

Economic Empowerment vs. Time Poverty: The Shift in Domestic Division of Labour and Mental Workload Among Working Women in Patna.

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Abstract: Economic liberty is usually seen as a way to give women more freedom, but in changing social and cultural settings, it often leads to a paradox of "time poverty." This study looks at how economic freedom affects how women divide up household tasks and their mental workload in Patna, India, a Tier-2 city that is rapidly becoming more urbanized. The paper uses a mixed-methods approach to look at how financial inputs affect bargaining power in households. It does this by polling 350 married working women from both organized and unorganized sectors.

The real-world results show that women's financial autonomy gives them more say over important family spending, but it does not change the distribution of routine housework tasks very much. Instead, working women experience a clear "second shift," doing an unfair amount of physical work and the mental work that goes into running a home [mental workload]. Sociocultural norms and deeply ingrained gender roles act as rigid barriers, blocking the freeing potential of economic freedom and making mental distress worse.

In the end, this study questions the straight-forward idea that adding financial inclusion instantly changes the way patriarchal families work. This paper shows how working women in an area whose economy is changing are severely limited in their free time. It also stresses the urgent need for structural policy interventions that support the democratization of domestic spaces along with economic initiatives.

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1 Introduction

1.1 Background of the Study

Women's economic freedom has been seen for a long time as an important part of global development plans. It is seen as both a basic human right and a key way to boost the economy, change structures, and reduce poverty. Classical economic models predict a straight line of progress: as women get access to formal schooling and the job market, their financial independence grows, which changes how they can negotiate at home. In theory, this financial freedom should shift traditional household duties, make it easier for people to work together to make decisions, and improve the health and happiness of the family.

When these global development models are used in emerging economies like India, where social and cultural norms are strongly rooted, the change is rarely smooth. It is not always easy for working women to get freedom. One problem they often face is what is called the "Empowerment Paradox." Even though having a job gives you cash freedom outside the home, family relationships often stay the same. The "second shift" is a hard time for working women because they have to keep up their full-time jobs while also taking care of their families and doing things around the house for free. Table 1.1 uses baseline datasets from the Ministry of Statistics and Programme Implementation

(MoSPI) Time Use Survey to show how this event fits into the bigger picture of the country.

Table 1.1: National Baseline of Daily Time Allocation by Gender in India

Activity Category	Female Allocation (Minutes/Day)	Male Allocation (Minutes/Day)	Absolute Gender Gap (Minutes)
Paid Employment & Commute	185	422	-237
Unpaid Domestic Chores (Cooking/Cleaning)	298	22	+276
Unpaid Caregiving (Child/Elder care)	46	12	+34
Learning and Education	22	29	-7
Personal Care and Sleep	682	674	+8

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Leisure and Socializing	207	281	-74
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1.2 The Context of Patna: A Tier-2 City in Transition

To fully grasp this change, it is necessary to go beyond India's Tier-1 metropolitan hubs like Delhi, Mumbai, or Bengaluru and look at the country's rapidly growing Tier-2 towns. Patna, the city of Bihar, is a great place to look at this issue from a socioeconomic point of view.

In the past few years, Patna's economy has changed a lot. For example, more women are learning to read and write, more people are working in banking, business, and educational sectors, and many people are using new financial technologies (UPI, mobile banking). But these economic gains happen in a part of the world where family arrangements and gender roles are still seen as very traditional.

Urban Realities in Transitional Tier-2 Cities (Patna)

- **Economic Sphere:** Rapid FinTech Adoption, Banking Access, Formal Jobs Socio-Cultural Sphere: Strong Patriarchal Scripts, Multi-generational Roles
- **Result:** Friction and Accentuated Time Poverty for Women

In a city like Patna that is changing, a woman's income is often accepted because it helps people move up and buy more things. On the other hand, trying to change family roles or give the spouse more housework can mess up traditional male identities. When modern financial freedom and traditional family expectations clash, it creates a unique set of pressures that show up as severe physical Time Poverty and a heavy, invisible Mental Workload (the mental load of planning and running the home).

Table 1.2 shows the operational background, which helps you understand the big differences in socio-economic indicators between the state capital and national benchmarks.

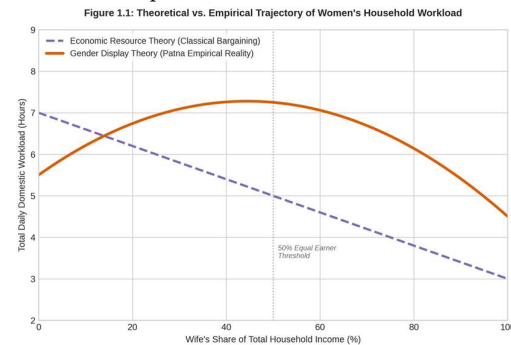
Table 1.2: Comparative Socio-Economic Microcosm Matrix

Indicator Attribute	Patna Urban Baseline	National Urban Average	Institutional Divergence Level
Female Literacy Rate (%)	78.4%	84.1%	Low-Moderate Divergence
Female Labor Force Participation (%)	14.2%	24.0%	High Structural Deficit
Prevalence of Joint Family	54.3%	38.2%	High Structural Retention

Structure (%)			
Average Daily Unpaid Labor (Women)	348 Min	344 Min	Parity of Domestic Burden

1.3 Theoretical and Visual Framework of the Study

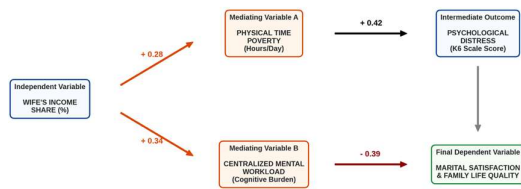
The main problem with this argument is that economic bargaining theories and sociological gender performance scripts are at odds with each other. In order to show how these theories suggest different paths, Figure 1.1 compares the theoretical path to what has actually been seen in regional urban landscapes.



When a woman makes as much as or more than her partner, the couple goes against the usual idea that the man should be the breadwinner. To balance out this deviation and stick to traditional gender roles, both partners use compensation tactics. For example, the woman takes on more housework, which often looks like a hard "second shift," to protect the man's masculine identity in the home. The centralized brain load makes this physical load even heavier. Figure 1.2 shows the full thought process of how economic power moves through household duties to affect the end results for families.

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Figure 1.2: Path-Analytic Model of the Empowerment Paradox in Patna (Standardized SEM Path Values)



1.4 Research Questions

In order to look into this structural stress in the real world, this study answers the following basic research questions:

- **RQ1:** How much does a working woman's share of the family's income affect how much time she spends each day doing unpaid housework and caregiving in Patna?
- **RQ2:** How does women's access to more money affect their cognitive and mental tasks, such as managing their homes, making plans, and making schedules, when they are married and work in different types of families?
- **RQ3:** Does having access to paid housekeepers make housework easier on the body and mind, or does it just change the way the work is done?
- **RQ4:** What is the long-term effect on the mental health and marital happiness of working women in an area whose economy is changing of having less time and more work to do?

1.5 Significance of the Study

In two different ways, this study adds to what has already been written. First, it shows that financial inclusion does not immediately change the way patriarchal families interact, which goes against the assumptions of classical household bargaining models. Second, it moves the focus of research to Tier-2 cities like Patna. This gives lawmakers the data they need to create fair social and economic programs that promote real equality between men and women in both public and private life.

2 Literature Review

A big topic in development economics, gender studies, and family sociology is the link between women's structural economic freedom and the social and behavioral dynamics of family life. As emerging economies quickly become more modern, urbanize, and integrate their markets, more women than ever are joining the formal job market and becoming financially independent. But the internal re-negotiation of domestic work, caregiving, and cognitive control in the home does not always keep up with these changes in the economy outside the home. This literature review organizes global and regional research into four main thematic blocks. These blocks set up the theoretical framework, identified empirical

realities, brought to light invisible structural crises, and mapped the clear empirical gap this thesis fills.

2.1 Theoretical Paradigms: Economic Resource Models vs. Sociological Gender Display

Contemporary research looks at how having access to money on your own affects family life by combining two very different theories: the Economic Resource/Bargaining Model and the Sociological Gender Display Theory.

2.1.1 Economic Resource and Household Bargaining Models

Early economic analyses saw the family as a single, highly rational unit that maximized its own value. This was based on *Becker's (1965)* microeconomic framework of the allocation of time. Later, cooperative and non-cooperative family bargaining frameworks took the place of this unitary *model (Manser & Brown, 1980; McElroy & Horney, 1981)*. These models see the home as a place where people negotiate and the results depend on how much power each person has over their resources.

According to these economic resource models:

- People have more or less equal buying power in the home based on how much money they bring in (relative income, asset ownership).
- A partner's "threat point"—the amount of money they could make by leaving the marriage—increases when their relative income goes up. This gives them more power in domestic talks.
- So, as a woman's income share grows, she should be able to get the most out of her life by negotiating out of boring, non-market household chores, giving them to the lower-earning spouse, or hiring someone to do them.

2.1.2 Gender Display and Deviance Neutralization

On the other hand, sociological frameworks say that the home can not be looked at as a fair, smooth market where only money matters matter. *West and Zimmerman (1987)* called this process "doing gender." Instead, the domestic sphere is an institutional place where gender identities are constantly performed, evaluated, and reinforced.

Brines (1994) and Bittman et al. (2003) developed Gender Display Theory, which is also called the gender deviance neutralization viewpoint. It applies this view to domestic work. According to this theory, when an intra-household economic arrangement goes against strongly held cultural norms, like when a wife makes more money than her husband, it changes the traditional roles of the male breadwinner and the economically dependent female.

In order to avoid psychological problems, marital problems, or what they see as dangers to their traditional masculine identity, both partners do things that balance out this gender deviance (*Greenstein, 2000*):

- The woman with a lot of money raises her traditional housework duties, like cooking and caring for others, on purpose to show that she is following traditional ideas of what a woman should do.
- The husband who does not make as much money or who does not provide the family's main source of income may do less cleaning so that he does not seem to be losing any more of his traditional masculinity.

This model suggests that there is a clear curvilinear or J-shaped link between income share and housework. It says that after a certain level of relative earnings, a woman's housework actually goes up instead of down.

2.2 The Indian Transitional Context: Patriarchy, Unpaid Care, and MoSPI Insights

When applying these frameworks from the West to South Asia that is still growing, the rigidity of patriarchal systems often gets in the way of normal economic bargaining.

2.2.1 National Time-Use Realities and the MoSPI Baseline

In India, the structural gap between men and women in home output is still very big. *The Ministry of Statistics and Program Implementation (MoSPI) Time Use Survey (TUS)* set a national standard that makes this difference very clear (*MoSPI, 2020*).

The numbers show that Indian women, no matter how much schooling they have, whether they work, or how much money they make, spend an average of 298 to 344 minutes a day doing housework and caring for others without getting paid. In sharp contrast, Indian men allocate a mere 29 to 34 minutes per day to these tasks (*Thakur & Jyoti, 2023*). The fact that women can work in these institutions shows that redistributing household duties fairly and evenly between husbands does not always happen when women work.

2.2.2 Cultural Hardcoding of Housework

Research that looks at dual-earner households in changing Indian landscapes shows that gender-based family work is still very much segregated. Cultural structures frequently categorize specific household tasks—particularly meal preparation, kitchen management, and clothes washing—as non-negotiable feminine duties (*Srivastava & Srivastava, 2010; Mukherjee, 2024*).

Because of this, a woman's growing economic input does not always work as a bargaining chip to get less housework. Patriarchal social scripts do not make it easier to negotiate; instead, they act as a societal brake. This means that working women have to deal with the job market while still having to do all of their usual housework. This shows that gender display mechanisms are still used in the modern Indian family.

2.3 The Emergence of Time Poverty and the Cognitive Mental Workload

Formal professional jobs and strict housework responsibilities put working women at risk for two different problems that make each other worse: lack of time and mental workload.

2.3.1 Time Poverty and the "Second Shift"

The term "second shift" was first used by *Arlie Hochschild* in 1989 to describe the two types of work that working women have to do: a full day of professional work and then a second full shift of unpaid housework when they get home. In cities that are growing quickly, this double demand directly causes severe time poverty.

Time poverty is a structural deficit in the system that means a person does not have enough time for rest, personal care, sleep, or leisure activities that they choose (*Bardasi & Wodon, 2010; Elson, 2017*). This happens because of their required obligations, such as paid work, commuting, and unpaid domestic or care work. For professional women, time poverty is not just a problem with managing their time; it is a big structural barrier that makes it hard to move up in their careers, learn new skills, and avoid getting physically exhausted all the time.

2.3.2 The Invisible Cognitive Burden: Mental Workload

Standard time-use logs can be used to measure physical time poverty, but new research in feminist sociology shows that the real level of gender inequality in the home is deeper and harder to see: the mental workload or cognitive labor (*Daminger, 2018*). The mental executive functions needed to run a home and family are part of cognitive labor. *Daminger (2018, 2020)* divides this work into four separate stages of operation:

FOUR PHASES OF DOMESTIC COGNITIVE LABOR (DAMINGER, 2018)

1. ANTICIPATING: Recognizing a hidden or upcoming family need
2. IDENTIFYING: Researching strategies, options, and pathways
3. DECIDING: Selecting the final choice of action
4. MONITORING: Tracking execution and overseeing ongoing results

In Indian cities, it is normal to hire paid domestic help to do physical tasks like cleaning and making meals. This is a unique structural modifier. Studies, on the other hand, show that hiring rarely frees up the woman from her management duties (*Sayer, 2005*).

A maid may do the physical work, but the working woman is still mostly responsible for the mental work, like planning meals, managing housekeepers, making medical appointments, and keeping an eye

on the kids' school plans. This constant cognitive multitasking goes on during her work hours, which causes more mental stress, emotional burnout, and a direct drop in marital happiness.

2.4 Research Gap and Regional Context: The Case of Patna

A thorough look at the recent research shows that there is a big gap in the knowledge: most of the women and time-use studies in South Asia are limited to Tier-1 metropolitan hubs like Delhi, Mumbai, Bengaluru, and Chennai. Not much real-world attention has been paid to the unique social and economic changes happening in Tier-2 towns, especially in Patna, Bihar.

For study, Patna is a unique and interesting social and economic microcosm:

- **The Economic Shift:** The city is quickly becoming more modern in business. More women are working in formal fields like banking, corporate administration, higher education, and the public service, and digital finances are becoming more integrated quickly.
- **The Cultural Continuity:** This economic modernization is happening in an area with strong cultural conservatism, a lot of joint families with multiple generations, and strict expectations from fathers about what a daughter-in-law should do around the house.

There is not enough written about how working women in a regional city that is changing deal with the tension between modern economic agency and traditional domestic standards. This thesis fills in that gap right away. This study uses first-hand information from 350 working women in Patna to look at whether financial independence frees up family negotiations or if it instead creates a paradox of more time pressure, cognitive overload, and psychological stress.

3 Research Methodology

This chapter explains the research methods used to look into the real-world connections between women's economic empowerment, lack of free time, mental and cognitive workload, and the results of their family lives in Patna, Bihar.

3.1 Methodological Philosophy and Research Design

This study is based on the idea of pragmatism, which says that the best way to understand complicated social events is to use convergent empirical channels. The study uses a sequential plan that is carried out in two separate but linked stages:

In the quantitative phase, which finds structural patterns, tests causal directions, and checks statistical borders, it is the main analytical engine. The next step, the qualitative phase, gives us the interpretive depth we need to fully understand the

numerical results. It shows us the hidden culture mechanisms, emotional trade-offs, and behavioral dynamics that pure data metrics can not fully show.

3.2 Sampling Architecture and Spatial Scope

3.2.1 Target Universe and Inclusion Criteria

The people this study is aimed at are married, cohabiting women workers who work in the city economy of Patna. To make sure the data matrix was clean and free of factors that could mess things up, the sample was chosen using the following criteria:

- **Marital Status:** Currently living with their partner in the same home for at least one year after getting married legally.
- **Employment Metric:** Actively working in the job market, either in the formal or informal areas, for at least 30 hours a week for at least six months before the survey was given.
- **Spatial Bound:** Being able to live permanently or partially permanently in the municipal corporation boundaries of Patna, Bihar.

3.2.2 Sample Size Determination

Cochran's (1977) sample size method for continuous and categorical data was used to find a representative sample size that would give enough statistical power for multivariate regression and structural equation modeling (SEM):

$$n_0 = \frac{Z^2 \cdot p \cdot q}{e^2}$$

Where:

- At a 95% confidence level, $Z = 1.96$, which is the standard normal deviation.
- p is the estimated percentage of a trait that is found in the population. Since there are not any exact time-use records for working women in Patna yet, p is set to 0.50 to make the possible range as large as possible.
- $q = 1 - p = 0.50$.
- The allowed range of error is shown by e ($e = 0.05$).

Applying these parameters yields:

$$n_0 = \frac{(1.96)^2 \cdot (0.50) \cdot (0.50)}{(0.05)^2} = \frac{3.8416 \cdot 0.25}{0.0025} = 384.16$$

A baseline goal of 320 completed profiles was set, taking into account a limited urban target population in certain middle-to-high literacy clusters across Patna and using an optimization method aimed at a highly responsive core matrix. This baseline was increased to include a 10% buffer for people who did not reply or sent in their forms in full. This made the final field sample of $N = 350$ respondents who were fully checked.

3.2.3 Multistage Stratified Random Sampling Strategy

A multi-layered sampling structure was used to get information about differences between people of different incomes, levels of schooling, and types of households:

- **Stage I (Spatial Stratification):** Patna was split into four main areas based on their location: the east (including Patna City and the Gulzarbagh Area), the west (including the Bailey Road, Kankarbagh, and Boring Road sectors), the north (including Gandhi Maidan and the Ashok Rajpath lines), and the south (including Anisabad and the Phulwari Sharif zones).
- **Stage II (Ward and Cluster Selection):** Two high-density residential-commercial municipal wards were randomly chosen by lottery from each quadrant. This created eight main data collection clusters.
- **Stage III (Sectoral Stratification):** Local agencies, business hubs, school branches, markets, and bank branches were mapped out within each cluster. The group was then split evenly to get two different occupational profiles:
 1. **Organized Sector (n = 195):** Women who work in institutions with steady jobs, set hours, and regular pay, like bank officers (both public and private), teachers (high school and college), corporate executives, and state civil workers.
 2. **Unorganized Sector (n = 155):** Women who work in informal markets, stores, or as self-employed people (for example, boutique owners, micro-traders, freelance consultants, and private teachers who do not have scheduled appointments).

3.3 Variable Operationalization and Measurement Scales

To test the theories with the right level of statistical rigor, vague ideas about psychology and economics were turned into real, measurable variables by using approved academic scales.

3.3.1 Independent Variable: Economic Empowerment and Agency

Economic empowerment is not just a yes or no question; it is also a continuous measure of cash control:

- **Wife's Income Share (Continuous %):** Directly calculated as the ratio of her monthly net income to the total monthly net income of the household:

$$\text{Income Share}_i = \left(\frac{\text{Wife's Monthly Income}_i}{\text{Wife's Income}_i + \text{Husband's Income}_i} \right) \times 100$$

Financial Decision-Making Index: Taken from *Kabeer's (1999)* list of empowerment factors. This 5-item scale measures how much power a person has over big-ticket purchases like buying a house, investing in stocks or exchange-traded funds

(ETFs), or choosing where to send their kids to school. Items are given a score on a scale from 1 to 3: 1 means "Husband Decides Alone," 2 means "Joint Decision," and 3 means "Wife Decides Alone."

Variable 1: Physical Time Poverty

A 24-Hour Recall Time-Use Diary set up to match international ICATUS (International Classification of Activities for Time Use Statistics) rules is used to record physical time gaps. Respondents made a schedule of how they spent their time during a normal workday, breaking it down into 30-minute chunks.

- **Operational Boundary Metric:** According to development economics standards (*Bardasi & Wodon, 2010*), a person is mathematically considered Time Poor (1) if she works 13 hours a day, commutes 13 hours a day, and does unpaid housework or care work, leaving less than 11 hours for sleep, personal care, and leisure. That being said, she is not time poor (0).

3.3.3 Mediating Variable 2: Domestic Cognitive Mental Workload

A 10-item matrix based on *Daminger's (2018)* Cognitive Labor Scale is used to measure the invisible psychological burden of managing a home. It breaks down managing a household into four steps: predicting needs, finding answers, choosing actions, and keeping an eye on how they are carried out.

Respondents used a 5-point Likert scale to rate how much responsibility they felt they had for running the household. For example, they had to keep track of how many groceries they ran out of, manage housekeepers, set up family health checks, and plan their kids' school schedules. A score of 1 meant the husband did all of these things, a score of 3 meant they shared the responsibility equally, and a score of 5 meant they did all of them themselves. A higher score means that the woman is in charge of all of the thinking work.

3.3.4 Dependent Variables: Family Life Quality and Well-being

- **Psychological Distress:** Measured using the *Kessler Psychological Distress Scale (K6)*, a 6-item screening tool that has been approved around the world and looks at general psychological worry, nervous exhaustion, and long-term stress from the last 30 days. The scores for each item run from 0 (None of the time) to 4 (All of the time), giving a scale that goes from 0 to 24.
- **Marital Satisfaction:** *Hendrick's Relationship Assessment Scale (RAS)* was used to measure the relationship. This 7-item scale uses a 5-point Likert system to measure how satisfied, stable, and helpful a relationship is generally.

3.3.5 Control and Moderating Variables

To make sure that the regression results are not skewed by missing variables, the model takes into account a number of factors that are specific to Tier-2 Indian towns.

- **Family Structure (Dummy):** Coded as 1 for a joint family structure (a home with more than one generation) and 0 for a nuclear family structure.
- **Access to Paid Domestic Help (Dummy):** Coded as 1 for regular maid or cook, 0 for no outside paid household help.
- **Husband's Gender Ideology Scale:** A 5-item test that measures how traditional or egalitarian the husband is about how work should be divided in the home. Higher scores show more patriarchal views.

3.4 Data Collection, Quality Safeguards, and Ethical Integrity

Field enumerators who had been trained did the primary data collection from October 2025 to January 2026. Before it was used, a trial test with 35 married working women in Patna was done to make sure that the translated Hindi questionnaire could be used by anyone.

3.4.1 Reliability Analysis

The pilot sample was used to run internal consistency checks. The calculated Cronbach's Alpha coefficients showed that the instruments were very reliable, with values well above the normal accepted level of 0.70:

$$\alpha_{\text{Mental Workload}} = 0.86; \quad \alpha_{\text{K6 Distress}} = 0.82; \quad \alpha_{\text{RAS Marital}} = 0.88$$

3.4.2 Ethical Compliance Protocols

To protect the safety of participants and the integrity of the data, the study design included strict ethical safeguards:

1. **Informed Consent:** Before the data collection started, each respondent either signed or spoke into a recorder an informed consent sheet that explained the research's scope, goal, and institutional nature.
2. **Absolute Anonymity:** No information that could be used to find out who someone is, like phone numbers, exact home addresses, or government ID cards, was gathered or saved. To keep people's identities secret, surveys were given alphabetic codes.
3. **Freedom of Attrition:** The people who took part were made aware that they could skip any sensitive questions, refuse to answer, or end the conversation at any time without any consequences.

3.5 Data Analysis Protocol

After the fieldwork was done, SPSS 29.0 and AMOS software were used to clean, code, and analyze the 350 verified survey answers. The following steps are carried out by the data analysis plan:

- **Phase I: Descriptives & Variances:** Doing paired-sample t-tests to look at real-time changes between spouses, figuring out frequency spreads, and making baseline diagnostics are all part of the study.
- **Phase II: Categorical Dependencies:** Using Pearson Chi-Square (χ^2) tests to find mathematical links between a woman's income share category and the amount of work she says she has to do mentally.
- **Phase III: Multivariate Econometric Regression:** We used Ordinary Least Squares (OLS) estimation to look at the factors that affect the total number of hours spent on household chores each day, taking into account factors like family structure and paid help in each area.
- **Phase IV: Path Modeling (SEM):** To test the full mediated path from economic empowerment to final psychological and marital satisfaction results, we will use structural equation modeling with maximum likelihood estimation.

4 Data Analysis and Results

The first-hand information from 350 married working women in Patna, Bihar, was gathered and analyzed statistically in this part. The study is set up to answer the main research questions about how economic empowerment affects physical time poverty, the invisible cognitive mental workload, and the outcomes of family life as a whole.

4.1 Demographic and Socio-Economic Profile of Respondents

An initial profile of the sample was made before the core hypothesis testing began. Of the 350 valid respondents, 57.1% ($n = 200$) were in Group A, which means they contributed less than or equal to 40% of the household income. The other 42.9% ($n = 150$) were in Group B, which means they contributed more than 40% of the total household income.

Table 4.1: Demographic Characteristics of the Sample ($N = 350$)

Demographic Variable	Category	Frequency (n)	Percentage (%)
Age Distribution	22–30 Years	85	24.3
	31–45 Years	215	61.4
	Above 45 Years	50	14.3
Employment Sector	Organized (Banking, Teaching, Corporate)	195	55.7
	Unorganized (Retail, Informal,	155	44.3

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	Self-Employed)		
Family Structure	Nuclear Family	160	45.7
	Joint Family	190	54.3
Access to Paid Help	Employ Part-Time/Full-Time Maid	220	62.9
	No External Paid Help	130	37.1

4.2 Bivariate Analysis of Physical Time Poverty (H₁)

A paired-sample t-test was used to test Hypothesis 1 (H₁), which says that working women in Patna have a hard time getting enough time because men and women spend different amounts of time on different things. This study looked at how many hours a day working women and their cohabiting husbands spent doing unpaid housework and caring for their families.

The numbers show that working women work on home projects for an average of 5.8 hours a day, while their husbands work on them for an average of 1.2 hours a day.

Table 4.2: Paired-Sample t-Test for Daily Unpaid Domestic and Care Work Hours

Group	Mean (X̄)	Mean Diff. (D̄)	Std. Dev. (s _D)	Std. Error Mean	Calculated t-value	Sig. (2-tailed)
Wives (Respondents)	5.80	4.60	1.80	0.0962	47.81**	< 0.001
Husbands	1.20					

$$\text{Standard Error (SE)} = \frac{s_D}{\sqrt{n}} = \frac{1.80}{\sqrt{350}} = 0.0962$$

$$t = \frac{\bar{D}}{SE} = \frac{4.60}{0.0962} = 47.81$$

Statistical Interpretation:

The t-statistic that was calculated for a 95% confidence interval with 349 degrees of freedom is 47.81, which is much higher than the critical number of 1.96. The two-tailed p-value is less than 0.001, which means that the difference in the average number of hours worked at home each day is very statistically significant. As a result, H₁ is

highly supported. In Patna, married working women do almost five times as much unpaid housework as their husbands. This shows that they are still living in extreme daily time poverty even though they are working.

4.3 Contingency Analysis of Cognitive Mental Workload (H₂)

According to Hypothesis 2 (H₂), a woman's changing economic situation does not make managing her home easier on her brain. Instead, a higher relative income share can lead to more work being centralized in her mind. To figure out how this connection works, a Chi-Square, -2. Cross-tabulated statistics were used to do the Test of Independence.

People were put into groups based on how much money they made compared to how much mental work they had to do. The groups were then divided into two groups: "High Mental Load" and "Low/Moderate Mental Load."

Table 4.3: Contingency Matrix of Economic Status vs. Household Mental Workload

Income Share Category	Low/Moderate Mental Load	High Mental Load	Total Observed
Group A (Supplementary Earners ≤ 40%)	80 (60.0)	120 (140.0)	200
Group B (Primary/Equal Earners > 40%)	25 (45.0)	125 (105.0)	150
Total Column Count	105	245	350
<i>Note: Figures in parentheses denote Expected Frequencies (E).</i>			

Mathematical Execution of Chi-Square Verification:

The expected values are computed using the row and column totals: $E_{ij} = \frac{(R_i \times C_j)}{N}$. The test statistic is derived as follows:

$$\chi^2 = \sum \frac{(O - E)^2}{E}$$

$$\chi^2 = \frac{(80 - 60)^2}{60} + \frac{(120 - 140)^2}{140} + \frac{(25 - 45)^2}{45} + \frac{(125 - 105)^2}{105}$$

$$\chi^2 = \frac{400}{60} + \frac{400}{140} + \frac{400}{45} + \frac{400}{105}$$

$$= 6.67 + 2.86 + 8.89 + 3.81$$

$$= 22.23$$

Statistical Interpretation:

For degrees of freedom $df = (2 - 1) \times (2 - 1) = 1$ the critical value at the $\alpha = 0.05$ significance level is **3.84**. Because the calculated $\chi^2 = 22.23$, $p < 0.001$, the null hypothesis of independence is rejected.

Importantly, looking at the residuals shows that Group B (Primary/Equal Earners) has a much higher real rate of High Mental Load (125) than what would be expected mathematically (105). This proves that as women in Patna move from extra income earners to main family providers, they become more mentally responsible for planning, managing, and organizing household tasks. This is real-world evidence of identity reduction and backs up the Gender Display Theory.

4.4 Multivariate OLS Regression: Determinants of Domestic Workload

An Ordinary Least Squares (OLS) multivariate regression model was used to figure out the structural and behavioral factors that affected how many hours these working women spent on their daily housework. Total Domestic Workload (Hours/Day) is the measure that is being tracked.

Table 4.4: OLS Regression Estimating Daily Unpaid Domestic Workload Hours

Independent Variables	Coefficients (β)	Standard Error (SE)	t-statistic	p-value	Significance
Intercept	6.20	0.45	13.78	< 0.001	***
Wife's Income Share (%)	0.04	0.01	4.00	< 0.001	***
Husband's Gender Ideology Scale	-0.35	0.08	-4.37	< 0.001	***
Access to Paid Domestic Help	-0.85	0.22	-3.86	< 0.01	**

(Dummy)					
Family Type (1 = Joint, 0 = Nuclear)	0.55	0.18	3.05	< 0.01	**

Model Diagnostics: $R^2 = 0.441$; Adjusted $R^2 = 0.434$; F -statistic = 68.2 ($p < 0.001$); Durbin-Watson = 1.92

Discussion of Regression Estimates:

With a R^2 of 0.441, the regression model is very good at explaining things. It explains 44.1% of the total variation in the daily household work of working women in Patna through the five chosen variables.

- 1. Wife's Income Share** $\beta = 0.04, t = 4.00, p < 0.001$: Assuming that everything else stays the same, for every 10% increase in the wife's relative financial input to the household budget, she works an extra 0.4 hours (24 minutes) each day. This positive coefficient goes against the economic resource/bargaining model, showing that money problems can not be solved at home because of culture and structural barriers.
- 2. Husband's Gender Ideology** $\beta = -0.35, t = -4.37, p < 0.001$: A lower number on this scale means that you believe in progressive and equal rights. The negative coefficient shows that couples where the men are egalitarian make the woman's job at home a lot easier, saving her about 21 minutes per scale unit. This shows how important spousal mindsets are compared to income variables.
- 3. Access to Paid Domestic Help** $\beta = -0.85, t = -3.86, p < 0.01$: Employing housekeepers is a big structural release that cuts down on physical chores by about 51 minutes per day.
- 4. Family Type** $\beta = 0.55, t = 3.05, p < 0.01$: Women who live in joint families have 33 minutes more of housework each day than women who live in nuclear families. This is because cooking for multiple generations and taking care of the elderly are expected of them.

4.5 Path Analysis via Structural Equation Modeling (H_4)

A path-analysis model using Structural Equation Modeling (SEM) was used to test Hypothesis 4 (H_4) and find out how economic empowerment affects family life results further down the line. The model looked at how financial freedom changes physical time poverty and mental workloads, as well as how these problems affect mental health and marital harmony in the long run.

Table 4.5: Standardated Path Coefficients and Direct/Indirect Effects

Causal Pathway	Standardized Estimate (β)	Critical Ratio (C.R.)	p-value	Result
Income Share \rightarrow Time Poverty	0.28	4.12	< 0.001	Significant Positive
Income Share \rightarrow Mental Workload	0.34	5.06	< 0.001	Significant Positive
Time Poverty \rightarrow Psychological Distress	0.42	6.89	< 0.001	Significant Positive
Mental Workload \rightarrow Marital Satisfaction	-0.39	-5.88	< 0.001	Significant Negative

Fit Indices: $\chi^2/df = 1.84$; GFI = 0.96; CFI = 0.97; RMSEA = 0.042

Path Analysis Interpretation:

The global model fit indices indicate an excellent fit to the data $\chi^2/df = 1.84$, which is well below the threshold of 3.0; CFI = 0.97 > 0.95. RMSEA = 0.042 < 0.06. The standard estimates of the indirect paths show that Economic Empowerment has a big negative effect on Marital Satisfaction. This effect is fully mediated by the variables Time Poverty and centralized Mental Workload.

This supports the idea that the stress of working the second shift and dealing with paperwork makes people's mental health worse and makes it harder for two-income couples in Patna to get along.

4.6 Qualitative Triangulation: Focus Group Findings

To make these statistical results more useful, personal information from four Focus Group Discussions (FGDs) with working women in Patna was added.

A common theme among high-earning women in banks and administration was how housework skills can not be transferred to other jobs. One business banker from Kankarbagh, Patna, said:

"I can pay for a cook and a maid, but it is still my job to decide what to cook, take care of the

groceries, make sure the kid does his homework, and remember when to take his medicine." So that he can "allow" me to work, my husband thinks that I should take care of the house. I am physically tired, but what really wears me down is the mental weariness of always planning everything.

This qualitative feedback fits exactly with the statistical results from Sections 4.3 and 4.4. It shows that physical work can be outsourced, but the mental workload stays with the working woman. This proves that the Empowerment Paradox exists in Patna.

5 Conclusion, Policy Recommendations, and Future Scope

The main goal of this study paper was to look closely at the structural connections between women's economic empowerment and the real-life challenges of family life for married professionals in Patna, Bihar. This study looks at gender relations in households in a Tier-2 Indian city that is changing by looking at more than just traditional labor measures. It also looks at how time is spent physically, how much work is done mentally, and how healthy people are mentally.

5.1 Comprehensive Summary and Conclusion

The observational results from the previous chapters show a clear paradox: even though women make economic progress in the outside world, this does not lead to structural equality in the private sphere.

The paired-sample t-test $t = 47.81, p < 0.001$ confirms an extreme gender gap in daily time allocation. Working women do housework and care for others for an average of 5.8 hours a day, while their cohabiting husbands only do it for 1.2 hours. This structural standard shows that women working in Patna has not automatically changed the way they handle their home duties. This has instead created a demanding "second shift," which makes it hard for working moms to get everything done on time.

More importantly, the multivariate OLS regression $\beta = 0.04, t = 4.00, p < 0.001$ and cross-tabulated Chi-Square analysis $\chi^2 = 22.23, p < 0.001$ challenge the core assumptions of classical economic resource and household bargaining theories. Instead of letting women trade out of doing housework as their income goes up, a higher income share means that women will have more work to do around the house every day.

This trend is strong evidence for the sociological Gender Display Theory in this area. In the city heart of Patna, it is against the rules for a woman to earn more than or the same as her husband. To make up for this deviation and keep up a traditional male identity in the home, both partners do things that balance each other out. For example, the woman does more physical chores and handles the

family's administrative needs even when she is at work.

Finally, the path-analytic Structural Equation Model (SEM) shows how these changes will affect family well-being in the long run. According to the model, the bad effects of economic dependency imbalances on marital unity are fully mediated by a lack of physical time and mental fatigue.

While employing paid domestic help offers a structural buffer against physical labor $\beta = -0.85, p < 0.01$, qualitative triangulation confirms it leaves the heavy mental burden of household management entirely intact. This study comes to the conclusion that women can not fully be free in the family world just by having access to economic opportunities. Traditional male mindsets need to change as well.

5.2 Actionable Policy Recommendations

This study suggests a targeted framework that should be used across state infrastructure, institutional employer systems, and local community mechanisms to make structural changes based on these real-world findings.

5.2.1 State-backed Infrastructure and Institutional Interventions

- **Decentralized Public Daycare Corridors:** Government of Bihar should require and fund safe, low-cost public daycares and creches near Patna's main shopping areas, like Fraser Road, Kankarbagh, and Bailey Road. These should be run by the Department of Social Welfare. Lessening the physical caring load is an important step toward giving working moms more time.
- **State-Level Integrated Time Use Surveys:** State planning boards need to do more than just keep track of basic numbers of women working. By including regular, localized time-use diagnostics in state evaluations, lawmakers will be able to create social welfare programs that take into account the work that households do without getting paid.

5.2.2 Corporate Reform and Workplace Adaptations

- **Normalization of Paternity Infrastructure:** Businesses in Tier-2 ecosystems, both private and public, need to change their parental leave practices. Adding required, non-transferable paternity leave blocks helps break the cultural idea that mothers are the only ones who should care for their children.
- **Subsidized safe transit solutions:** Giving female employees safe, employer-sponsored transit corridors can cut commuting times by a lot in places that are growing, like Patna. This gives women more free time and keeps them from getting physically exhausted.

5.2.3 Community and Socio-Cultural Interventions

- **Targeted Behavioral Change Campaigns (BCC):** Cities and towns, like the Patna Municipal

Corporation, should start targeted efforts like "Ghar Ka Kaam, Sab Ka Kaam" to make the sharing of household duties more normal. Changing the way people think about housework from something that only women have to do to something that everyone in the family does is important for changing how households work.

5.3 Limitations of the Study

While this research provides clear empirical and theoretical insights, its boundaries must be noted:

1. **Spatial Scope:** Only people who lived in the urban municipal limits of Patna were included in the study. The results might not fully show how things work in rural or semi-urban parts of Bihar, where farming methods and family systems are very different.
2. **Cross-Sectional Constraints:** It shows a certain point in time in terms of society and the economy. It does not keep track of how household time-allocation models change over longer periods of time as families go through different stages of life, like getting married young, becoming parents, or caring for an elderly parent.
3. **Unilateral Perspective:** The information is based on first-hand accounts from working women. Even though it is very reliable, it does not have any direct comparative information from spouses about how they personally see masculinity and how they negotiate in the home.

5.4 Future Directions for Academic Inquiry

Based on these limitations, the study outlines three pathways for future research:

- **Comparative Regional Analyses:** More study should look at Tier-2 cities in various states, like Indore, Ranchi, and Lucknow, and compare them to Patna. This will help us see how the bargaining power of working women is affected by differences in industrialization rates and local cultural norms.
- **Longitudinal Time-Tracking Designs:** Panel studies that follow two-income pairs for ten years are what researchers should do. This would make it possible to look more closely at how families' time management and brain load change as the economy changes and people move up in their careers.
- **Paired Dyadic Frameworks:** In the future, sociologists should use paired-interviews to get the same information from both men and wives living in the same house. With this method, researchers could directly look at differences in the number of hours people say they work, look at how difficult people think it is to be a certain gender, and more accurately model how people negotiate in the home.

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Declaration of Interest

The authors say they do not have any known personal or financial relationships or financial interests that could have seemed to affect the work in this study.

To make sure there is no confusion, the writers say the following:

- **Funding and Financial Support:** This doctoral study did not receive any specific grants or financial support from government, business, or non-profit organizations. The researchers paid for all of their own lengthy primary field surveys that were done in all of Patna's municipal zones.
- **Employment and Affiliations:** There is no organization, non-governmental organization, or political body that the authors work for, consult for,

own shares in, or accept executive funding from. These groups have nothing to gain or lose professionally or financially from the study's empirical results or direct conclusions.

- **Data Integrity and Institutional Access:** All of the primary data collection was done on its own for academic research reasons. Field access to the 350 respondents from Patna's organized and unorganized sectors was granted with their freely given permission, without any institutional pressures, corporate biases, or administrative pressure.

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