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# Stunting and inequality in Sri Lanka compared to other Low- and middle-income South Asian countries

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DC, WJ and PG conceptualized and designed the study. DC carried out the initial analyses and drafted the initial manuscript. WJ and PG reviewed and helped to evolve the analyses and revised the manuscript and approved the final manuscript as submitted.

**Ethical standards disclosure:**

This study was conducted according to the guidelines laid down in the Declaration of Helsinki and all procedures involving research study participants were approved by the Ethics Approvals (Human Participants) sub-Committee of the School of Sport, Exercise and Health Sciences at Loughborough University (HPSC Reference Number: C20-08). DHS data (including NFHS India) for all countries, except Sri Lanka, were anonymized and publicly available, rendering full ethics review unnecessary. The authors have received permission from the DHS program to use data for this study. Access permission for the Sri Lanka DHS survey data were acquired from the Sri Lanka Census and Statistics Department.

## Abstract

**Objective:** This study investigates and measures whether the association of childhood stunting with household socioeconomic position (SEP) differs in Sri Lanka compared to other South Asian countries.

**Design:** Secondary analysis of data of children from the latest available DHS data (survey years, 2016-2018). The exposures (SEP) were maternal education and wealth. The outcome was stunting. Binary logistic regression models incorporated SEP, Country, and SEP-by-Country interaction terms.

**Setting:** A nationally representative sample of children from Bangladesh, India, Nepal, Pakistan and Sri Lanka.

**Participants:** Mothers/caregivers of children under 36 months (133,491).

**Results:** The prevalence of stunting in Sri Lanka of 19% was much lower than that observed for all the other low to low-middle income South Asian countries (37% in Bangladesh, 36% in India, 31% in Nepal, 30% in Pakistan). The association of SEP with odds of stunting was similar in Sri Lanka compared to other South Asian countries. The only exception was weaker associations of wealth with stunting in Sri Lanka compared to Bangladesh. For example, in Sri Lanka, the poorest group had 2.75 (2.06, 3.67) times higher odds of stunting compared to the richest group, but in Bangladesh, this estimate was 4.20 (3.24, 5.44); the difference between these two estimates being 0.65 (0.44, 0.96) on the odds ratio scale.

**Conclusions:** The lower prevalence of stunting in Sri Lanka is unlikely to be due to less inequality. It is more likely that the lower prevalence of stunting in Sri Lanka is related to there being fewer mothers belonging to the lowest SEP groups.


**Keywords:** stunting, socioeconomic position, South Asia, Sri Lanka

## Introduction

Approximately 22% of all children under 5 years of age were stunted in 2020 and more than one-third of these children live in South Asia[1]. This is important because the WHO has reported that around 45% of deaths among children under 5 years of age are still linked to undernutrition and these mostly occur in low-and middle-income countries (WHO, 2021).

Stunting is associated with numerous adverse outcomes including poor child development, less productivity, and chronic diseases in adulthood[2–4]. Existing evidence has consistently shown that better socioeconomic position (SEP) is associated with lower risk of childhood stunting in South Asia[5–7]. This association has been demonstrated using diverse measures of SEP, such as family income, maternal education, and household wealth[3,6,8] including in studies from Sri Lanka [9–11]. SEP includes multiple levels in any society including individual, household and community levels. Stunting at the youngest ages is most likely to be affected by factors in the household environment. This is because children under 36 months spend a large amount of time at home in the South Asian context[12].

Despite similar levels of economic development compared to most other South Asian countries, there is considerably less childhood stunting in Sri Lanka. For example, in Sri Lanka, the estimated prevalence of under-5 stunting was 16% in 2020, compared against 37% in Pakistan, 31% in India, and 30% in both Bangladesh and Nepal [1]. One explanation for the lower prevalence of childhood stunting in Sri Lanka is that there is less inequality compared to that observed in other South Asian countries [9]. According to the UNICEF definition, the countries belonging to South Asia are Bangladesh, India, Maldives, Nepal, Pakistan, and Sri Lanka. These countries, excluding the Maldives, are low-and-middle income countries. Although studies have investigated differences in socioeconomic inequality in stunting between low-and-middle income countries, including South Asian countries [13–18], none have compared inequality in stunting in Sri Lanka to that observed in other South Asian countries.

This study aims to investigate whether the association of household SEP with stunting in children under 36 months of age differs in Sri Lanka compared to other Low- and middle-income South Asian countries (Bangladesh, India, Nepal, Pakistan).

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## Material and methods

**Surveys:** The present study used the latest available Demographic and Health Surveys (DHS) data with anthropometric data of the four South Asian countries: Bangladesh (2017/18), Nepal (2016), Pakistan (2017/18), and Sri Lanka (2016). The Indian National Family Health Survey 4 (NFHS-4) data (2015/16) with anthropometric data were used for India. The DHS and NFHS are nationally representative household surveys. The methods and types of data collected are almost identical for DHS and NFHS.

**Samples:** The total number of children in the study was 133,491. The sample selection process for each country is shown in Appendix Figure 1. Mothers with multiple births were excluded from the analysis.

**Outcome:** Stunting was defined as a height-for-age Z-scores (HAZ) according to the WHO-2006 Standards [19] more than two standard deviations below the median (i.e., 50$^{th}$ percentile).

**Exposure:** Two measures of SEP were considered; maternal education (none, primary, secondary, and higher education [referent]) and a within-country household wealth index (poorest, poorer, middle, richer, and richest [referent]). Potential confounders included in the analyses were sex of child (male or female), place of residence (urban, rural), and child's age in months.

**Statistical analysis:** Descriptive statistics were computed for each country separately. Subsequently, data from all countries were pooled together. Binary logistic regression models with stunting as an outcome were developed that incorporated SEP, Country, and SEP-by-Country interaction terms. SEP-by-Country interaction terms were included in the models to estimate how the associations of SEP with stunting differed in Sri Lanka compared to each other country. A set of interaction terms was created for mother's education by country (e.g., no education mothers in Sri Lanka, no education mothers in Bangladesh etc.) and another set of interaction terms was included for household wealth by country (e.g., poorest household in Sri Lanka, poorest household in Bangladesh etc.). The first set of models considered mother's education and wealth index separately. Then a second set of models considered mother's education and wealth index together. All models were adjusted for all potential confounders and included sampling weights. For each model, estimates were obtained showing 1) the associations (e.g., of mother's education with stunting) in each country and 2) how the associations were different in Sri Lanka compared to each other South Asian Country.

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All analyses were conducted using SPSS (Version 27).

**Ethics:** The present study was approved by the Ethics Approvals (Human Participants) sub-Committee of the XXXX (The institution will be inserted after blind review is complete). Participants (a parent or guardian for a child) had given their free and informed consent before each interview or biomarker test.

**Results**

Mean HAZ in Sri Lanka was -0.93 and in Bangladesh, India, Nepal, and Pakistan it was between -1.5 and -1.2 (Table 1). Consequently, the prevalence of stunting in Sri Lanka of 19% was lower than that observed for all the other low to low-middle income South Asian countries (37% in Bangladesh, 36% in India, 31% in Nepal, 30% in Pakistan). Mothers in Sri Lanka were, on average, more educated than mothers in the other countries. For example, 54% of mothers in Sri Lanka had higher education compared against just 11% in India. The wealth index was calculated within country and was a relative quintile-based measure, meaning that in all countries there will be approximately 20% of the sample in each quintile. More children in Sri Lanka (85%) than other South Asian countries (25-73%) lived in rural areas. More than 65% of children in the sample in each country were over 12 months old.

Table 2 shows the estimated associations for each SEP measure considered separately. The estimated difference of the associations between the SEP measures and odds of stunting in Sri Lanka versus each country is shown in a separate column for each country. For example, the first column in Sril Lanka shows the mother's secondary education group had 1.59 (95% CI = 1.34, 1.90) times higher odds of stunting compared to the higher education group. In Bangladesh, this estimate was 2.36 (95%CI = 1.85, 3.02). On the odds ratio scale, the difference between these two estimates, 0.67 (95%CI = 0.50, 0.91), is shown in the column "Sri Lanka vs Bangladesh Difference". In all low and low-middle income countries, the odds of child stunting were higher in 1) mothers with no education and mothers with primary education (compared to mothers with higher education) and 2) the middle, poorer, and poorest categories of the wealth index (compared to the richest category). The highest association between the SEP measures and stunting in the poorest household was in Pakistan (AOR= 4.61, 95%CI=2.81, 7.55). The lowest association between the SEP measures and stunting was in the richer household in India, (AOR=1.42, 95%CI= 1.31, 1.54). The associations of the SEP measures with the odds of stunting were similar in Sri Lanka

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compared to all other South Asian countries, except Bangladesh. The estimates for the wealth index were consistently lower in Sri Lanka than in Bangladesh. For example, in Sri Lanka, the poorest group had 2.75 (95%CI = 2.06, 3.67) times higher odds of stunting compared to the richest group, but in Bangladesh, this estimate was 4.20 (95%CI = 3.24, 5.44). On the odds ratio scale, the difference between these two estimates of 0.65 (95%CI = 0.44, 0.96) provides evidence of a weaker association in Sri Lanka between wealth index and stunting compared to Bangladesh. This association was consistent in each wealth index group in Sri Lanka compared to Bangladesh. The association of maternal education with higher odds of stunting was also lower in Sri Lanka than in Bangladesh but only at secondary (versus higher) level. The estimated odds ratio difference was 0.67 (95%CI = 0.50, 0.91).

Table 3 shows the estimated differences between Sri Lanka and each of the other South Asian countries combined into one model to test the association between each of the SEP measures (mother's education and wealth) and the odds of stunting. Results show similar but slightly weaker estimates for the associations of wealth and mother's education with stunting compared to Table 2. Sri Lanka still had a weaker association of wealth (middle to poorest level) with odds of stunting compared to Bangladesh (e.g., Sri Lanka vs Bangladesh difference OR in the poorest level was 0.64 (95%CI = 0.42, 0.97).

**Discussion**

The key finding of this study is that the associations of mother's education and wealth with odds of stunting were generally similar in Sri Lanka compared to other South Asian countries. This suggests that the observed lower levels of child stunting in Sri Lanka compared to other low-and middle-income countries (LMICs) in South Asia are not likely because of less inequality in stunting. The exception was the weaker association of the wealth index with odds of stunting in Sri Lanka compared to Bangladesh.

The reason for finding weaker associations of wealth index with odds of stunting in Sri Lanka compared to Bangladesh may be due to households in the poorest wealth group in Sri Lanka being less poor than the households in the same wealth group in Bangladesh. The asset-based DHS wealth index is similar for Sri Lanka and Bangladesh, in terms of composition of the variables (https://dhsprogram.com) but it is a relative index within country and it is likely that the lowest level in the index indicates greater poverty in Bangladesh than Sri Lanka. Globally socioeconomic indicators show less poverty but higher variability in wealth in Sri Lanka

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compared to Bangladesh. For example, Extreme poverty (the population below the international poverty line, $1.90 per day per person) in Sri Lanka was only 0.8% in 2016 and it was 15% in Bangladesh. However, inequality was higher in Sri Lanka with a reported higher Gini index (higher value indicates higher inequality) of 39.3 compared to 32.4 in Bangladesh [20]. This information shows that greater inequality could be in Sri Lanka although our study revealed a relatively lower prevalence at the national level of Sri Lanka compared to other LMICs. For example, we found that the odds of child stunting in Sri Lanka are higher in children with no education mothers and also in children living in the poorest households compared to the highest SEP groups. This evidence has also been confirmed by a subpopulation study in the eastern province of Sri Lanka (Sujendran et. al., 2015) reporting a higher inequality in the lower SEP groups (wealth and mother's education) than in the highest SEP groups. For example, Sujendran et. al. reported a nearly four times higher risk of stunting in children if their parent's education level is below the secondary level compared to the above secondary level (OR=4.91, p=0.048).

Our results suggest that the observed lower levels of stunting in Sri Lanka are likely to be due to fewer children/mothers in the most deprived groups. For example, less mothers in Sri Lanka had no education or primary education compared to the other low and low-middle income South Asian countries. Higher education is likely associated with a mother's ability to follow the directions of health care practitioners and to support and care for their children to promote optimal early growth and development. The relationship between education and better health and nutrition practices concurs with other local literature which reports that educated mothers in Sri Lanka are more likely to follow nutrition related instructions given by health caregivers and in turn have lower levels of stunting (e.g., Jayawardena 2012). Sri Lanka reports better child feeding indicators compared to other South Asian countries. For example, the regional highest exclusive breast-feeding rate (90.3%) and highest solid or semisolid complementary foods feeding rate (97.5%) in children aged 6-23 months was in Sri Lanka [22]. These indicators for other South Asian countries ranged, respectively, from 19.6% (Pakistan) to 59.8% (Bangladesh), and 74.5% (India) to 95.9% (Nepal), [23–26].

Gender equality in education and positive attitudes and cultural and social norms about girls' education have given more education opportunities for women in Sri Lanka compared to other South Asian countries. A formal education system with education opportunities for girls in Sri Lanka was initiated earlier in Sri Lanka than other South Asian countries. For example,

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Sri Lankan children have had opportunities for education irrespective of sex, race, religion, caste or class since the colonial periods of the Portuguese (1505-1658), Dutch (1658-1796), and British (1796-1948) [27]. In contrast, there has been less equality of education by gender across the other South Asia countries [27,28]. A free education policy was introduced in Sri Lanka earlier (in the year 1945) than for the other South Asian countries (1990 in Bangladesh, 2009 in India, 2007 in Nepal and 2010 in Pakistan), [29,30]. This is likely to have further enhanced women's education opportunities in Sri Lanka compared to other South Asian countries. These benefits are likely magnified for current mothers in Sri Lanka with transfer of education benefits over generations.

Findings that Sri Lanka observes the same level of inequality in stunting compared to other low and low-middle income countries in South Asia in the analysis means that there remain vulnerable groups in Sri Lanka that have a risk of stunting. For example, stunting in the estate worker community in Sri Lanka (32%) is higher than other rural (17%) and urban (15%) areas according to the SLDHS-2016 [22,31]. Furthermore, the current political and economic crisis in Sri Lanka will create more challenges for preventing stunting because the crisis has the potential to move larger proportions of the population into poverty. This could break down the benefits of education and health that have been achieved to reduce child stunting in Sri Lanka.

Interventions to improve wealth and mother's education are likely to reduce stunting in all South Asian countries. For example, Mishra et al., (2019) showed that scaling up existing household wealth levels to the level of the richest quantile in the population had the potential to reduce under-5 stunting in Odisha state in India by 4% from 2015 to 2030. An overview paper of Torlesse & Aguayo (2018), summarized the evidence of the implications for the direction of future advocacy, policy, and program actions to improve maternal and child nutrition in South Asia. They reported a need for intervention to reinforce girls' access to education in contexts where they are deprived of educational opportunities in South Asia. However, evidence shows that there is a lack of intervention programs to improve the coverage of maternal nutrition interventions in South Asia [34]. Identifying policy differences in education between South Asian countries is, therefore, needed to facilitate creating environments more conducive to optimal child growth and development in other South Asian countries.

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The strengths of this research are the use of the large samples consistently collected using DHS measures across these South Asian countries to facilitate a coherent comparison. A limitation of these data is that it is not possible to look at causal relationships because the surveys are cross sectional. The analysis was also constrained to the indicators collected in the surveys such as the use of a wealth index and measures of education that are collected in DHS surveys. The number of children with mothers in the "no education" group in Sri Lanka is small and the 95% CI are wide. There are some limitations in using asset-based wealth indices across countries because the indices are relative within country and the value of an asset and its importance may vary widely across country/geographical area and time [35,36]. The study was therefore not able to formally estimate the extent to which the lower rates of stunting in Sri Lanka are due to less inequality.

## Conclusion

Our results suggest that the lower prevalence of child stunting in Sri Lanka compared to other LMICs in South Asia is unlikely due to less inequality (i.e., weaker associations of maternal education and household wealth with the odds of stunting). Instead, the lower prevalence of child stunting in Sri Lanka is likely due to fewer children/mothers belonging to the most deprived SEP groups.

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Table 1 Descriptive statistics stratified by country [*].

| | | Sri Lanka N=4198 | Bangladesh N=4305 | India N=115570 | Nepal N= 1065 | Pakistan N= 1774 |
|---|---|---|---|---|---|---|
| **Outcome** | | | | | | |
| HAZ | Mean (SD) | -0.93 (1.30) | -1.50 (1.39) | -1.34 (1.81) | -1.32 (1.31) | -1.24 (1.66) |
| Stunting | | | | | | |
| Not stunted | N (%) | 3407 (81.2) | 2699 (62.7) | 73451 (63.6) | 733 (68.9) | 1249 (70.4) |
| Stunted < -2 Z | N (%) | 791 (18.8) | 1606 (37.3) | 42119 (36.4) | 332 (31.1) | 525 (29.6) |
| **Exposure** | | | | | | |
| Mother's educational | | | | | | |
| Higher | N (%) | 2252 (53.6) | 703 (16.3) | 12469 (10.8) | 190 (17.9) | 371 (20.9) |
| Secondary | N (%) | 1795 (42.8) | 2058 (47.8) | 54481 (47.1) | 353 (33.2) | 436 (24.6) |
| Primary | N (%) | 121 (2.9) | 1247 (29.0) | 15759 (13.6) | 217 (20.4) | 230 (13.0) |
| No education | N (%) | 30 (0.7) | 297 (6.9) | 32861 (28.4) | 305 (28.5) | 737 (41.5) |
| Wealth index | | | | | | |
| Richest | N (%) | 825 (19.7) | 793 (18.4) | 16876 (14.6) | 182 (17.1) | 480 (27.1) |
| Richer | N (%) | 922 (22.0) | 836 (19.4) | 21183 (18.3) | 241 (22.7) | 386 (21.8) |
| Middle | N (%) | 851 (20.3) | 799 (18.6) | 23258 (20.1) | 261 (24.5) | 397 (22.4) |
| Poorer | N (%) | 839 (20.0) | 898 (20.9) | 25566 (22.1) | 213 (20.0) | 291 (16.4) |
| Poorest | N (%) | 761 (18.1) | 979 (22.7) | 28687 (24.8) | 168 (15.8) | 220 (12.4) |
| **Covariates** | | | | | | |
| Place of residence | | | | | | |
| Rural | N (%) | 3555 (84.7) | 2893 (67.2) | 83977 (72.7) | 307 (28.8) | 442 (24.9) |
| Urban | N (%) | 643 (15.3) | 1412 (32.8) | 31593 (27.3) | 758 (71.2) | 1332 (75.1) |
| Sex of child | | | | | | |
| Male | N (%) | 2121 (50.5) | 2249 (52.2) | 59806 (51.7) | 592 (55.6) | 889 (50.1) |
| Female | N (%) | 2077 (49.5) | 2056 (47.8) | 55764 (48.3) | 473 (44.4) | 885 (49.9) |
| Age of child (months) | | | | | | |
| 0 – 5 | N (%) | 518 (12.4) | 702 (16.3) | 15073 (13.0) | 159 (14.8) | 301 (17.0) |
| 6 – 11 | N (%) | 690 (16.4) | 668 (15.5) | 20012 (17.3) | 185 (17.4) | 282 (15.9) |
| 12 – 23 | N (%) | 1431 (34.1) | 1492 (34.7) | 40315 (34.9) | 379 (35.7) | 586 (33.1) |
| 24 – 35 | N (%) | 1559 (37.1) | 1443 (33.5) | 40170 (34.8) | 342 (32.1) | 605 (34.1) |

[*] The frequencies (Ns) in the table have been weighted using sampling weights.

SD=standard deviation, HAZ=height for age Z-score.

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Table 2 Associations of household socioeconomic position variables (considered separately) with the odds of stunting for each country, with estimated differences (in the associations) between Sri Lanka and each other country.

| | Sri Lanka | Bangladesh | Sri Lanka vs Bangladesh Difference | India | Sri Lanka vs India Difference | Nepal | Sri Lanka vs Nepal Difference | Pakistan | Sri Lanka vs Pakistan Difference |
|---|---|---|---|---|---|---|---|---|---|
| | AOR (95% CI) | AOR (95% CI) | AOR (95% CI) | AOR (95% CI) | AOR (95% CI) | AOR (95% CI) | AOR (95% CI) | AOR (95% CI) | AOR (95% CI) |
| Model 1 | | | | | | | | | |
| Mothers Education | | | | | | | | | |
| Higher [referent] | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Secondary | 1.59 (1.34, 1.90) | 2.36 (1.85, 3.02) | 0.67 (0.50, 0.91) | 1.67 (1.55, 1.80) | 0.95 (0.79, 1.16) | 1.39 (0.86, 2.25) | 1.15 (0.69, 1.91) | 1.88 (1.09, 3.22) | 0.85 (0.48, 1.50) |
| Primary | 2.74 (1.81, 4.14) | 2.79 (2.15, 3.61) | 0.98 (0.60, 1.60) | 2.45 (2.25, 2.66) | 1.12 (0.73, 1.70) | 2.23 (1.33, 3.75) | 1.23 (0.63, 2.38) | 2.22 (1.24, 3.98) | 1.23 (0.60, 2.52) |
| No education | 4.20 (1.92, 9.20) | 3.65 (2.58, 5.16) | 1.15 (0.49, 2.71) | 3.18 (2.95, 3.42) | 1.32 (0.60, 2.91) | 2.55 (1.59, 4.09) | 1.65 (0.66, 4.12) | 3.93 (2.43, 6.34) | 1.07 (0.43, 2.68) |
| Model 2 | | | | | | | | | |
| Wealth Index | | | | | | | | | |
| Richest [referent] | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Richer | 1.32 (0.96, 1.80) | 2.14 (1.63, 2.81) | 0.62 (0.41, 0.93) | 1.42 (1.31, 1.54) | 0.93 (0.67, 1.28) | 1.77 (0.97, 3.24) | 0.74 (0.38, 1.46) | 1.29 (0.79, 2.11) | 1.02 (0.57, 1.81) |
| Middle | 1.69 (1.25, 2.30) | 3.05 (2.32, 4.00) | 0.56 (0.37, 0.84) | 1.97 (1.83, 2.13) | 0.86 (0.63, 1.17) | 2.28 (1.26, 4.13) | 0.74 (0.38, 1.45) | 1.99 (1.27, 3.13) | 0.85 (0.49, 1.47) |
| Poorer | 1.96 (1.46, 2.64) | 4.25 (3.27, 5.51) | 0.46 (0.31, 0.68) | 2.67 (2.48, 2.88) | 0.74 (0.54, 1.00) | 2.71 (1.49, 4.92) | 0.73 (0.37, 1.41) | 2.83 (1.79, 4.49) | 0.69 (0.40, 1.20) |
| Poorest | 2.75 (2.06, 3.67) | 4.20 (3.24, 5.44) | 0.65 (0.44, 0.96) | 3.55 (3.30, 3.82) | 0.77 (0.58, 1.04) | 4.58 (2.49, 8.40) | 0.60 (0.31, 1.18) | 4.61 (2.81, 7.55) | 0.60 (0.34, 1.05) |

Note: All models included sampling weights and were adjusted for age, sex (binary term: male and female), and place of residence (binary term: urban and rural). Age was two linear spline terms as children under 22 months old tended to more stunting than older (22 to 35 months) children.

AOR= adjusted odds ratio, CI= confidence interval

The estimated differences in the odds scale have been calculated using SEP-by-country interaction terms included in each regression model. Regression models were estimated using STATA software. See the Statistical analysis sub-section in the Material and methods for more details.

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Table 3 Associations of household socioeconomic position variables (considered together) with the odds of stunting for each country, with estimated differences (in the associations) between Sri Lanka and each other country.

| | Sri Lanka | Bangladesh | Sri Lanka vs Bangladesh Difference | India | Sri Lanka vs India Difference | Nepal | Sri Lanka vs Nepal Difference | Pakistan | Sri Lanka vs Pakistan Difference |
|---|---|---|---|---|---|---|---|---|---|
| | AOR (95% CI) | AOR (95% CI) | AOR (95% CI) | AOR (95% CI) | AOR (95% CI) | AOR (95% CI) | AOR (95% CI) | AOR (95% CI) | AOR (95% CI) |
| Mothers Education | | | | | | | | | |
| Higher [referent] | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Secondary | 1.32 (1.09, 1.61) | 1.67 (1.29, 2.17) | 0.79 (0.57, 1.10) | 1.36 (1.26, 1.47) | 0.97 (0.79, 1.20) | 1.17 (0.71, 1.94) | 1.13 (0.66, 1.93) | 1.75 (1.00, 3.05) | 0.76 (0.42, 1.37) |
| Primary | 1.97 (1.28, 3.03) | 1.66 (1.24, 2.20) | 1.19 (0.71, 1.99) | 2.02 (1.86, 2.20) | 1.16 (0.74, 1.80) | 1.84 (1.10, 3.08) | 1.16 (0.56, 2.40) | 2.73 (1.59, 4.69) | 1.03 (0.49, 2.17) |
| No education | 2.88 (1.26, 6.55) | 2.03 (1.39, 2.96) | 1.42 (0.57, 3.50) | 1.70 (1.55, 1.86) | 1.42 (0.62, 3.26) | 1.69 (0.94, 3.04) | 1.56 (0.59, 4.14) | 1.90 (1.04, 3.47) | 1.05 (0.39, 2.82) |
| Wealth Index | | | | | | | | | |
| Richest [referent] | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Richer | 1.22 (0.89, 1.67) | 1.91 (1.44, 2.52) | 0.69 (0.45, 1.06) | 1.25 (1.15, 1.36) | 1.01 (0.73, 1.40) | 1.47 (0.78, 2.77) | 0.65 (0.31, 1.38) | 1.06 (0.64, 1.75) | 0.89 (0.47, 1.69) |
| Middle | 1.51 (1.10, 2.08) | 2.56 (1.93, 3.40) | 0.51 (0.33, 0.77) | 1.54 (1.42, 1.68) | 0.91 (0.65, 1.26) | 1.65 (0.86, 3.18) | 0.80 (0.39, 1.64) | 1.42 (0.88, 2.31) | 0.98 (0.54, 1.78) |
| Poorer | 1.68 (1.23, 2.31) | 3.33 (2.52, 4.40) | 0.59 (0.39, 0.90) | 1.86 (1.70, 2.03) | 0.98 (0.71, 1.36) | 2.10 (1.10, 4.01) | 0.91 (0.44, 1.89) | 1.71 (1.03, 2.83) | 1.06 (0.60, 1.90) |
| Poorest | 2.17 (1.58, 2.99) | 3.13 (2.36, 4.16) | 0.64 (0.42, 0.97) | 2.15 (1.96, 2.36) | 0.97 (0.70, 1.35) | 3.34 (1.70, 6.60) | 0.83 (0.41, 1.67) | 2.45 (1.40, 4.28) | 1.15 (0.63, 2.08) |

Note: All models included sampling weights and were adjusted for age sex (binary term: male and female), and place of residence (binary term: urban and rural)

AOR= adjusted odds ratio, CI= confidence interval

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