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Work, Motherhood, and Nutrition: Investigating the Association of Maternal Employment on Child Nutritional Status in South Asia—A Systematic Review

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ADMINISTRATIVE INFORMATION

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Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 23 February 2025 and was last updated on 23 February 2025.

INTRODUCTION

Review question / Objective The present systematic review examined the association between maternal employment and the nutritional status of children up to twelve years old from South Asia.

Rationale In South Asia, most women cease employment post-delivery owing to childcare responsibilities. However, women from economically weaker sections often continue working, predominantly in the informal sectors, to supplement family income. A woman's income increases food security, ensures nutrition security, and facilitates access to adequate childcare services that improve the child's nutrition status. The dual responsibilities of childcare and employment induce stress in working women. Also, the reduced time mothers spend with their children due to employment impacts adequate childcare, resulting in poor nutritional outcomes in children. The association between maternal employment and the child's health is influenced by factors such as the nature of employment, the employer, and maternal income. The challenges are exacerbated for mothers from underprivileged households, who are working for a living. A trade-off between a mother's income and the time available for childcare and the impact on child nutritional outcomes remains inconclusive.

Condition being studied All the included studies were examined to evaluate the association between maternal employment status with: (1) stunting (height-for-age < -2 standard deviations (SD), (2) other forms of malnutrition include a composite index of anthropometric failure (CIAF), coexisting forms of malnutrition (CFM), wasting (weight-for-height <-2SD), underweight (weight-for-age <-2SD), mean Z-score for HAZ (height-for-age), mean Z-score for WAZ (weight-for-age), mean Z-score for WHZ (weight-for-height), mid-upper-arm-circumference, mean Z-score of mid-upper-arm-circumference-for-age (MUACZ), small arm (mid-upper-arm-circumference <115 mm),

thinness/wasting (Z-score of BMI-for-age 2SD), mean Z-score for BMI-for-age (BAZ), height, and weight.

METHODS

Search strategy The keywords used to search were : ["children" OR "young children" OR "infant" OR "child" OR "toddler" OR "preschool children"] AND ["women" OR "mother" OR "maternal"] AND ["maternal employment" OR "working status" OR "women, working" OR "working women" OR "working woman" OR "employment status" OR "occupational status" OR "labor force" OR "gainfully employed] AND ["Afghanistan" OR " Bangladesh" OR "Bhutan" OR "India" OR "Maldives" OR "Nepal" OR "Pakistan" OR " Sri Lanka"] AND "South Asia" AND ["nutritional status" OR "physical growth" OR "anthropometry" OR "wasting" OR "stunting" OR "underweight" OR "undernutrition" OR "malnutrition" OR "obesity" OR "overweight" OR "composite index of anthropometric failure" OR "coexisting forms of malnutrition OR MND's OR micronutrient deficiencies"].

Participant or population Children up to 12 years of age.

Intervention Not applicable.

Comparator South Asian countries (Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka).

Study designs to be included Observational study (cross-sectional study, case control and cohort study).

Eligibility criteria Children up to 12 years of age.

Information sources An electronic search was conducted in three databases, viz. PubMed, Science Direct, and Web of Science, for full-text research articles published in English between January 2011 and December 2024. Additionally, a grey literature search was conducted to collect information on maternity leave, paternity leave, and childcare provision policies in South Asian countries to summarize the existing policies.

Main outcome(s) All the included studies were examined to evaluate the association between maternal employment status with: (1) stunting (height-for-age < -2 standard deviations (SD), (2) other forms of malnutrition include a composite index of anthropometric failure (CIAF), coexisting forms of malnutrition (CFM), wasting (weight-for-height <-2SD), underweight (weight-for-age <-2SD), mean Z-score for HAZ (height-for-age), mean Z-score for WAZ (weight-for-age), mean Z-score for WHZ (weight-for-height), mid-upper-arm-circumference, mean Z-score of mid-upper-arm-circumference-for-age (MUACZ), small arm (mid-upper-arm-circumference <115 mm), thinness/wasting (Z-score of BMI-for-age 2SD), mean Z-score for BMI-for-age (BAZ), height, and weight.(1) stunting (height-for-age < -2 standard deviations (SD), (2) other forms of malnutrition include a composite index of anthropometric failure (CIAF), coexisting forms of malnutrition (CFM), wasting (weight-for-height <-2SD), underweight (weight-for-age <-2SD), mean Z-score for HAZ (height-for-age), mean Z-score for WAZ (weight-for-age), mean Z-score for WHZ (weight-for-height), mid-upper-arm-circumference, mean Z-score of mid-upper-arm-circumference-for-age (MUACZ), small arm (mid-upper-arm-circumference <115 mm), thinness/wasting (Z-score of BMI-for-age 2SD), mean Z-score for BMI-for-age (BAZ), height, and weight.

Additional outcome(s) None.

Data management The data was extracted and documented in the Microsoft Excel spreadsheet in the following format: author(s), year, country, age, sample (n), data collection tools, maternal employment status, indicators of childhood nutritional status, and overall findings.

Quality assessment / Risk of bias analysis We used the Strengthening the Reporting of Observational Studies in Epidemiolo-gy-Modified (STROBE-M) tool to assess the reporting quality of the included observational studies. The studies were graded as "excellent" (≥ 85), "good" (70 to <85), "fair" (50 to <70), and "poor" (<50) based on the total obtained score from two independent reviewers [29,30].

Strategy of data synthesis The data was extracted and documented in the Microsoft Excel spreadsheet in the following format: author(s), year, country, age, sample (n), data collection tools, maternal employment status, indicators of childhood nutritional status, and overall findings. All searched articles were uploaded in COVIDENCE 2.0 systematic review software (Veritas Health Innovation, Melbourne, Australia) in PubMed file format from the PubMed database and RIS file format from the Science Direct and Web of Science databases, respectively [28]. All duplicate articles were removed, and two reviewers independently performed the title and abstract

screening followed by the full-text screening to include the eligible studies for the review.

Subgroup analysis Not applicable.

Sensitivity analysis Not applicable.

Language restriction Study publised in English language only.

Country(ies) involved India.

Other relevant information The present systematic review, to our knowledge, is the first of its kind that comprehensively examined the association between maternal employment and the nutritional status of children in conjunction with the existing policies of South Asian countries. Our findings show mixed results on the association between maternal employment and childhood nutritional status—with some beneficial, no, and adverse effects. Additionally, the association was determined by the nature or type of jobs, workplace en-vironment, availability of childcare facilities, and regional variations.

Keywords mothers' employment; nutritional status; children; South Asia; systematic review; malnutrition.

Dissemination plans The review concludes that the association between maternal employment and child nutritional outcomes in South Asia is complex and context-dependent. Policymakers and administrators should address the complex challenges of women employed in informal sectors through the implementation of employment legislation, provision of childcare facilities, and establishment of social security measures to support mothers and improve child nutritional outcomes.

Contributions of each author

Author 1 - Rupali Waghode - Writing-review & editing. Writing- original draft, methodology, review, editing, formal analysis, validation, data curation, conceptualization.Conceptualization ; Methodology: Software: RW and SSY; Formal analysis: RW and SSY; Writing- Original draft preparation RW, SSY, RG, SAR and KM; Writing-review and editing: RW, SSY, RG, SAR and KM; Supervision: KM and RG. All.
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