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ORIGINAL RESEARCH

Hunger in humans: evolutionary context and contemporary implications - Review of the evidence

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1. ABSTRACT

The study analyzed is a historical-evolutionary review that examines the role of hunger in human history. The author concludes that food scarcity has been a strong selective pressure, but emphasizes that the evidence for a relationship between caloric restriction and longevity in humans remains weak. Since only the abstract is available, the review method, source selection criteria, and many analytical details are not reported in the available material.In the section "The Choice to Live in Health or Illness" by Dr. A. Colonnese and R. Panzironi, the publication contributes primarily to the evolutionary context in which changes in food availability can influence human demographics and adaptations. Independent archaeological studies confirm that, in various Neolithic contexts, agriculture was associated with rapid dietary changes, greater settlement stability, and initial population growth. However, they do not prove that every agricultural society inevitably had a less nutritious diet or lower dietary biodiversity.

ONLINE ARTICLE

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MISSION

LIFE Science Hub – Journal of Science was founded with the aim of making scientific knowledge accessible without giving up methodological rigour, quality of sources and authoritativeness of content. The journal promotes the dissemination of knowledge in the health, nutrition, medical and longevity sciences, building a bridge between the world of research and society.

Through articles, reviews, in-depth analyses and expert contributions, the Journal champions evidence-based medicine and science, fostering a correct interpretation of scientific data and countering misinformation. Every piece of content is developed with the aim of translating the complexity of research into understandable, useful and applicable information, while keeping intact the principles of accuracy, transparency and scientific independence.

Free from political, industrial and commercial influence, the journal stands as an authoritative and independent editorial space, dedicated to promoting scientific culture, professional development and the growth of health awareness among the public.

2. ANALYZED STUDY

The question addressed by the publication is whether hunger and caloric restriction played a role in human evolution and whether they can help explain a potential relationship between lower energy availability and longevity. The hypothesis discussed is that repeated historical exposures to famine favored adaptations useful for survival when food was scarce.Regarding the section from "The Choice to Live in Health or Illness" by Dr. A. Colonnese and R. Panzironi, the relevant point is not a direct demonstration of the effects of agriculture on biodiversity or sedentary lifestyles. Instead, the relevance concerns the general framework: food availability, hunger, and energy-saving strategies are factors that have profoundly influenced human biological and demographic history.The study can therefore support a general evolutionary shift in the narrative, but it cannot prove that cultivation caused nutritional impoverishment of the diet or sedentary behavior in all populations. These aspects require specific archaeological and anthropological evidence.

3. MATERIALS AND METHODS OF THE ORIGINAL STUDY

The publication is presented in the abstract as a brief review of historical documentation regarding the frequency and extent of famines in human history. It is not a clinical trial, it does not compare groups of participants, and it does not report on a dietary intervention.Since the full text is not accessible and the available material consists only of the abstract, there is no report of the inclusion criteria for sources, the number of publications examined, the research period, the databases consulted, a bibliographic search strategy, procedures for assessing study quality, or statistical analyses. Furthermore, there is no mention of a sample, control group, endpoints, follow-up, or comparative quantitative data.

4. RESULTS

The main result is conceptual and historical-evolutionary: hunger is described as one of the primary selective pressures on the human genome. In simple terms, for many generations, the ability to survive when food was scarce may have favored biological traits useful for conserving energy and maintaining reproduction under difficult conditions.The abstract reports that the genetic component contributes approximately 25% to the variability of human longevity. However, the author considers it unlikely that genes capable of directly extending life were selected specifically for this effect; any advantages regarding longevity could be unintended consequences of other adaptations. This value is not accompanied, in the available material, by an estimation method, confidence interval, or reference population.The publication also concludes that the evidence for an effect of caloric restriction on human longevity is weak. No experimental results on agriculture, measures of dietary biodiversity, comparative nutritional data, or direct estimates of sedentary behavior are reported. Therefore, the segment relevant to the book is the general link between food pressure, adaptation, and population organization, rather than a complete demonstration of the cited sentence.

5. INTERPRETATION

The most accessible takeaway from the study is that human dietary history has not been one of constant abundance. Recurring periods of scarcity may have influenced survival and reproduction, leaving traces in our biological adaptations. This provides a plausible evolutionary framework for understanding why major shifts in food supply systems have had such significant social and demographic consequences.However, the publication subject to this Evidence Review does not demonstrate a complete causal chain from agriculture to reduced dietary biodiversity, nutritional depletion, population growth, and sedentary lifestyles. It primarily documents the more general progression of food scarcity selective pressure survival adaptations. Extending this reasoning to the Neolithic transition is an interpretation that must be evaluated through independent studies of human remains, ancient diets, and archaeological demography.

6. INDEPENDENT CONFIRMING EVIDENCE

An archaeological review by Larsen examined the consequences of the transition from hunting and gathering to agriculture in various populations during the Holocene period. The author describes how, in many contexts, an increasing reliance on cultivated plants was associated with a less varied diet, reduced

access to meat and certain micronutrients, as well as greater settlement stability. This evidence confirms the passage in the book linking systematic cultivation, reduced dietary variety, and sedentary lifestyles, although it is a narrative synthesis rather than a quantitative meta-analysis. The consequences were not identical in every geographical area or historical period [1].A study on human remains in Great Britain used stable carbon isotopes in bones—chemical traces that help reconstruct the general origin of consumed foods. The authors observed, at the beginning of the Neolithic, a rapid and complete shift from a diet heavily based on marine resources to a primarily terrestrial diet, coinciding with the appearance of domesticated plants and animals. This result directly confirms that the introduction of agriculture could markedly alter the dietary repertoire; it does not, by itself, prove that the new diet was necessarily worse in every nutritional aspect [2].Regarding the demographic segment, Shennan and colleagues analyzed 13,658 radiocarbon dates from Western European sites, using them as an indirect indicator of population density over time. In ten of the twelve regions examined, the local appearance of agriculture was followed by significant population growth compared to the reference model. However, the picture was not one of continuous growth: after initial increases, fluctuations and, in various regions, demographic declines were observed. The study therefore confirms the association between the adoption of agriculture and initial demographic expansions, but cautions against describing it as a uniform or inevitably stable process [3].

7. CONFLICTING EVIDENCE

No directly conflicting evidence of sufficient relevance has been identified; this does not prove the absence of contrary results.The available evidence still requires caution. A land-based or more crop-dependent diet does not automatically equate to a lower-quality diet in every population. The variety of foods, the presence of livestock, fishing, foraging for wild plants, climatic conditions, and preservation practices could substantially alter the effects of the agricultural transition. Sedentary behavior was also not absolute: many communities combined cultivation, animal husbandry, hunting, fishing, and seasonal mobility. Finally, archaeological demographic reconstructions are based on indirect indicators and primarily describe population trends, not complete census counts.

8. QUADRO COMPARATIVO E SINTESI DELLE EVIDENZE

The table distinguishes the publication subject to the review from the independent research used to verify the individual steps of the book's narrative.

Quadro comparativo

Reference	Study type	Population or model	Main result	Direction of evidence	Strength of evidence
Original study	Historical-evolutionary review	Human evolutionary history; no experimental sample reported	Hunger is described as a significant selective pressure; weak evidence for caloric restriction and human longevity.	biologically consistent evidence	preliminary
[1]	Archaeological narrative review	Holocene human populations in various archaeological contexts	The transition to agriculture is associated, in many contexts, with a less varied diet, lower mobility, and potential nutritional disadvantages.	indirect confirmation	moderate
[2]	Archaeological observational study with stable isotopes	Pre-Neolithic and Neolithic human remains from Great Britain	All'inizio del Neolitico si osserva un passaggio rapido da dieta marina a dieta terrestre.	direct confirmation	moderate
[3]	Archaeological-demographic observational study	13,658 radiocarbon dates in 12 regions of Western Europe	The arrival of agriculture was followed by initial demographic growth in ten regions, with subsequent unstable trends.	direct confirmation	moderate

9. SINTESI EDITORIALE E CONCLUSIONI

CONCLUSIONS

The analyzed publication plausibly argues that hunger and food scarcity had evolutionary significance in human history, but it does not provide direct data on the transition to agriculture. The narrative in the paragraph is indirectly confirmed by archaeological evidence showing dietary changes, greater settlement stability, and initial demographic increases associated with agriculture. However, the idea of universal nutritional impoverishment requires a cautious formulation, as outcomes varied between populations, environments, and subsistence strategies.

Aggiornato al 17/11/2026. Questo contenuto riflette una sintesi divulgativa delle evidenze scientifiche al momento della pubblicazione e non sostituisce il parere medico.

10. TRANSPARENCY AND SCIENTIFIC RESPONSIBILITY

Artificial Intelligence was used solely as a tool for editorial and documentary support. All content, interpretations, bibliographic citations and conclusions have been verified, reviewed and approved by the author, who assumes full scientific responsibility for them.

The manuscript was also subjected to independent peer review prior to publication.

To ensure the greatest transparency, the complete history of the article, including the dates of submission, revision, acceptance and publication, as well as information on the peer review process, is available on the dedicated Article History page.

11. RIFERIMENTI BIBLIOGRAFICI

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