Such As Low Literacy Rates, High Dropout Rates, Inadequate Infrastructure, And Teacher Shortages, Particularly In Rural And Tribal Areas. While Government Initiatives Like The Right To Education (RTE) Act And Samagra Shiksha Abhiyan Aim To Bridge The Gap, Disparities In Access And Quality Remain Pressing Concerns.

A Comparative Analysis Of These Two States Provides Valuable Insights Into The Role Of Policy, Governance, And Socio-Cultural Factors In Shaping Educational Outcomes In India.

Objectives:

a) To Collect And Analyze Key Education Indicators For Kerala And Madhya Pradesh, Along With The Corresponding Government Education Expenditures From 2011-12 To 2020-21.

b) To Identify And Examine The Disparities In Education Outcomes Between The Two States And Explore The Underlying Causes.

c) To Assess The Effectiveness Of Increased Education Spending In Achieving Desired Education Related Objectives.

d) To Propose Policy Recommendations Aimed At Addressing These Disparities And Improving Education Conditions In Both Regions.

Methodology

The Research Paper Is Done On Various Education Indicators Of Kerala And Madhya Pradesh And Education Expenditure By Respective Governments From 2011-12 To 2020-21. The Following Are The Education Variables Of The Study.:

a) Enrolment In School (Pre-Primary To 12)
b) Gross Enrolment Ratio In Higher Education
c) Gender Parity Index (Higher Education)
d) No Of Teachers (Prof And Equivalent)
e) Pupil Teacher Ratio (PTR) Higher Education

The Secondary Data Utilized In This Study Has Been Sourced From Various National And State Government Reports. The Data Is Initially Analyzed Using Bar And Line Graphs To Depict Trends Over 10 Years Alongside Corresponding Health Variables.

Then Pearson's Coefficient Of Correlation And Significance Level Test Were Done To Find The Relationship Between The Variables And Health Expenditure Of The Respective States. If,

- R = 1: Perfect Positive Correlation. As One Variable Increases, The Other Increases Proportionally.
- R = -1: Perfect Negative Correlation. As One Variable Increases, The Other Decreases Proportionally.
- R = 0: No Correlation. There Is No Linear Relationship Between The Variables.

Determining Weak Or Strong Relationships:

- Strong Correlation: |R| Is Close To 1 Or -1.
- Weak Correlation: |R| Is Close To 0.

We Reject The Null Hypothesis Of No Relation Between The Variable And Health Expenditure If The P-Value Is Less Than 0.005.

2. Literature Review

The Indian Education System Is Characterized By Significant Regional Disparities, With States Like Kerala Exhibiting Remarkable Educational Achievements, While Others, Such As Madhya Pradesh, Continue To Struggle With Fundamental Challenges. Kerala's Education System Is Widely Regarded As One Of The Most Successful In India. Scholars Attribute Its Success To A Combination Of Historical Reforms, State Intervention, And Strong Community Participation (Dreze& Sen, 2013).[1]

The State Boasts The Highest Literacy Rate In India (Census, 2011)[2] And Has Achieved Near-Universal Enrolment In Primary Education (Nair, 2019)[3]. Early 20th-Century Movements Emphasized Education For All, Reducing Gender And Caste Disparities (Jeffrey, 2001)[4].Kerala Has A Rob. Despite These Successes, Challenges Persist In Higher Education And Skill Development, With Scholars Calling For Reforms To Bridge The Gap Between Academic Learning And Employability (Mukhopadhyay, 2020)[5].

Madhya Pradesh, In Contrast, Faces Considerable Obstacles In Achieving Educational Progress. The State Has One Of The Lowest Literacy Rates In India (Census, 2011)[6], Particularly Among Marginalized Communities. Studies (Sharma & Mehta, 2018)[7]. Untrained Teachers And High Student-Teacher Ratios Negatively Impact Educational Outcomes (Rana, 2021)[8]. Socio-Economic Factors, Child Labor, And Early Marriage Contribute To Low Retention, Especially For Girls (Banerjee & Mishra, 2015)[9]. Government

[1]Drèze, J., & Sen, A. (2013). *An uncertain glory: India and its contradictions.* Princeton University Press.
[2]Office of the Registrar General & Census Commissioner, India. (2011). *Census of India 2011*. Ministry of Home Affairs, Government of India.
[3]Nair, P. (2019). *Educational achievements in Kerala: A historical perspective*. Journal of Indian Education, 45(2), 56-72.
[4]Jeffrey, R. (2001). *Declining caste and rising literacy in Kerala*. Economic and Political Weekly, 36(13), 1121-1135.
[5]Mukhopadhyay, R. (2020). *Bridging the gap between higher education and employability in Kerala*. Higher Education Review, 32(4), 78-92.
[6]Office of the Registrar General & Census Commissioner, India. (2011). *Census of India 2011*. Ministry of Home Affairs, Government of India.
[7]Sharma, P., & Mehta, S. (2018). *Literacy challenges in Madhya Pradesh: A socio-economic analysis*. Indian Journal of Social Research, 39(3), 201-218.
[8]Rana, A. (2021). *Impact of untrained teachers on student learning outcomes in Madhya Pradesh*. Educational Review, 27(1), 34-51.
[9]Banerjee, A., & Mishra, K. (2015). *Socio-economic barriers to girls' education in Madhya Pradesh*. Journal of Rural Studies, 41, 89-104.

Initiatives Such As The Right To Education (RTE) Act And Samagra Shiksha Abhiyan Have Sought To Address These Issues, But Implementation Challenges Remain (Gupta, 2022)[10].

Education Expenditure Plays A Crucial Role In Determining The Quality And Accessibility Of Education. Several Studies Analyze The Budgetary Allocations And Spending Patterns In Kerala And Madhya Pradesh. Kerala Consistently Allocates A Higher Percentage Of Its Gross State Domestic Product (GSDP) To Education Compared To Madhya Pradesh. According To Kumar (2020), Kerala's Expenditure Is Around 5.5% Of GSDP, Whereas Madhya Pradesh Lags At Approximately 3.2%[11]. A Study By Reddy (2019) Indicates That Kerala's Per Capita Education Expenditure Is Significantly Higher Than That Of Madhya Pradesh, Resulting In Better Infrastructure And Teacher Training Programs.[12]

Gupta & Sharma (2021)[13] Argue That The Higher Spending In Kerala Has Translated Into Superior Learning Outcomes And Higher Literacy Rates, While Madhya Pradesh's Limited Investment Has Led To Persistent Challenges In Access And Quality.

Studies By Verma (2022)[14] Highlight That Kerala's Public Education System Receives Substantial Government Support, Whereas Madhya Pradesh Relies More On Private Institutions, Creating Disparities In Education Quality And Accessibility.

Existing Literature Highlights The Stark Disparities In Educational Development Between Kerala And Madhya Pradesh. However, Research Gaps Remain In The Role Of Digital Education In Both States, Impact Of NEP 2020 On Regional Disparities, Long-Term Outcomes Of Educational Reforms. Future Studies Should Focus On Policy-Driven Solutions To Bridge The Educational Divide In India.

3. Centrally Sponsored Schemes And State Sponsored Schemeson Sustainable Development Goals (SDG 4) In Kerala And Madhya Pradesh

Centrally Sponsored Schemes (CSS) In Education Are Initiatives Funded By The Central Government And Implemented By State Governments To Improve Access, Quality, And Equity In Education Across India. These Schemes Aim To Bridge Regional Disparities And Ensure Universal Education For All Children. Two Of The Most Significant Centrally Sponsored Education Schemes Are Sarva Shiksha Abhiyan (SSA) And Samagra Shiksha Abhiyan (SSA). Launched In 2001, Sarva Shiksha Abhiyan Aimed To Achieve Universal Elementary Education Under The Framework Of The Right To Education (RTE) Act, 2009, Ensuring Free And Compulsory Education For Children Aged 6–14 Years. The Scheme Focused On Increasing Enrollment, Bridging Gender And Social Gaps, And Improving School Infrastructure. While SSA Significantly Improved Primary Education Access, Challenges Like Poor Learning Outcomes And Retention Rates Persisted. Recognizing The Need For A More Integrated Approach, The Government Of India Launched Samagra Shiksha Abhiyan In 2018, Merging Sarva Shiksha Abhiyan (SSA), Rashtriya Madhyamik Shiksha Abhiyan (RMSA), And Teacher Education (TE) Into A Single Scheme Covering Pre-Primary To Class 12. This Scheme Emphasizes Digital Education, Vocational Training, Inclusive Education, And Teacher Training To Enhance The Overall Quality Of School Education. Kerala, With Its Strong Education System, Has Leveraged These Schemes Effectively To Maintain High Literacy Levels, Whereas Madhya Pradesh Has Used Them To Address Gaps In Enrollment, Infrastructure, And Teacher Quality. While These Initiatives Have Significantly Contributed To Improving Educational Access, Challenges Such As Learning Quality, Infrastructure Deficiencies, And Teacher Shortages Continue To Require Sustained Policy Efforts For Long-Term Educational Reform.

[10]Gupta, R. (2022). *Assessing the implementation challenges of RTE and Samagra Shiksha Abhiyan in Madhya Pradesh*. Policy Perspectives, 14(2), 45-63.

[11]Kumar, S. (2020). *State-wise education expenditure in India: A comparative study*. Economic Studies, 52(3), 87-103.

[12]Reddy, M. (2019). *Per capita education expenditure and its impact on infrastructure: A comparison of Kerala and Madhya Pradesh*. Indian Economic Review, 44(2), 120-139.

[13]Gupta, P., & Sharma, D. (2021). *Public expenditure on education and learning outcomes: A state-level analysis in India*. Journal of Educational Policy, 36(1), 67-84.

[14]Verma, T. (2022). *Public vs. private education: The case of Kerala and Madhya Pradesh*. Indian Journal of Education, 50(4), 98-115.

State Governments In India Have Implemented Various Schemes To Enhance Educational Access And Reduce Disparities. Kerala, Known For Its High Literacy Rates, Has Introduced Initiatives Such As The Vidyakiranam Scheme And The Kerala State Literacy Mission. The Vidyakiranam Scheme Provides Financial Assistance To Children Of Differently-Abled Parents, Ensuring Educational Continuity From Primary To Higher Education. Meanwhile, The Kerala State Literacy Mission Aims To Improve Adult Literacy And Promote Lifelong Learning Through Programs Like Aksharasree, Targeted At Marginalized Communities, And Samagra, A Comprehensive Literacy Initiative.

On The Other Hand, Madhya Pradesh, A State Facing Significant Educational Challenges, Has Launched Multiple Scholarship Schemes To Support Students From Underprivileged Backgrounds. The Mukhyamantri Medhavi Chhatravriti Yojana Is A Merit-Based Scholarship Covering Tuition Fees For Students Securing 75% (State Board) Or 85% (CBSE/ICSE) In Class 12, Encouraging Higher Education In Professional Courses. The Gaon Ki Beti Yojana Specifically Supports Rural Girls By Providing Financial Assistance For Higher Education, While The Pratibha Kiran Yojana Extends Similar Benefits To Urban Girls From Below Poverty Line (BPL) Families. Additionally, The Vikramaditya Yojana Offers Tuition Fee Coverage For Meritorious Students From Economically Weaker Sections Of The General Category, Provided They Achieve A Minimum Of 60% In Class 12. These Schemes Reflect The Distinct Approaches Of Kerala And Madhya Pradesh In Addressing Educational Inequality—While Kerala Focuses On Universal Literacy And Lifelong Learning, Madhya Pradesh Emphasizes Financial Aid To Bridge Socio-Economic Gaps In Higher Education. A Comparative Analysis Of These Initiatives Provides Critical Insights Into Regional Disparities In Educational Policy Implementation And Outcomes.

4. Data Analysis

4.1 Budget For Education In Kerala And Madhya Pradesh

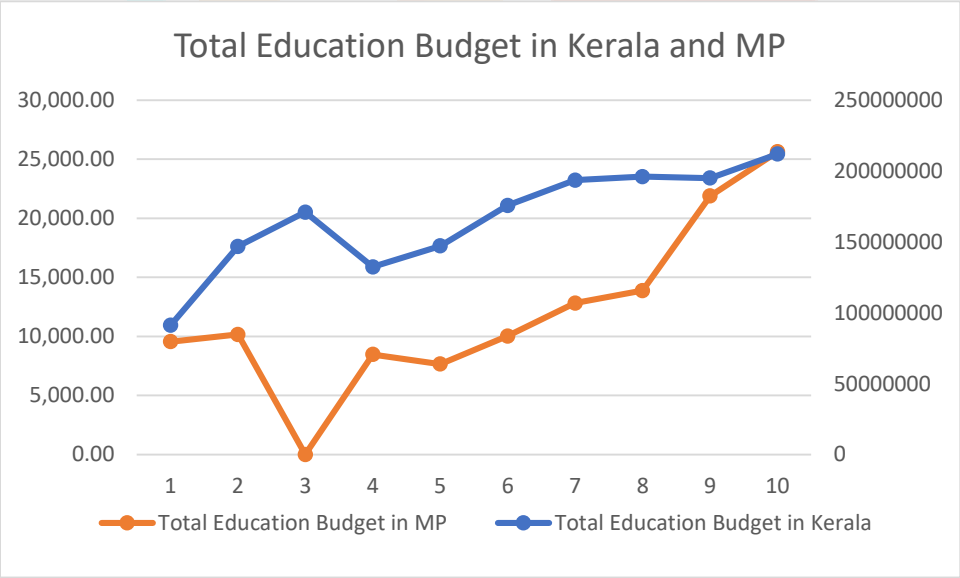

Fig 1

Fig. 1 Shows The Graph Illustrates The Total Education Budget In Kerala And Madhya Pradesh Over A Period Of Ten Years (2011–2020), Highlighting Significant Trends In Education Expenditure In Both States. Kerala, Represented By The Blue Line, Demonstrates A Consistently High Investment In Education, With A Steady Increase Over The Years. Although There Is A Slight Decline Around The Fourth Year, The Budget Continues To Rise, Stabilizing In The Later Years Before Experiencing Another Increase In The Final Year. In Contrast, Madhya Pradesh, Represented By The Orange Line, Shows Greater Fluctuations In Its Education Budget. The Most Notable Decline Occurs Around The Third Year, Indicating A Substantial Budget Cut Or Reallocation Of Funds. However, After This Drop, The State Gradually Increases Its Education Expenditure, Following A Steady Upward Trend From The Fifth Year Onward. By The Tenth Year, The Education Budgets Of Both States Converge, Indicating A Significant Rise In Madhya Pradesh's Investment In Education In The Later Years. This Trend Suggests That While Kerala Has Maintained A Long-Term Commitment To Education Funding, Madhya Pradesh Has Made Considerable Efforts In

Recent Years To Bridge The Gap. The Overall Increase In Education Spending In Both States Reflects A Growing Recognition Of Education As A Key Policy Priority.

4.2 Enrolment In School Education

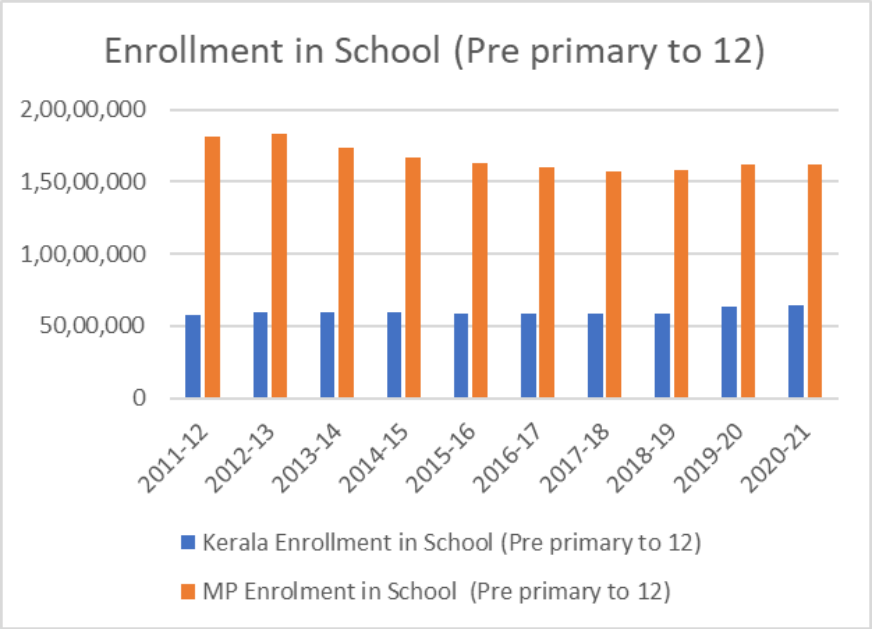

Fig 2

The Enrollment Trends In School Education (Pre-Primary To Grade 12) For Kerala And Madhya Pradesh, As Depicted In The Fig 2, Highlight Significant Differences Between The Two States Over The Period From 2011-12 To 2020-21. Madhya Pradesh Consistently Records A Significantly Higher Number Of Enrolled Students Compared To Kerala, Primarily Due To Its Larger Population. However, A Noticeable Decline In School Enrollment Is Observed In MP From 2012-13 To 2018-19, Followed By Stabilization In The Later Years (2019-20 And 2020-21). This Decline May Be Attributed To Factors Such As Increasing Dropout Rates, Migration Patterns, Or Socio-Economic Challenges Affecting School Participation. In Contrast, Kerala Exhibits Relatively Stable Enrollment Figures With Minor Fluctuations, And A Slight Increase In The Final Years, Which May Indicate Effective Educational Policies, Better Retention Rates, And Improved Access To Schooling. The Contrasting Trends Suggest That While Kerala Has Successfully Maintained School Participation Levels, MP Faces Challenges In Sustaining Enrollment, Despite Having A Larger Student Population. This Underscores The Need For Targeted Policy Interventions In MP To Address Structural Issues In Education Access And Retention.

Years	**Kerala Enrollment In School (Pre Primary To 12)**	**Total Education Budget In Kerala**	**MP Enrolment In School (Pre Primary To 12)**	**Total Education Budget In MP**
2011-12	57,69,147	91166824	1,81,48,774	9,558.03
2012-13	59,91,713	146792945	1,83,54,242	10,159.71
2013-14	59,23,305	170921934	1,73,22,875	2.41
2014-15	59,15,805	132300181.2	1,66,62,658	8462.85
2015-16	58,65,210	147123940.8	1,62,89,382	7662.16
2016-17	58,18,531	175744037	1,60,47,306	10031.02
2017-18	58,15,510	193547203.6	1,57,11,025	12813.71
2018-19	58,42,611	195997079.5	1,57,80,097	13880.2
2019-20	63,79,071	195012257	1,62,42,368	21878.26
2020-21	6423120	211896446	1,61,69,265	25619.36
	R= .864	P Value= .001	R= -0.404	P Value= .247

Table 3

The Correlation Analysis Between School Enrollment And The Total Education Budget In Kerala And Madhya Pradesh Reveals Significant Differences In Their Educational Trends. In Kerala, The Pearson Correlation Coefficient (R = 0.864, P = 0.001) Indicates A Strong Positive Relationship Between The Education Budget And Student Enrollment, Suggesting That Increased Financial Investment In Education Is Associated With Higher School Participation. The Statistically Significant P-Value (0.001) Reinforces The Reliability Of This Correlation, Implying That Budgetary Allocations Play A Crucial Role In Sustaining And Expanding School Enrollment. In Contrast, Madhya Pradesh Exhibits A Moderate Negative Correlation (R = -0.404) Between School Enrollment And The Education Budget, Indicating That As Funding Increases, Enrollment Shows A Slight Decline. However, The High P-Value (0.247) Suggests That This Relationship Is Not Statistically Significant, Meaning The Variation In Enrollment Is Likely Influenced By Other Socio-Economic And Policy-Related Factors Rather Than Budget Alone. These Findings Highlight The Contrasting Impact Of Educational Investment In The Two States, With Kerala Demonstrating A More Effective Utilization Of Resources To Enhance School Participation, While Madhya Pradesh's Enrolment Trends Appear To Be Shaped By Additional Structural Challenges Beyond Financial Allocations.

4.3 Gross Enrolment Ratio (GER) In Higher Education

The Fig 4 Illustrates The Gross Enrolment Ratio (GER) In Higher Education For Kerala And Madhya Pradesh From 2011-12 To 2020-21, Highlighting Significant Disparities In Higher Education Participation Between The Two States. Kerala Consistently Maintains A Higher GER Compared To Madhya Pradesh, Indicating Better Access To Higher Education Institutions. Over The Years, Kerala's GER Has Shown A Steady Increase, Rising From 22.1 In 2011-12 To 41.3 In 2020-21, Reflecting The State's Strong Focus On Expanding Higher Education Opportunities Through Improved Infrastructure And Policies. In Contrast, Madhya Pradesh Has Experienced Slower Growth In GER, Increasing From 19.2 In 2011-12 To 28.9 In 2020-21, Suggesting Persistent Challenges In Ensuring Broader Access To Higher Education. The Widening Gap Between The Two States Indicates That While Kerala Has Successfully Expanded Enrollment In Higher Education, MP Still Faces Obstacles Such As Financial Constraints, Socio-Economic Barriers, And Limited Institutional Capacity. This Trend Underscores The Need For Targeted Policy Interventions In MP To Enhance Higher Education Accessibility And Improve Enrollment Rates, Ensuring That More Students Can Benefit From Tertiary Education Opportunities.

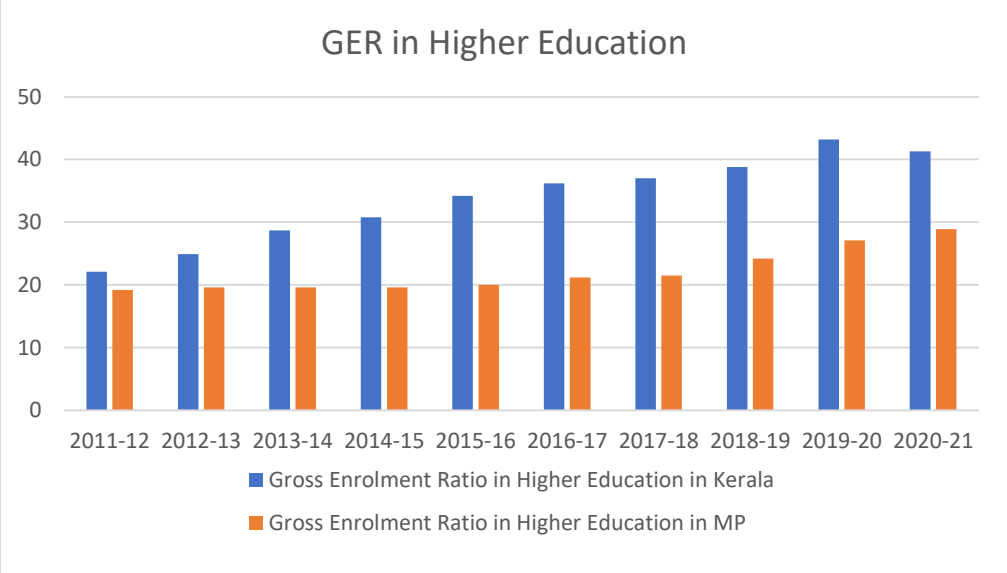

Fig 4

The Correlation Analysis Between The Gross Enrolment Ratio (GER) In Higher Education And The Total Education Budget In Kerala And Madhya Pradesh Presents Distinct Trends In Both States. In Kerala, The Pearson Correlation Coefficient (R = 0.291) Indicates A Weak Positive Relationship Between The Education Budget And GER, Suggesting That Increases In The Education Budget Have Not Been Strongly Associated With Higher Enrolment In Tertiary Education. Furthermore, The High P-Value (0.414) Implies That This Correlation Is Not Statistically Significant, Meaning The Observed Trend Could Be Due To

Random Variation Rather Than A Direct Causal Relationship. This Indicates That Factors Other Than Budget, Such As Educational Infrastructure, Socio-Economic Conditions, And Student Preferences, May Be Influencing Enrolment In Higher Education In Kerala.

Years	Gross Enrolment Ratio in Higher Education in Kerala	Total Education Budget in Kerala	Gross Enrolment Ratio in Higher Education in MP	Total Education Budget in MP
2011-12	22.1	91166824	19.2	9,558.03
2012-13	24.9	146792945	19.6	10,159.71
2013-14	28.7	170921934	19.6	2.41
2014-15	30.8	132300181.2	19.6	8462.85
2015-16	34.2	147123940.8	20	7662.16
2016-17	36.2	175744037	21.2	10031.02
2017-18	37	193547203.6	21.5	12813.71
2018-19	38.8	195997079.5	24.2	13880.2
2019-20	43.2	195012257	27.1	21878.26
2020-21	41.3	211896446	28.9	25619.36
	R = .291	P value= .414	R= .911	p value= .00

Table 5

In Contrast, Madhya Pradesh Exhibits A Strong Positive Correlation (R = 0.911) Between The Education Budget And GER, Implying That Higher Budget Allocations Are Closely Linked To Increased Enrolment In Higher Education. The P-Value (0.00) Confirms That This Correlation Is Statistically Significant, Suggesting A Meaningful Relationship Between Government Expenditure And Student Enrolment In Tertiary Education. This Could Indicate That Financial Investment In Education In MP Has Played A More Direct Role In Expanding Access To Higher Education, Potentially By Improving Infrastructure, Affordability, And Outreach Programs. The Stark Contrast Between The Two States Highlights The Complexity Of Factors Influencing Higher Education Enrolment And Suggests That While Budgetary Increases May Drive Enrolment Growth In MP, Kerala's Enrolment Patterns May Be More Influenced By Other Structural And Demographic Factors.

4.4 Gender Parity Index (Higher Education) In Kerala

The Graph Below Illustrates The Gender Parity Index (GPI) In Higher Education For Kerala And Madhya Pradesh From 2011-12 To 2020-21, Highlighting The Disparities In Gender Representation In Higher Education Enrollment. Kerala Consistently Maintains A GPI Above 1.3, Indicating That Female Enrollment Surpasses Male Enrollment Throughout The Period. This Suggests That Kerala Has Successfully Implemented Policies That Promote Gender-Inclusive Education, Likely Influenced By Higher Literacy Rates, Better Socio-Economic Conditions, And Increased Awareness Of Women's Education.

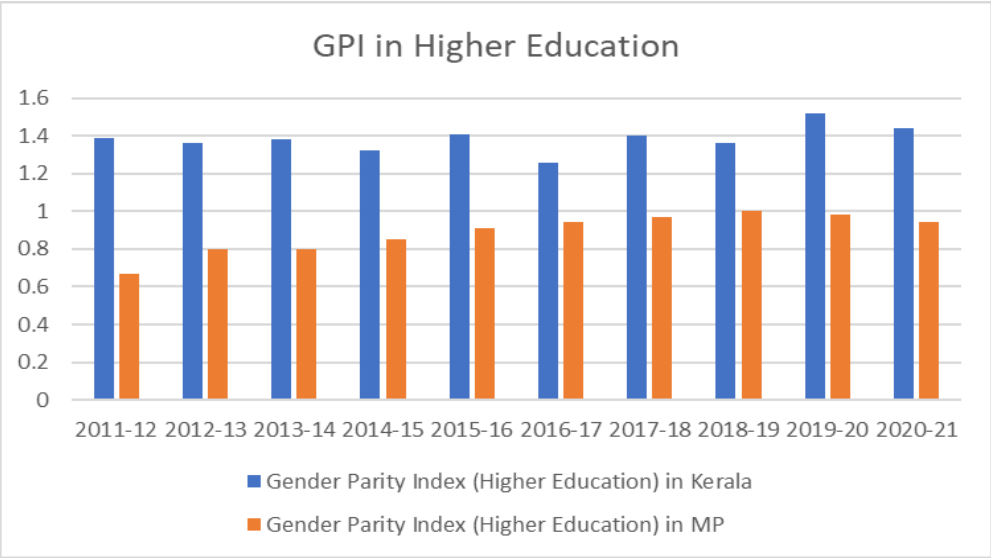

Fig 6

In Contrast, Madhya Pradesh Has A GPI Below 1 For Most Of The Years, Indicating Male Dominance In Higher Education Enrollment. However, There Is A Gradual Increase Over Time, With The GPI Approaching 1 By 2019-20, Reflecting Progress In Gender Parity. The Widening Gap Between The Two States Highlights Regional Disparities In Female Participation In Higher Education, Where Kerala Has Made Significant Strides While MP Continues To Face Socio-Economic And Cultural Barriers That Limit Female Access To Higher Education. Despite MP's Improvement, The Data Suggests A Need For Stronger Interventions, Such As Scholarships, Awareness Programs, And Socio-Economic Support, To Further Bridge The Gender Gap In Higher Education Enrolment.

Table 7

Years	Gender Parity Index (Higher Education) in Kerala	Total Education Budget in Kerala	Gender Parity Index (Higher Education) in MP	Total Education Budget in MP
2011-12	1.39	91166824	0.67	9,558.03
2012-13	1.36	146792945	0.8	10,159.71
2013-14	1.38	170921934	0.8	2.41
2014-15	1.32	132300181.2	0.85	8462.85
2015-16	1.41	147123940.8	0.91	7662.16
2016-17	1.26	175744037	0.94	10031.02
2017-18	1.4	193547203.6	0.97	12813.71
2018-19	1.36	195997079.5	1	13880.2
2019-20	1.52	195012257	0.98	21878.26
2020-21	1.44	211896446	0.94	25619.36
	R= .291	p value= .414	R= .524	p value= .120

The Table 7 Presents The Pearson's Correlation Coefficient (R) And P-Values For The Relationship Between The Gender Parity Index (GPI) In Higher Education And The Total Education Budget In Kerala And Madhya Pradesh. In Kerala, The Correlation Coefficient (R = 0.291) Suggests A Weak Positive Correlation Between The Education Budget And Gender Parity In Higher Education. However, The P-Value (0.414) Is Not Statistically Significant, Indicating That Changes In The Education Budget Do Not Have A Strong Or Direct Impact On Gender Parity In Higher Education.

Conversely, In Madhya Pradesh, The Correlation Coefficient (R = 0.524) Indicates A Moderate Positive Correlation Between The Education Budget And Gender Parity In Higher Education. This Suggests That As The Education Budget Increases, There Is A Tendency For Gender Parity To Improve. However, The P-Value (0.120) Is Greater Than 0.05, Meaning That This Correlation Is Not Statistically Significant. This Implies That While There Is Some Relationship Between Education Funding And Gender Parity, Other Factors, Such As Socio-Economic Conditions, Cultural Norms, And Policy Interventions, May Play A More Substantial Role In Influencing Gender Parity In Higher Education.

Overall, The Findings Indicate That Increasing The Education Budget Alone May Not Be Sufficient To Ensure Gender Parity In Higher Education. Targeted Policies, Scholarships, And Awareness Programs Are Likely Needed, Especially In States Like Madhya Pradesh, Where Gender Disparities In Education Remain A Concern.

4.5 No. Of Teachers (Prof And Equivalent)

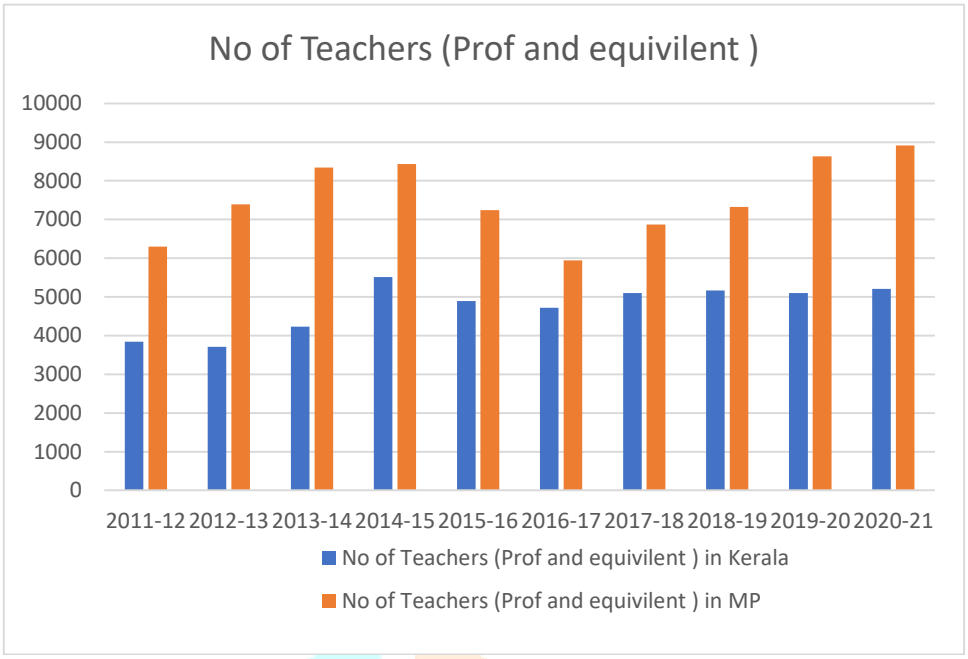

Fig 8

The Fig 8 Illustrates The Number Of Teachers (Professors And Equivalent Positions) In Higher Education In Kerala And Madhya Pradesh (MP) From 2011-12 To 2020-21. The Blue Bars Represent Kerala, While The Orange Bars Represent MP.

From The Graph, It Is Evident That The Number Of Teachers In MP Has Consistently Been Higher Than In Kerala Across All Years. MP Shows Significant Growth In Faculty Numbers, Particularly After 2018-19, Indicating An Expansion In Higher Education Institutions, Recruitment Drives, Or Increased Investment In Faculty Hiring. However, There Is A Decline Between 2015-16 And 2016-17, Suggesting Possible Budget Constraints, Faculty Attrition, Or Institutional Restructuring. After This Period, The Faculty Numbers In MP Recover And Continue To Rise.

In Contrast, Kerala Exhibits A More Stable But Slower Increase In The Number Of Teachers Over Time. The Fluctuations In Kerala's Faculty Numbers Are Relatively Minor Compared To MP, Indicating A More Consistent Faculty Strength Without Drastic Recruitment Changes. However, Kerala's Faculty Numbers Remain Significantly Lower Than MP's, Reflecting Regional Disparities In Higher Education Infrastructure, Institutional Expansion, And Policy Priorities.

Overall, This Graph Highlights Regional Differences In Higher Education Faculty Strength, With MP Experiencing Larger Fluctuations And Growth Compared To Kerala's Steady But Limited Increase. The Growing Number Of Teachers In Both States, Particularly Post-2018, Suggests An Increasing Emphasis On Higher Education, Which Is Crucial For Improving Teaching Quality, Student-Teacher Ratios, And Academic Development.

Years	No of Teachers (Prof and equivilent) in Kerala	Total Education Budget in Kerala	No of Teachers (Prof and equivilent) in MP	Total Education Budget in MP
2011-12	3840	91166824	6298	9,558.03
2012-13	3707	146792945	7393	10,159.71
2013-14	4235	170921934	8341	2.41
2014-15	5515	132300181.2	8433	8462.85
2015-16	4892	147123940.8	7239	7662.16
2016-17	4723	175744037	5944	10031.02
2017-18	5101	193547203.6	6874	12813.71
2018-19	5169	195997079.5	7324	13880.2
2019-20	5103	195012257	8632	21878.26
2020-21	5209	211896446	8917	25619.36
	R = .541	p value= .107	R= .356	p value= .313

Table 9

The Pearson's Correlation Coefficient (R) And P-Values Presented In The Table Measure The Strength And Significance Of The Relationship Between The Number Of Teachers (Professors And Equivalent) And The Total Education Budget In Kerala And Madhya Pradesh (MP) Over The Years 2011-12 To 2020-21.

For Kerala, The Correlation Coefficient R = 0.541 Suggests A Moderate Positive Correlation Between The Education Budget And The Number Of Teachers, Meaning That An Increase In The Budget Is Somewhat Associated With An Increase In The Number Of Teachers. However, The P-Value = 0.107 Is Greater Than 0.05, Indicating That This Correlation Is Not Statistically Significant At The 5% Significance Level. This Implies That Other Factors Beyond The Budget May Be Influencing Teacher Recruitment In Kerala.

For Madhya Pradesh, The Correlation Coefficient R = 0.356 Indicates A Weak Positive Correlation Between The Education Budget And The Number Of Teachers, Meaning That While There Is A Slight Association, The Relationship Is Not Strong. The P-Value = 0.313, Which Is Also Greater Than 0.05, Further Confirms That This Relationship Is Not Statistically Significant. This Suggests That Fluctuations In The Number Of Teachers In MP May Be Driven By Factors Other Than Budgetary Allocations, Such As Policy Decisions, Recruitment Drives, Or Institutional Expansions.

Overall, While There Is Some Correlation Between The Education Budget And The Number Of Teachers In Both States, The Lack Of Statistical Significance Implies That Budgetary Increases Alone Do Not Directly Lead To An Increase In Faculty Numbers. Other Factors, Such As Policy Interventions, Institutional Needs, And State-Specific Hiring Practices, Likely Play A More Crucial Role In Determining The Number Of Teachers In Higher Education Institutions In Both Kerala And MP.

4.6 Pupil Teacher Ratio (PTR) In Higher Education

The Graph Below Illustrates The Pupil-Teacher Ratio (PTR) In Higher Education For Kerala And Madhya Pradesh (MP) From 2011-12 To 2020-21. The PTR Represents The Number Of Students Per Teacher In Higher Education Institutions, With A Lower Ratio Indicating Better Teacher Availability And Potentially Higher-Quality Education.

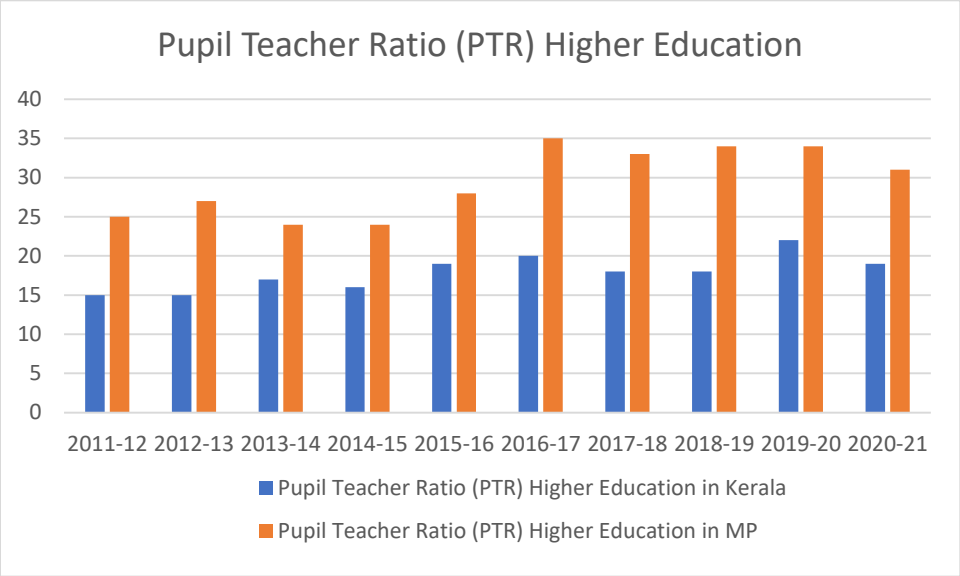

Fig 10

From The Fig 10, Kerala Consistently Maintains A Lower PTR, Ranging Between 15 And 20 Students Per Teacher, Suggesting A More Favourable Learning Environment With Better Faculty-Student Interaction. In Contrast, Madhya Pradesh Exhibits A Significantly Higher PTR, Often Exceeding 30 Students Per Teacher, Peaking At Around 35 In 2016-17, Which Indicates Greater Strain On Faculty Resources And Potentially Lower Individual Attention To Students.

Over The Years, Kerala's PTR Shows Minor Fluctuations But Remains Relatively Stable, Reflecting A Well-Managed Higher Education System With A Steady Number Of Teachers And Controlled Student Intake. However, MP Shows A Persistently High PTR, With Some Variations, But The Values Remain Above 25, Indicating A Shortage Of Teaching Staff Relative To Student Enrolment.

Hence Kerala Demonstrating A Better Teacher-Student Ratio, While MP Faces Challenges In Maintaining An Adequate Number Of Teachers Relative To Its Student Population. This Disparity Suggests The Need For Policy Interventions In MP To Recruit More Faculty And Improve Educational Outcomes.

Years	Pupil Teacher Ratio (PTR) Higher Education in Kerala	Total Education Budget in Kerala	Pupil Teacher Ratio (PTR) Higher Education in MP	Total Education Budget in MP
2011-12	15	91166824	25	9,558.03
2012-13	15	146792945	27	10,159.71
2013-14	17	170921934	24	2.41
2014-15	16	132300181.2	24	8462.85
2015-16	19	147123940.8	28	7662.16
2016-17	20	175744037	35	10031.02
2017-18	18	193547203.6	33	12813.71
2018-19	18	195997079.5	34	13880.2
2019-20	22	195012257	34	21878.26
2020-21	19	211896446	31	25619.36
	R = .681	p value= .029	R= .600	p value= .067

Table 11

The Table 11showsr And P Values Of Kerala And MP Respectively. In The Case Of Kerala, The Correlation Coefficient Is **0.681**, Suggesting A **Moderate To Strong Positive Correlation** Between The Variables. This Means That As One Variable Increases, The Other Also Tends To Increase. The P-Value Of **0.029** Is Below The Conventional Threshold Of 0.05, Indicating That This Correlation Is **Statistically Significant**, And The Relationship Is Unlikely To Be Due To Random Chance.

In Madhya Pradesh (MP), The Correlation Coefficient Is **0.600**, Indicating A **Moderate Positive Correlation** Between The Variables. However, The P-Value Is **0.067**, Which Is Slightly Above The 0.05 Significance Level. This Suggests That While There Is A Notable Relationship Between The Variables, It Is **Not Statistically Significant At The 95% Confidence Level**, Meaning There Is A Higher Probability That The Observed Correlation Could Be Due To Chance.

Overall, The Findings Indicate A Stronger And Statistically Significant Relationship In Kerala Compared To Madhya Pradesh. The Results Suggest That In Kerala, The Studied Variables Are More Closely Associated, While In MP, The Correlation, Though Present, Lacks Statistical Significance.

5. Conclusion

This Comparative Study Of The Education Sector In Kerala And Madhya Pradesh Highlights Significant Disparities In Key Indicators Such As The Number Of Teachers, Education Budget Allocation, And Pupil-Teacher Ratio. Kerala Demonstrates A More Robust And Well-Funded Education System, With A Higher Number Of Teachers Relative To Student Enrollment, Leading To A Lower Pupil-Teacher Ratio And Better Learning Outcomes. In Contrast, Madhya Pradesh Faces Persistent Challenges, Including An Inadequate Number Of Teachers, Fluctuating Education Budgets, And A Relatively High Pupil-Teacher Ratio, Which Adversely Impacts The Quality Of Education.

The Correlation Analysis Further Emphasizes These Differences. In Kerala, The Stronger Correlation Between Education Budget And The Number Of Teachers Suggests That Investments In Education Directly Contribute To Improving Faculty Strength, Thereby Enhancing The Overall Quality Of Education. The Statistically Significant P-Value Indicates That This Relationship Is Not Due To Chance. Meanwhile, In Madhya Pradesh, Although There Is A Positive Correlation, The Weaker Significance Level Suggests That Factors Beyond Budgetary Allocations, Such As Administrative Efficiency And Policy Implementation, Play A Crucial Role In Shaping Educational Outcomes.

These Findings Underscore The Need For Targeted Policy Interventions To Bridge Regional Disparities. While Kerala's Model Showcases The Effectiveness Of Sustained Investment In Education, Madhya Pradesh Requires Strategic Reforms To Improve Teacher Recruitment, Optimize Resource Allocation, And Enhance Governance In The Education Sector. Without These Measures, The Existing Educational Divide Between The Two States Is Likely To Persist, Affecting Long-Term Human Capital Development And Socioeconomic Progress.

In Conclusion, Addressing Educational Inequalities Between States Like Kerala And Madhya Pradesh Is Critical To Achieving India's Broader Educational And Developmental Goals. By Implementing Data-Driven Policies, Ensuring Accountability In Spending, And Prioritizing Teacher Training And Recruitment, Policymakers Can Create A More Equitable And Effective Education System Across The Country.

6. Policy Implications

Increased Budgetary Allocations: Madhya Pradesh Needs To Enhance Its Investment In Education To Match National Standards. A Targeted Approach To Budget Distribution, Prioritizing Underdeveloped Regions, Can Bridge Existing Gaps.

Teacher Recruitment And Training: Addressing The Shortage Of Qualified Teachers Through Recruitment Drives, Improved Incentives, And Periodic Training Programs Is Crucial For Enhancing Educational Outcomes.

Infrastructure Development: Expanding Educational Infrastructure, Particularly In Rural And Tribal Areas, Will Ensure Better Accessibility And Learning Environments.

Community Participation And Awareness: Strengthening Community Engagement In Education Can Foster Accountability And Encourage Higher Enrollment And Retention Rates.

Technology Integration: Implementing Digital Learning Tools And E-Education Platforms Can Enhance Learning Outcomes, Especially In Regions With Limited Physical Infrastructure.

7. Way Forward

To Achieve A Balanced Education System Across States, A Multi-Pronged Approach Is Necessary. Madhya Pradesh Must Adopt Kerala's Best Practices, Such As Community-Driven Education Models And Decentralized Policy Implementation. Collaboration Between Government Bodies, Ngos, And Private Stakeholders Can Facilitate Resource Mobilization And Innovative Educational Reforms. Future Research Should Focus On Micro-Level Policy Interventions And Their Long-Term Impact On Educational Outcomes. By Addressing Regional Disparities, India Can Progress Towards A More Equitable And Inclusive Education System.

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