

Key Economic Factors Influencing Children's Educational Outcomes: A Case Study of Otjiwarongo District, Namibia

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ABSTRACT

This study examines the association between household economic conditions and children's educational outcomes in the Otjiwarongo District of Namibia, with particular emphasis on grade progression. The study employed a convergent mixed-methods design involving a quantitative survey of 159 mothers, complemented by semi-structured interviews and focus group discussions. Quantitative data were analysed using descriptive statistics, Spearman's rank-order correlations, and ordinal logistic regression, while qualitative data were analysed through thematic analysis.

Findings indicate that household income, maternal educational attainment, household composition, and mothers' economic empowerment are significantly associated with children's grade progression. Children from high-income households showed greater odds of being in advanced grade categories relative to children from low-income households (OR = 3.12, $p = 0.008$), while maternal tertiary education was positively associated with higher grade placement (OR = 2.12, $p = 0.029$). Conversely, an increase in the number of school-age children within households was associated with reduced odds of higher grade progression (OR = 0.74, $p = 0.044$). The Mothers' Economic Empowerment (MEE) Index remained independently associated with grade progression after adjusting for socioeconomic covariates (OR = 1.42, $p = 0.040$).

Regression diagnostic tests indicated acceptable model adequacy, including satisfactory multicollinearity thresholds and no significant violation of the proportional odds assumption. Qualitative findings further contextualised the statistical associations by illustrating how income insecurity, informal employment, debt burdens, and economic shocks shape educational participation and continuity.

Rather than demonstrating direct causal effects, the findings highlight important socioeconomic associations that contribute to educational inequalities within the Namibian context. The study situates these findings within broader African debates on educational inequality, poverty, gendered economic vulnerability, and household resource distribution.

Keywords: economic empowerment, educational inequality, grade progression, household income, Namibia, ordinal logistic regression, Sub-Saharan Africa.

INTRODUCTION

Since independence in 1990, Namibia has expanded access to formal education through free primary and secondary education policies and substantial investment in educational infrastructure. National enrolment rates at the primary level remain relatively high, yet substantial disparities persist in educational progression, retention, and completion. In the Otjiwarongo District of the Otjozondjupa Region, primary school enrolment approximates the national average at about 91%, while secondary enrolment and completion rates decline markedly (Ministry of Education, Arts and Culture, 2019).

These disparities reflect broader structural inequalities within Namibia, one of the world's most unequal societies according to the World Bank (2022). Educational inequality in Namibia is deeply intertwined with poverty, labour market exclusion, gendered economic disadvantage, and uneven access to household resources. Across Sub-Saharan Africa, educational outcomes continue to reflect socioeconomic inequalities despite expanded

formal access to schooling (Lewin, 2009; UNESCO, 2021). Studies from Kenya, South Africa, Zimbabwe, Ghana, and Nigeria consistently demonstrate that household poverty, parental unemployment, food insecurity, and inadequate financial access remain strongly associated with grade repetition, absenteeism, and early school dropout (Hungu, 2011; Oketch et al., 2012; Spaull, 2015).

Contemporary African educational inequality literature increasingly argues that educational exclusion should not be understood solely in terms of school access, but rather through the cumulative interaction of household vulnerability, gendered labour precarity, social protection gaps, and resource inequality (Tikly, 2016; Sayed & Moriarty, 2020). In many African contexts, children's educational continuity depends heavily on household economic resilience and caregiving stability. Consequently, educational inequality reflects broader socioeconomic stratification.

Within Namibia, district-level evidence examining how household economic conditions shape educational progression remains limited. Most national datasets obscure localised variations in economic vulnerability, family composition, and women's economic agency. This study therefore examines the associations between key household economic factors and children's grade progression in the Otjiwarongo District. Specifically, the study investigates how household income, maternal employment, financial access, maternal education, and mothers' economic empowerment are associated with educational progression outcomes.

Importantly, given the cross-sectional nature of the data, this study does not claim causal relationships. Rather, it identifies statistically and socially meaningful associations that may inform future longitudinal and intervention-based research. Educational progression is influenced by multiple interacting social, institutional, and economic factors, many of which extend beyond the scope of the present study.

LITERATURE REVIEW

Theoretical Frameworks

This study draws on the Resource Investment Model (Becker, 1994), the Resource Dilution Hypothesis (Downey, 1995), and Kabeer's Empowerment Framework (1999).

The Resource Investment Model posits that household economic resources shape children's educational opportunities through the ability to finance direct and indirect schooling costs. These include school fees, uniforms, transportation, food, learning materials, and private academic support.

The Resource Dilution Hypothesis suggests that household resources are finite and become increasingly stretched as family size expands. In contexts of economic scarcity, larger households may struggle to provide equitable educational support to all children.

Kabeer's framework conceptualises empowerment through three interconnected dimensions: resources, agency, and achievements. This perspective is particularly relevant in African contexts where women may contribute economically to households while remaining excluded from household financial decision-making.

Together, these frameworks provide a multidimensional understanding of how household economic circumstances and maternal agency may shape educational progression.

Educational Inequality in Sub-Saharan Africa

Recent African scholarship highlights that educational inequalities increasingly reflect broader socioeconomic disparities rather than formal access deficits alone (Tikly, 2016). Although many African states have abolished tuition fees at basic education levels, indirect schooling costs continue to disproportionately affect low-income households (UNESCO, 2021).

In South Africa, Spaull (2015) found that socioeconomic status remains one of the strongest predictors of educational achievement despite extensive educational reforms. Similarly, Hungu (2011), using SACMEQ data

across Southern and Eastern Africa, demonstrated that household wealth and parental education significantly predict educational attainment and learning outcomes.

Research from Kenya and Ghana further demonstrates that children from economically vulnerable households are more likely to experience absenteeism, grade repetition, and delayed school completion due to food insecurity, transport limitations, and inability to afford learning materials (Oketch et al., 2012; Rolleston, 2011).

Gendered labour inequalities also shape educational outcomes across Africa. Women disproportionately occupy informal and precarious labour sectors characterised by unstable income, limited social protection, and constrained access to financial services (ILO, 2021). Consequently, maternal economic insecurity often translates into educational vulnerability for children.

The Namibian case reflects many of these broader regional patterns. High national inequality, unemployment, and uneven educational quality continue to reproduce educational stratification between socioeconomic groups.

Household Income and Educational Outcomes

Household income is consistently identified as the strongest economic predictor of children's educational outcomes. Research across multiple contexts demonstrates that children from higher-income households have greater access to educational resources, attend better-resourced schools, and achieve higher levels of educational attainment (Duflo, 2012; World Bank, 2020).

In Sub-Saharan Africa, the relationship between income and education is particularly pronounced due to the prevalence of direct and indirect educational costs. Even in countries with free education policies, families face significant expenses for uniforms, books, transport, and school meals (Glewwe & Kassouf, 2016). These costs can constitute a substantial proportion of household income for low-income families, creating barriers to enrolment and progression.

Hindin (2005) found that in Zimbabwe, Zambia, and Malawi, household economic status was significantly associated with children's school enrolment and grade attainment. Similarly, Gichuru and Mumbi (2015) demonstrated that in Kenya, children from households with higher incomes were more likely to attend school regularly and progress through grades without repetition.

Mothers Employment and Income Control

Mothers' employment contributes to household income and can enhance mothers' economic autonomy. However, the relationship between maternal employment and children's educational outcomes is complex and context-dependent. On one hand, employed mothers contribute additional income that can be directed toward children's education. On the other hand, employment may reduce the time mothers have available for direct involvement in their children's schooling (Smith-Greenaway, 2013).

The quality and stability of maternal employment matter as much as employment per se. Informal sector employment, which characterises much of women's work in Sub-Saharan Africa, is typically characterised by low and irregular income, lack of social protection, and limited opportunities for advancement (International Labour Organization [ILO], 2021). Mothers engaged in informal work may earn income but remain economically vulnerable, with limited capacity to plan for long-term educational expenses.

Kabeer's (1999) framework emphasises that income alone is insufficient; control over income and decision-making autonomy are critical determinants of whether economic resources translate into children's educational investment. A mother who earns income but lacks authority to decide how it is used may be unable to prioritise educational expenses, even when household income is adequate.

Access to Financial Services

Access to financial services including savings accounts, credit, and insurance can enhance households' capacity to manage educational expenses. Savings enable families to accumulate resources for predictable costs such as

school fees, while credit can smooth consumption during periods of income shortfall (Global Findex Database, 2021).

However, access to formal financial services remains limited for low-income women in Sub-Saharan Africa. Barriers include lack of documentation, distance from financial institutions, low financial literacy, and discrimination (World Bank, 2019). In the absence of formal financial access, families rely on informal mechanisms savings groups, loans from family and friends, moneylenders that may be less reliable and more expensive.

Pitt, Khandker, and Cartwright (2017) found that access to microcredit in Bangladesh was associated with increased school enrolment for girls, suggesting that financial services can directly support educational outcomes. However, the evidence from Sub-Saharan Africa is more mixed, with studies showing variable impacts depending on programme design and context.

Household Composition and Resource Dilution

Household composition including the number of children, the presence of both parents, and the extended family structure significantly affects the economic resources available for each child's education. The resource dilution hypothesis predicts that as family size increases, the resources available per child decrease, potentially compromising educational outcomes (Downey, 1995).

Empirical evidence supports this hypothesis across multiple contexts. Chevalier, Harmon, O'Sullivan, and Walker (2013) found that in the United Kingdom, children from larger families had lower educational attainment, controlling for household income. Desai and Alva (1998) demonstrated that in India, the positive effect of maternal education on child health was attenuated in larger families, suggesting that resources were spread more thinly.

In Sub-Saharan Africa, where extended family networks often share resources and caregiving responsibilities, the relationship between household composition and educational outcomes may be more complex. However, studies consistently find that the number of school-age children in a household is negatively associated with individual children's educational progression (Lloyd & Blanc, 2018).

The Namibian Context

Namibia's economic landscape is characterised by high inequality, with a Gini coefficient among the highest in the world (World Bank, 2022). This inequality is reflected in educational outcomes, with children from wealthier households significantly more likely to complete secondary education and transition to tertiary study than those from poorer households (Ministry of Education, Arts and Culture, 2019).

Mothers in Namibia face particular economic challenges. The labour force participation rate for mothers stands at 56%, compared to 72% for men (Namibia Labour Force Survey, 2022). Mothers earn approximately 30% less than men (Namibia Statistics Agency, 2018) and are more likely to be employed in the informal sector, where earnings are lower and less secure (ILO, 2018). These economic constraints directly affect mothers' capacity to invest in their children's education. In the Otjiwarongo District specifically, the economic context is characterised by elevated unemployment and poverty rates, particularly among women. Economic restrictions substantially influence household welfare, thereby affecting children's educational outcomes (Ministry of Labour, Industrial Relations and Employment Creation, 2019). LeBeau, Iipinge, and Conteh (2004) found that children from economically empowered households in Namibia are more likely to attend school regularly and perform better academically.

METHODOLOGY

Research Design

The study employed a convergent mixed-methods design integrating quantitative and qualitative data collection and analysis. Quantitative survey data provided measurable patterns regarding economic factors and grade

progression, while qualitative interviews and focus group discussions contextualised the lived experiences underlying these statistical associations.

The mixed-methods approach enhanced methodological triangulation and strengthened interpretive validity.

Sample and Sampling Procedures

The quantitative component included 159 mothers residing in the Otjiwarongo District who had at least one school-age child enrolled in Grades 1–12. Stratified random sampling ensured representation across school phases and residential locations.

The demographic profile revealed that 62.9% of respondents were single mothers, 70.4% were aged 26–45 years, and 86.1% had attained secondary or tertiary education. Family sizes were substantial, with 71.1% having four or more children and 48.0% having two or more children in school simultaneously.

For the qualitative component, purposive sampling selected 20 mothers representing diverse socioeconomic backgrounds. Three focus group discussions were additionally conducted with educators, community leaders, and policymakers ($n = 22$).

Data Collection Instruments

Quantitative data were collected using a structured questionnaire containing demographic, socioeconomic, educational, and empowerment-related variables.

Key variables included:

- Household monthly income; Maternal employment status, Access to financial services, Household composition, Maternal education, Participation in empowerment programmes, Asset ownership, Financial decision-making autonomy.

Children's educational outcomes were operationalised primarily through grade progression categories because grade progression provides a measurable indicator of educational continuity and retention within the Namibian schooling system. However, the study acknowledges that educational outcomes are multidimensional and may also include academic achievement, literacy acquisition, examination performance, school engagement, and broader learning quality indicators. Consequently, grade progression should be interpreted as a partial rather than exhaustive measure of educational success.

Children's educational outcomes were operationalised through grade progression categories:

Lower primary, Upper primary, Junior secondary and Senior secondary

Economic variables measured included employment status, primary source of income, average monthly income (categorised as low: <N\$2,000; middle: N\$2,000–N\$10,000; high: >N\$10,000), access to financial services, and participation in economic empowerment programmes. The MEE Index demonstrated acceptable internal consistency (Cronbach's $\alpha = 0.73$).

Qualitative data were collected through semi-structured interview guides exploring mothers' experiences of economic constraints, the specific ways in which economic factors affected their children's education, the challenges they faced in financing education, and the strategies they employed to overcome economic barriers.

Construction and Validation of the Mothers' Economic Empowerment (MEE) Index

The Mothers' Economic Empowerment (MEE) Index was constructed as a multidimensional composite measure intended to capture both material and agency-related aspects of empowerment.

Item Selection

Eight indicators were included based on theoretical relevance and prior empowerment literature:

1. Employment status
2. Income regularity
3. Household financial decision-making authority
4. Ability to support children's schooling expenses
5. Access to formal credit
6. Participation in empowerment programmes
7. Asset ownership
8. Perceived institutional support

These indicators reflected both economic resources and agency dimensions consistent with Kabeer's (1999) framework.

Scaling Decisions

Each item was measured on a five-point Likert scale ranging from:

1=Strongly Disagree

To

5 = Strongly Agree

Negatively framed items were reverse-coded prior to analysis to ensure directional consistency.

The composite index was computed using additive standardisation procedures. Each item contributed equally to the final score because exploratory analysis showed no sufficiently strong empirical or theoretical justification for differential weighting. Equal weighting also improved interpretability and reduced the risk of overfitting within the relatively modest sample size.

Composite scores were rescaled to a 0–100 metric using linear transformation procedures to facilitate interpretation across regression models.

Reliability and Validity Assessment

The Mothers' Economic Empowerment (MEE) Index was designed as a multidimensional composite measure integrating both material and agency-related dimensions of empowerment. Equal weighting procedures were adopted because preliminary exploratory analysis did not identify sufficiently strong empirical justification for differential weighting of indicators. This approach also improved interpretability and reduced model instability within the modest sample size.

Reliability testing produced a Cronbach's alpha coefficient of 0.73, indicating acceptable internal consistency for exploratory social science research. Exploratory factor analysis further indicated moderate unidimensionality, with all indicators loading above 0.40 on the primary latent factor. Item-total correlations ranged from 0.42 to 0.68, supporting internal coherence among the selected indicators. The composite index was therefore retained to capture interconnected dimensions of empowerment while reducing fragmentation among highly correlated variables.

Data Analysis

Quantitative analyses were conducted using SPSS Version 27.

Analytical procedures included: Descriptive statistics, Spearman's rank-order correlations

and ordinal logistic regression. Ordinal logistic regression was selected because the dependent variable (grade progression category) was ordinal rather than continuous. Qualitative data were analysed using inductive thematic analysis following Braun and Clarke's (2006) six-phase framework. This study focuses specifically on findings related to economic factors influencing educational outcomes.

Regression Diagnostics and Model Adequacy Checks

Several diagnostic procedures were conducted to assess statistical robustness and the suitability of the ordinal logistic regression model.

Multicollinearity Assessment

Variance Inflation Factor (VIF) and tolerance statistics were examined to assess conceptual overlap among predictors, particularly household income, employment status, and the MEE Index. All predictors demonstrated VIF values below 2.5 and tolerance values above 0.40, indicating no evidence of problematic multicollinearity. Although several variables were conceptually related, diagnostic thresholds remained within acceptable limits for multivariate regression analysis.

Proportional Odds Assumption

The proportional odds assumption underlying ordinal logistic regression was evaluated using the Test of Parallel Lines. The assumption was not significantly violated ($p > 0.05$), supporting the appropriateness of the proportional odds model.

Model Fit and Adequacy

Model adequacy was assessed using likelihood-ratio chi-square statistics, Pearson goodness-of-fit tests, and McFadden's pseudo- R^2 coefficient. The regression model significantly outperformed the intercept-only model:

$$\chi^2(9) = 35.6, p < 0.001 \quad \chi^2(9) = 35.6, p < 0.001 \quad \chi^2(9) = 35.6, p < 0.001$$

The model produced a McFadden pseudo- R^2 value of:

$$R^2 = 0.18 \quad R^2 = 0.18 \quad R^2 = 0.18$$

This reflects moderate explanatory power appropriate for social science survey research involving complex behavioural and socioeconomic variables.

Ethical Considerations

Ethical approval was obtained from Rusangu University and the Directorate of Education, Otjozondjupa Regional Council. All participants provided informed consent, and confidentiality was assured through the use of participant codes. Participation was voluntary, with the right to withdraw at any time.

FINDINGS

Economic Profile of Respondents

The economic profile of respondents revealed significant variation in income, employment, and financial access. Table 1 presents the distribution of respondents by income category.

Table 1: Distribution of Respondents by Monthly Income

Income Category	Frequency	Percent (%)
Low (<N\$2,000)	78	49.1
Middle (N\$2,000–N\$10,000)	56	35.2
High (>N\$10,000)	19	11.9
No response	6	3.8
Total	159	100.0

Nearly half of respondents (49.1%) were classified within the low-income category (<N\$2,000 monthly income), while only 11.9% fell into the high-income category (>N\$10,000). Informal employment predominated, with 43.4% of mothers working in informal economic activities.

Access to formal financial services remained limited:

- 34.6% possessed bank accounts;
- 22.0% reported access to formal credit;
- 45.3% relied on informal savings groups.

These findings reflect broader regional patterns of financial exclusion among low-income African women.

Employment patterns reflected the prevalence of informal sector work. Of the 159 respondents, 43.4% were employed in the informal sector, 28.3% were formally employed, and 28.3% were unemployed. Among employed respondents, the most common occupations were domestic work, informal trading, and agriculture.

Correlation Analysis

Spearman’s correlation analysis identified several statistically significant associations.

Table 2 presents the correlation matrix.

Table 2: Spearman's Correlation Matrix

Variable	1. Grade Level	2. Income Level	3. Maternal Employment	4. Financial Access	5. MEE Index	6. No. School Children
1. Grade Level	1.00					
2. Income Level	0.28	1.00				
3. Maternal Employment	0.21	0.35	1.00			
4. Financial Access	0.24	0.42	0.31	1.00		
5. MEE Index	0.32	0.48	0.45	0.52	1.00	
6. No. School Children	-0.21	-0.18	-0.12	-0.15	-0.15	

Note $p < .05$ $p < .01$ $p < .001$

Household income showed a positive association with grade progression:

$\rho=0.28, p<.05$ \rho = 0.28, \ p < .05 $\rho=0.28, p<.05$

The MEE Index demonstrated the strongest positive association:

$\rho=0.32, p<.01$ \rho = 0.32, \ p < .01 $\rho=0.32, p<.01$

The number of school-age children was negatively associated with grade progression:

$$\rho = -0.21, p < .05 \quad \rho = -0.21, \quad p < .05 \quad \rho = -0.21, p < .05$$

The MEE Index demonstrated the strongest positive association with grade progression:

$$\rho = 0.32, p < 0.01 \quad \rho = 0.32, \quad p < 0.01 \quad \rho = 0.32, p < 0.01$$

Although statistically significant, the magnitude of the correlation indicates a moderate rather than strong relationship, suggesting that children's educational progression is influenced by multiple interacting household, institutional, and contextual factors beyond economic empowerment alone.

Ordinal Logistic Regression

Regression findings indicated that household income, maternal education, household composition, and the MEE Index were significantly associated with grade progression outcomes.

Table 3: Ordinal Logistic Regression Analysis

Predictor	Odds Ratio (OR)	95% CI	p-value
Income: Middle vs Low	2.34	(1.15, 4.77)	0.019
Income: High vs Low	3.12	(1.34, 7.25)	0.008
Maternal Employment (Formal vs Unemployed)	1.89	(0.98, 3.64)	0.057
Access to Financial Services	1.76	(0.92, 3.37)	0.086
MEE Index (per 10-point increase)	1.42	(1.02, 1.97)	0.040
Maternal Education: Tertiary vs No Tertiary	2.12	(1.08, 4.16)	0.029
Number of School-Age Children	0.74	(0.55, 0.99)	0.044

Note. McFadden Pseudo $R^2 = 0.18$; Likelihood-ratio $\chi^2 (9) = 35.6, p < .001$; $n = 112$

Children from high-income households demonstrated higher odds of being in advanced grade categories relative to low-income households:

$$OR = 3.12, p = 0.008 \quad OR = 3.12, \quad p = 0.008 \quad OR = 3.12, p = 0.008$$

Maternal tertiary education was positively associated with higher grade placement:

$$OR = 2.12, p = 0.029 \quad OR = 2.12, \quad p = 0.029 \quad OR = 2.12, p = 0.029$$

Each additional school-age child was associated with reduced odds of higher educational progression:

$$OR = 0.74, p = 0.044 \quad OR = 0.74, \quad p = 0.044 \quad OR = 0.74, p = 0.044$$

Importantly, the MEE Index remained independently associated with grade progression even after adjustment for income and education variables:

$$OR = 1.42, p = 0.040 \quad OR = 1.42, \quad p = 0.040 \quad OR = 1.42, p = 0.040$$

However, these findings should be interpreted as statistical associations rather than evidence of direct causality because the study design was cross-sectional.

Qualitative Findings

Thematic analysis of interview and focus group data yielded five themes that illuminate the mechanisms through which economic factors influence children's educational outcomes.

Theme 1: Income Insecurity as the Primary Barrier to Educational Support

Income insecurity was identified as the dominant barrier to mothers' ability to support their children's education. Mothers described situations where insufficient or irregular income forced direct interruptions to their children's schooling, including the inability to pay school fees, purchase uniforms, or provide transport. These interruptions created cycles of educational disruption and heightened stress for both mother and child.

A single mother of three explained:

Last term, my child was sent home because I could not pay the transport money. She missed two weeks of school. When she went back, she was behind. She is still struggling to catch up. It breaks my heart because it is not her fault—it is my fault I don't have money. (Participant 23, single, informal trader)

Another mother described the unpredictability of informal sector income:

I sell at the market. Some days I make money, some days I make nothing. When school fees are due, I never know if I will have the money. I lie awake worrying. Sometimes I borrow from the moneylender, but then the interest is too high and I am even poorer. (Participant 78, married, informal trader)

Notably, income insecurity was not confined to unemployed mothers. Employed respondents also reported that rising living costs and debt obligations significantly eroded their disposable income, leaving little capacity to support education beyond basic requirements. A formally employed domestic worker explained:

I have a job, yes. But I earn 1,800 dollars per month. Rent is 800. Food is 600. Transport is 200. There is nothing left for school. My children go to school, but if there is an extra cost a trip, sports, books I cannot pay. They miss out. (Participant 81, single, domestic worker) This finding suggests that employment status alone is insufficient as a measure of economic empowerment; the quality and stability of income are equally important determinants of educational outcomes.

Theme 2: The Inadequacy of Informal Sector Earnings

Mothers engaged in informal sector work consistently described their earnings as inadequate to meet educational expenses. The irregularity and unpredictability of informal income made it difficult to plan for school costs, which typically arise at predictable intervals (beginning of term, examination periods) but require accumulated savings that informal workers struggle to maintain.

A mother selling vegetables at the roadside described:

I make maybe 50 dollars on a good day, 20 on a bad day. But school fees for one child is 300 dollars per term. That is many days of selling. And I must also eat, pay rent, buy more vegetables to sell. By the time term starts, I never have enough. (Participant 112, single, informal trader) The COVID-19 pandemic was mentioned by several participants as having exacerbated informal sector vulnerabilities. Lockdowns and economic disruption reduced customer demand, destroyed perishable stock, and eliminated the small savings that mothers had accumulated.

Theme 3: Debt Burdens and the High Cost of Borrowing

In response to income inadequacy, many mothers turned to borrowing from family, friends, savings groups, or moneylenders. However, the terms of borrowing, particularly from informal moneylenders, often compounded economic vulnerability rather than alleviating it.

A mother who had borrowed from a moneylender explained:

I borrowed 500 dollars for school fees. The moneylender said I must pay back 600 after one month. I could not pay, so it became 700. Now I owe 1,000 and I still have not paid the original fees. I am trapped. (Participant 34, single, unemployed)

Savings groups (stokvels) provided a more affordable alternative, but required regular contributions that some mothers could not sustain. A participant in a savings group described:

We contribute 100 dollars each month. At the end of the year, we get a big pay out. That is how I pay school fees. But some months I cannot contribute, and then I feel ashamed. The group helps me, but it is still hard. (Participant 47, married, stokvel member)

The reliance on high-interest borrowing to finance education created cycles of debt that undermined long-term economic stability and, consequently, sustained educational support.

Theme 4: The Compounding Effect of Multiple Children in School

Consistent with the quantitative finding that the number of school-age children negatively predicts grade progression, mothers described the compounding effect of multiple educational expenses. A mother of four school-age children explained:

Four children in school. Four sets of uniforms. Four transport payments. Four sets of books. Four contributions for this and that. It is too much. I cannot afford for all of them to go to secondary school. I will have to choose. (Participant 56, single, unemployed)

This forced choice between children's educational futures was a recurring theme. Mothers described impossible decisions: which child to send to secondary school, which to keep at home; which child to pay fees for this term, which to let miss school. These decisions were described with profound distress, as mothers recognised that their choices would shape their children's life opportunities.

A grandmother caring for grandchildren explained:

I have three grandchildren. I can only afford to send two to school. The oldest, she must stay home and help me. She cries. I cry. What can I do? I am old, I have no money. (Participant 156, widow, informal trader)

The resource dilution hypothesis, confirmed quantitatively, was experienced qualitatively as the painful necessity of prioritising some children over others.

Theme 5: Economic Shocks and Educational Disruption

Economic shocks—unexpected expenses, illness, job loss, death in the family—were described as precipitating educational disruption. Unlike predictable educational costs, which mothers could attempt to plan for, shocks undermined even the most careful planning.

A mother whose husband had lost his job explained:

He was working, we were managing. Then he lost his job. Suddenly, we had nothing. The children missed a whole term because we could not pay. They are behind now, and they may never catch up. (Participant 103, married, previously employed)

Health shocks were particularly devastating. A mother caring for a sick relative described:

My mother was sick. I had to take her to the hospital, pay for transport, pay for medicine. The money for school fees I used it for her. What else could I do? Now my child is out of school. (Participant 129, widowed, informal trader)

The absence of social protection mechanisms to buffer economic shocks meant that temporary crises had permanent consequences for children's educational trajectories.

Triangulation: Economic Factors as Determinants of Educational Outcomes

The integration of quantitative and qualitative findings provides robust, triangulated evidence for the central role of economic factors in shaping children's educational outcomes. The quantitative analysis establishes the existence and magnitude of relationships: income as the strongest predictor, the independent effect of the MEE Index, the negative effect of family size. The qualitative analysis illuminates the mechanisms through which these relationships operate: income insecurity disrupting schooling, the inadequacy of informal earnings, debt burdens compounding vulnerability, forced choices between children, and shocks derailing educational trajectories.

Together, the quantitative and qualitative findings provide triangulated evidence that household economic vulnerability is closely associated with children's educational progression. The quantitative analysis establishes measurable statistical relationships between income, empowerment, household composition, and grade progression, while the qualitative findings illuminate the lived mechanisms through which these associations operate, including income insecurity, debt burdens, unstable employment, and economic shocks. However, because the study design is cross-sectional, these findings should be interpreted as associative rather than definitively causal.

DISCUSSION

The findings align with broader African educational inequality literature demonstrating that educational progression is closely associated with household socioeconomic conditions.

The association between household income and grade progression supports evidence from South Africa, Kenya, and Ghana showing that poverty-related educational barriers persist despite expanded formal school access (Spaull, 2015; Oketch et al., 2012). In the Namibian context, indirect schooling costs remain substantial obstacles for economically vulnerable households.

The independent association between the MEE Index and educational progression suggests that economic empowerment extends beyond absolute income levels. Mothers' financial decision-making autonomy, institutional support, and economic agency may shape educational prioritisation within households. This finding is consistent with Kabeer's conceptualisation of empowerment and with emerging African gender-development literature emphasising women's bargaining power within households.

The negative association between household size and educational progression further reflects regional evidence on resource dilution within economically constrained households. Larger households may face intensified competition for limited educational resources, particularly in contexts characterised by informal employment and unstable income streams.

Overall, the findings reinforce broader African educational inequality literature demonstrating that educational progression is deeply embedded within household socioeconomic conditions. In the Otjiwarongo context, educational vulnerability appears closely associated not only with low income, but also with income instability, gendered economic precarity, limited financial inclusion, and household resource pressures. The study therefore contributes to regional debates by demonstrating how educational inequalities persist despite formal school access expansion, particularly within contexts characterised by structural poverty and uneven economic opportunity.

Income as the Primary Determinant

The finding that household income is the strongest predictor of grade progression (OR = 3.12 for high vs low income) is consistent with the broader international literature (Duflo, 2012; World Bank, 2020) and with regional studies from Sub-Saharan Africa (Gichuru & Mumbi, 2015; Hindin, 2005). This result supports the resource investment model: income functions as the proximate mechanism through which economic capacity is translated into educational investment, enabling fee payment, purchase of materials, and transport provision.

However, the qualitative findings reveal that the relationship between income and educational outcomes is not simply a matter of absolute earnings. Income insecurity the irregularity and unpredictability of income emerged as a critical dimension that standard income measures may miss. Mothers with similar average incomes but different income stability face very different capacities to plan for and meet educational expenses. This finding suggests that policies focused solely on increasing income may be insufficient if they do not also address income stability and predictability.

The predominance of informal sector employment (43.4% of respondents) and its associated income insecurity highlights a structural challenge. Informal sector work provides income but not stability, and mothers engaged in it remain economically vulnerable despite their labour force participation. This suggests that employment status alone is an inadequate measure of economic empowerment; the quality, stability, and returns to employment matter as much as employment per se.

The Independent Effect of Economic Empowerment

The independent effect of the MEE Index on grade progression, controlling for income and education (OR = 1.42 per ten-point increase), is a theoretically important finding. It suggests that economic empowerment encompasses dimensions of agency and decision-making autonomy that operate over and above absolute income levels. A mother who controls her income and participates in household financial decisions is more likely to direct resources toward children's education than a mother with equivalent income but lower agency.

This finding is consistent with Kabeer's (1999) framework, which distinguishes between resources (what people have), agency (what people can do with what they have), and achievements (outcomes). Income represents resources; decision-making autonomy represents agency. The finding that agency predicts grade progression independent of resources confirms that both dimensions are important and that interventions must address both.

The specific components of the MEE Index that showed strongest item-total correlations regular income and ability to support education point to the mechanisms through which empowerment operates. Regular income provides predictability and planning capacity; the subjective sense of ability to support education reflects both objective economic capacity and the confidence that derives from agency and control.

Resource Dilution in Context

The finding that each additional school-age child reduces the odds of grade progression by 26% (OR = 0.74) supports the resource dilution hypothesis (Downey, 1995) and is consistent with studies from other contexts (Chevalier et al., 2013; Desai & Alva, 1998). In the Otjiwarongo context, where 71.1% of households have four or more children and 48.0% have two or more children in school simultaneously, this effect has substantial practical significance.

The qualitative finding that mothers face forced choices between children's educational futures deciding which child to send to secondary school, which to prioritise for fee payment reveals the human dimension of resource dilution. These are not abstract calculations but painful decisions with lifelong consequences for children. The distress mothers described in making these choices underscores the moral weight of economic constraints.

The resource dilution effect has important policy implications. Interventions that support individual children may be diluted in large families if they do not address the household-level resource constraints. Supporting one child's education while leaving others unsupported may not reduce overall dropout rates if families must still choose which children to educate. This suggests the need for household-level rather than child-level interventions, or for interventions that comprehensively support all children in a household.

The Role of Financial Access

Access to financial services showed a positive but marginally significant association with grade progression (OR = 1.76, $p = 0.086$). The marginal significance may reflect the limited access to formal financial services among the sample (only 34.6% had bank accounts, 22.0% had formal credit access). With such limited access, detecting significant effects is statistically challenging.

However, the qualitative findings suggest that financial mechanisms matter. Savings groups (stokvels) were described as important sources of educational funding, enabling mothers to accumulate resources over time. In contrast, moneylenders were described as traps that compounded vulnerability. This suggests that the quality and terms of financial access matter as much as access per se. Affordable, reliable, and flexible financial services could enhance mothers' capacity to plan for educational expenses and buffer economic shocks.

The absence of formal financial access for most respondents, combined with their reliance on informal mechanisms, points to a market failure. Financial institutions are not serving low-income women effectively, leaving them to rely on expensive and unreliable alternatives. Addressing this failure through appropriate product design, delivery channels, and regulatory frameworks could enhance economic empowerment and, through this pathway, children's educational outcomes.

Policy Implications

The findings carry several implications for policy and practice.

First, income support for low-income households is essential. The strong income gradient in grade progression suggests that reducing poverty is a prerequisite for improving educational outcomes. This requires both immediate income support (social grants, cash transfers) and longer-term livelihood interventions (employment creation, skills development, enterprise support). The child grant programme provides a foundation, but its value should be increased and its reach expanded to ensure that no child is excluded from school due to household poverty.

Second, income stability matters as much as income level. Policies that promote stable, predictable income including formal employment creation, social protection that smooths consumption, and support for informal sector workers to formalise would enhance mothers' capacity to plan for and meet educational expenses. Interventions that address income volatility, such as savings mechanisms that accommodate irregular income, could buffer the effects of income insecurity.

Third, economic empowerment must address agency, not just resources. The independent effect of the MEE Index suggests that interventions focused solely on increasing income may be insufficient if they do not also enhance women's decision-making autonomy and control over resources. Programmes should explicitly address household gender dynamics, financial literacy, and women's participation in financial decisions.

Fourth, household-level interventions are needed. The resource dilution effect suggests that supporting individual children may be insufficient if household-level resource constraints are not addressed. Interventions should consider the full set of children in a household and provide support that enables all children to progress, rather than forcing families to choose.

Fifth, financial inclusion must be expanded and improved. The limited access to formal financial services, combined with the reliance on expensive informal alternatives, points to the need for financial products designed for low-income women. Affordable credit, flexible savings, and appropriate insurance could enhance mothers' capacity to manage educational expenses and buffer shocks.

Sixth, social protection should buffer economic shocks. The finding that temporary shocks have permanent consequences for educational trajectories suggests the need for mechanisms that protect children's education during household crises. Emergency school fee support, rapid response social protection, and linkages between health and education systems could prevent shocks from derailing educational progression.

Limitations and Future Research

This study has several limitations. The cross-sectional design precludes causal inference about the relationships identified. The sample is drawn exclusively from the Otjiwarongo District, and findings may not be directly transferable to other contexts. The reliance on self-reported data introduces the possibility of reporting bias. The income measure is categorical and may not capture the full complexity of household economic status.

Future research should employ longitudinal designs to track how changes in economic factors affect educational outcomes over time. Comparative studies across districts with different economic profiles would illuminate contextual factors that moderate relationships. Research examining specific economic interventions such as cash transfers, savings programmes, or employment creation would provide evidence for what works. Finally, research incorporating children's perspectives would illuminate how they experience and interpret the economic constraints that shape their educational trajectories.

Limitations

Several limitations should be acknowledged. First, the cross-sectional design limits the ability to establish causal relationships between economic variables and educational outcomes. The findings therefore reflect associations rather than directional causal effects.

Second, children's educational outcomes were measured primarily through grade progression categories, which may not fully capture educational quality, academic achievement, literacy development, or broader learning outcomes.

Third, the sample was limited to the Otjiwarongo District, reducing generalisability to other Namibian or regional contexts.

Fourth, reliance on self-reported economic measures may introduce reporting bias, particularly regarding household income and financial access.

Finally, although the MEE Index demonstrated acceptable reliability and internal consistency, alternative weighting approaches and additional validation procedures may further strengthen future applications of the index.

Future research should employ longitudinal and panel-data approaches capable of examining temporal relationships between household economic change and children's educational trajectories. Comparative regional studies and intervention-based research would further strengthen understanding of how economic empowerment may shape educational outcomes across different African contexts.

CONCLUSION

This study examined the associations between household economic conditions and children's educational outcomes in the Otjiwarongo District of Namibia.

The findings indicate that household income, maternal education, household composition, and mothers' economic empowerment are significantly associated with children's grade progression. Importantly, the Mothers' Economic Empowerment Index remained independently associated with educational progression even after adjusting for conventional socioeconomic indicators.

Rather than demonstrating direct causal effects, the findings highlight how socioeconomic vulnerability, income instability, and gendered economic inequalities may contribute to educational disparities within Namibia and across Sub-Saharan Africa more broadly.

The study therefore contributes to contemporary African educational inequality debates by illustrating how educational progression is embedded within wider household economic structures and gendered patterns of vulnerability. Policies aimed at improving educational outcomes should consequently address not only school access, but also household economic resilience, women's empowerment, financial inclusion, and social protection systems.

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