




# Gender inequality as a structural determinant of nutrition and maternal and child health in the Brazilian Amazon

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## Introduction

Over the last few decades, Brazil has made significant strides in maternal and child health. However, health indicators from the Western Amazon (comprising the states of Amazonas, Acre, Rondônia, and Roraima) indicate that this progress has not yet fully reached the populations within these territories. In this context, historical, social, and gender inequalities continue to shape daily family life and caregiving conditions, directly influencing dietary practices and maternal and child health.

These inequalities become particularly visible in the current nutrition transition within the Amazon region. This process has been marked by a decline in the intake of regional, fresh, and sustainable foods, followed by a significant expansion of ultra-processed foods (UPF) in household routines.<sup>1,2</sup> This shift has occurred primarily because women – historically responsible for family nutrition – find in UPFs a strategy to cope with domestic overload.<sup>3</sup> In this context, the increasing consumption of UPFs creates a critical scenario that contributes to the high prevalence of

childhood overweight and obesity observed in the region. Consequently, excess weight has become as concerning a problem as growth deficits and micronutrient deficiencies, which have historically persisted in the Amazon.<sup>4,5</sup>

To comprehend how gender inequalities, women's disproportionate burden, and the nutrition transition intersect in the Western Amazon, it is necessary to trace the historical roots of the region's occupation. In the Upper Juruá, in the late 19th century, the migration of Northeastern men to the rubber estates was designed to exclude women and children, who were deemed unproductive in the extractive system.<sup>6,7</sup> The few women in the region during that period – mostly Indigenous and some Northeastern migrants – were exposed to systematic violence and exploitation. This intentional exclusion shaped relations in which women were treated as commodities, objects of trade, dispute, and control.<sup>6-8</sup> Even when active in the rubber stands, their contribution was rendered invisible: tapping rubber was attributed to men, and acknowledging female participation would have strained the gender and kinship structures that sustained the power relations.<sup>6-7</sup> Such invisibility likely consolidated



intergenerational patterns of gender socialization, where girls learned to cook and perform domestic tasks from an early age, while boys were kept away from the kitchen to protect their masculinity. In this process, cooking became socially associated with femininity and a moral expectation imposed on women.<sup>6,9</sup>

Following the decline of the rubber cycle in the early 20th century, women's participation in productive activities increased, yet without an equivalent redistribution of domestic responsibilities. Consequently, women began to accumulate both productive and domestic labor, consolidating multiple and overlapping work shifts.<sup>6-8,10,11</sup> In the established rubber estates, activities related to maintenance of the “rubber trails” – pathways in the forest connecting the trees – and rubber processing depended heavily on female labor. Women were active in several stages of the production process, from tree preparation and management to latex processing. They performed essential roles such as scraping the trunks, installing the collection cups, pruning, smoking, and latex preparation. Nevertheless, they did not achieve the adequate social and economic recognition.<sup>7,8,12</sup>

Throughout the 20<sup>th</sup> century, these dynamics were reproduced across different economic and institutional arrangements, maintaining the sexual division of labor as a structural principle of social organization. As Kergoat<sup>13</sup> highlights, this division constitutes a durable principle of social organization that maintains a hierarchy among female and male activities, even in the face of productive transformations.<sup>11,13</sup> In this context, historical and anthropological studies indicate that, even after the decline of the classical extractive model, the organization of domestic life remained heavily anchored in the women's responsibility for caregiving and nutrition.<sup>6,14</sup> The naturalization of care as a female attribute operated as a mechanism of intergenerational transmission through family educational practices, community norms, and moral expectations associated with motherhood.

Notwithstanding such transformations, this article does not intend to establish a linear causal relationship between the rubber estate system and contemporary dynamics, nor to exhaustively detail every practical instance of these shifts. Rather, it proposes a historical-interpretative reading in which specific forms of the sexual division of labor, consolidated during the rubber cycle, helped structure social expectations regarding women's roles in caregiving and nutrition. Despite socio-historical nuances and ruptures, the overlap between productive labor and domestic responsibilities—culturally imposed on women—continues to define their modes of life and livelihoods. Contemporary studies indicate that women in the Amazon region frequently report extreme exhaustion, a decline in the pleasure of cooking, minimal family

collaboration in household tasks, and the moral pressure to satisfy the preferences of partners and children.<sup>3</sup> In this context, when they resort to the use of UPFs, they do so as a response to an unequal workload and the social expectation of maternal care and dedication, which continue to structure their routines and limit their available time.<sup>3</sup> From this perspective, the use of UPFs does not simply reflect a choice for convenience, nor a fully conscious dietary decision by families. Instead, it expresses the concrete contradictions of structural inequalities related both to capital accumulation and to the time dedicated to poorly recognized labor functions, which restrict food autonomy—understood here as the capacity to decide, access, and prepare food freely and with dignity. Thus, while the difficulty of accessing healthy or regional foods is a concrete and relevant barrier, the convenience attributed to UPFs stems just as deeply—albeit frequently rendered invisible—from daily overload and the persistence of gender norms that organize labor and care.<sup>3</sup>

In this context, maternal and child health emerges as an important marker of structural and intersectional gender inequalities. Such inequalities reflect the intersection of gender, race, and class in the production of particular social vulnerabilities.<sup>15,16</sup> In Brazil, their effects are felt more intensely by Black and Brown women, who are frequently exposed to lower income levels, institutional support, and social safety nets.<sup>17</sup> To expect overworked women – living in food insecurity contexts and exposed to multiple work shifts – to prepare traditional, fresh, and nutritious meals is not only unrealistic, but also unjust. Public food and nutrition policies, albeit well-intentioned, frequently overlook the gender dimension and the need for collective responsibility. In summary, by targeting women almost exclusively, these policies reinforce the notion that child health is, primarily, a female obligation.

Finally, it is important to recognize that nutrition and maternal and child health are not explained by gender inequalities alone. Income, educational attainment, access to food, and the commercial strategies of the food industry also play an essential role in shaping dietary practices. The gender dimension intersects with these factors by organizing the distribution of time, labor, and caregiving responsibilities within families, thereby conditioning the actual possibilities for choice. Similarly, the sexual division of labor is central to understanding contemporary dietary practices, the consumption of UPFs, and the barriers to adherence regarding nutritional guidelines.<sup>2,3</sup>

Furthermore, advancing maternal and child health in the Amazon requires interventions that include father figures – historically underrepresented in food and nutrition studies – and other caregivers.<sup>18</sup> These actions must promote more equitable household environments, without reinforcing stereotypes, instead encouraging shared

caregiving. It is equally necessary to recognize that dietary choices are not merely a matter of individual preference, but are responses to social, historical, cultural, political, and economic contexts. Currently, these contexts engender an unequal system of commodity production (agricultural, mineral, and energy) within the global industrial system.<sup>19</sup>

If we seek for concrete advancements in maternal and child health, we must abandon the narrative that holds women exclusively responsible for family dietary practices. Adequate and healthy nutrition depends less on isolated nutritional information and more on conditions that make it possible to cook, care, and live with dignity – which demands intersectoral public policies and a commitment to social justice.<sup>20</sup> Addressing gender inequalities, therefore, is not a peripheral issue, but a structuring axis for policies focused on equity.<sup>21</sup>

### Author's contribution

Hovadick ACA: played a leading role in the conceptualization, supervision, and writing of the original draft, as well as providing an equivalent contribution to the investigation methodology, project administration, and review and editing of the manuscript. Mosquera PS: played a supporting role in the conceptualization, investigation, methodology, project administration, and review and editing of the manuscript. Gugliotti JP: played a supporting role in the conceptualization, methodology, writing of the original draft, and review and editing of the manuscript. All authors approved the final version of the article and declare no conflicts of interest.

### Declaration on the use of artificial intelligence

The authors declare that artificial intelligence (AI) tools were used exclusively for linguistic review of the manuscript, including improvements in grammar, spelling, clarity, and style. No AI tools were employed for generating scientific content, data analysis, results interpretation, or the formulation of conclusions. The authors maintain full accountability for all intellectual, conceptual, and analytical content presented in the manuscript.

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### Data availability

All datasets supporting the results of this study are present in the article.

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