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The Silence of Systems: Risks of Algorithmic Nutritional Exclusion in Hyperconnected Economies

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The digitalization of nutrition has radically transformed how individuals monitor their dietary intake but has also introduced invisible algorithmic risks. This study investigates the algorithmic behavior of MyFitnessPal and Cronometer in response to simulated nutritional scenarios, using user profiles that display energy or micronutrient vulnerabilities. Based on an exploratory-comparative design, five simulated profiles (both female and male) with different weight-loss objectives were tested under controlled conditions, using traditional, chaotic, and standardized menus. The findings reveal a substantial difference between the two applications: MyFitnessPal exhibited a systematic algorithmic silence, failing to issue warnings even in cases of intake below 1000 kcal, while Cronometer blocked unsafe goals and explicitly flagged nutritional deficiencies. These insights highlight the critical need to integrate protective mechanisms and digital ethics into self-tracking apps, particularly for users lacking professional nutritional guidance. The study contributes to developing best practices for designing responsible algorithms with direct implications for public health in hyperconnected economies.

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