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Relationship Between Serum Ghrelin Hormone Levels and Fertility Factors in Men: A Systematic Review

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ABSTRACT

Introduction: Ghrelin, a multifaceted peptide hormone primarily produced in the stomach and gastrointestinal tract, exhibits diverse physiological effects. Notably, it stimulates growth hormone release and plays a key role in regulating appetite. While ghrelin receptors are present in testicular tissue, the direct impact of ghrelin on human spermatogenesis and male fertility remains uncertain. While animal studies suggest that ghrelin administration can influence sperm production and quality, further research is needed to establish its role in human reproductive health. Therefore, this review evaluated the relationship between ghrelin and men's fertility factors.

Search Strategy: PRISMA guidelines and Cochrane systematic review principles were adhered to in this systematic review. A comprehensive search was conducted across key databases (PubMed, Scopus, and Web of Science) using specific keywords related to "Ghrelin", "Spermatogenesis", "Fertility", and their synonyms. Additionally, grey literature was explored through the Google Scholar search engine. Observational studies investigating serum ghrelin levels in men and their association with fertility factors were included. Review articles, conference papers, letters to the editor, and case reports were excluded. The studies were independently screened, data extraction was performed, and the quality of the included studies was assessed using the Newcastle-Ottawa scale by two authors.

Results: A total of 1,125 articles were involved in PubMed, Scopus, and Web of Science. Among these articles, 145 duplicate articles were excluded. Also, 980 articles were screened, and 970 titles and abstracts were irrelevant. Finally, 10 studies remained, and these met the essential criteria for analysis. A key outcome observed in these studies was the remarkable relevance of ghrelin to serum testosterone, sperm concentration, and gonadotropin hormones. The most apparent correlation between serum testosterone levels and ghrelin levels demonstrates an undeniable association. Additionally, factors such as age, weather, and other hormones such as leptin and obestatin were found to affect this correlation.

Conclusion and Discussion: The findings of the current study suggest a significant association between ghrelin and fertility factors. Additional studies are needed to explore the exact relationship between ghrelin and spermatogenesis.

Keywords: Ghrelin, Fertility, Spermatogenesis, systematic review