



Is global interest in fasting, intermittent fasting and the liver shifting?

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Abstract

A recent article highlighted the hepatic benefits of intermittent fasting, particularly during Ramadan. However, the rising use of glucagon-like peptide-1 (GLP-1)/glucose-dependent insulintropic polypeptide (GIP) receptor agonists (RAs) is altering public behavior, leading to decreased interest in diet and exercise. With a focus on hepatic health, we analyzed global search trends using Google Trends™ data from January 1, 2022 to December 31, 2024, focusing on the keywords "fasting", "intermittent fasting", "diet", "nutrition", "liver", Semaglutide ("Ozempic"™, the most widely known GLP-1 RA) and Tirzepatide ("Mounjaro"™, a newer dual GLP-1 and GIP RA). Search interest for "intermittent fasting" and "diet" showed a significant decline over time (Spearman's rho: -0.582 and -0.605, respectively, both $P < 0.001$), while interest in "fasting" and "nutrition" remained stable. Search interest for Semaglutide, Tirzepatide, "fasting and liver", "diet and liver" and Semaglutide and "liver" increased (Spearman's rho: +0.914, +0.936, +0.369, +0.297 and +0.808, respectively, all $P < 0.001$). These findings suggest a trend of shifting away from traditional dieting toward broader health concerns, likely influenced by the increasing use of GLP-1/GIP RAs.

Key Words: Intermittent fasting; Glucagon-like peptide-1 receptor agonists; Glucose-dependent insulintropic polypeptide receptor agonists; Weight management; Diet trends; Hepatic; Public health behavior

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Core Tip: The rising popularity of glucagon-like peptide-1/glucose-dependent insulinotropic polypeptide receptor agonists is reshaping public interest in weight management, leading to a global decline in internet search trends for "intermittent fasting" and "diet" over three years. As the focus of the public shifts toward drug treatment for weight management and broader health topics like longevity and vitality, traditional dieting approaches may be losing relevance.

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TO THE EDITOR

We read with interest the recent article by Emara *et al*[1], which highlights the hepatic benefits of fasting, particularly intermittent fasting, as practiced during Ramadan. The authors implemented a systematic review and meta-analysis and evaluated the effects of Ramadan diurnal intermittent fasting (RDIF) on liver function tests in 601 healthy adults across 20 studies (1987-2020). RDIF showed small but significant improvements in aspartate transaminase, alkaline phosphatase, and bilirubin levels, and a moderate improvement in gamma-glutamyl transferase (changes in alanine transaminase, lactate dehydrogenase, and prothrombin time were not significant). These findings suggest that Ramadan fasting may offer short-term liver protection, but the observed variability in some results calls for further research to confirm these effects. However, glucagon-like peptide-1 (GLP-1) and glucose-dependent insulinotropic polypeptide receptor agonists (RAs) are significantly altering patient behavior, nutritional attitudes, and the weight management industry[2]. Users report appetite suppression, reduced alcohol intake, and decreased motivation for exercise. This shift has even led to a 15% drop in the United States, in the sales of traditional diet books over the past three years, with publishers now focusing more on topics like longevity, vitality, women's health, and stress-related weight gain to align with changing consumer interests[2].

SEARCH TRENDS IN HEALTH

From our own experience[3], we observed a global decline in interest in dieting and exercise, alongside a growing interest in GLP-1 RAs, as reflected in internet search trends. To further investigate whether these trends in public interest persist, and in light of the publication by Emara *et al*[1] on RDIF, we analyzed internet search data using Google Trends™ (<https://trends.google.com/trends/>), this time covering the period from January 1, 2022 to December 31, 2024 (note that Google implemented new algorithms for Google Trends on January 1, 2022). Our analysis focused on assessing global internet search patterns and honing on hepatic health, specifically for the keywords: "fasting", "intermittent fasting", "diet", "nutrition", "liver", Semaglutide ("Ozempic"™, the most widely known GLP-1 RA) and Tirzepatide ("Mounjaro"™, a newer dual GLP-1 and glucose-dependent insulinotropic polypeptide RA). Only English-language terms were used, based on our prior research, which indicated that English-language searches are significantly more prevalent compared to searches in other languages[3]. Google Trends™ provides data in the form of Relative Search Volumes (RSVs), a metric representing the popularity or search interest of a term relative to all searches on Google™ during a specific time period and geographic region. RSVs are scaled between 0 and 100, with 100 representing peak popularity. It is important to note that RSVs are context-sensitive and can vary depending on the timeframe (daily, weekly, or annually) and the selected location (country, region) (<https://newsinitiative.withgoogle.com/resources/trainings/basics-of-google-trends/>). Normality of the distribution for each search term was assessed with the Wilks-Shapiro test; most were found not to be normally distributed. There was periodicity in some searches, which was not amenable to further assessment, due to the limited length of the time span (more "cycles", at least 5-6, would be needed[4]). To examine the trends in RSVs for the selected keywords, we calculated Spearman's rho correlation coefficient for each search term over time (in weeks). Spearman's rho uses ranks instead of assumptions of normality[5]. For detailed access to our study data, please visit Zenodo (10.5281/zenodo.14889006).

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CONCLUSION

In conclusion, our analysis reveals a significant decline in global interest in the search terms "intermittent fasting" and "diet" over the examined period, as indicated by their negative correlation coefficients. This decline aligns with a broader

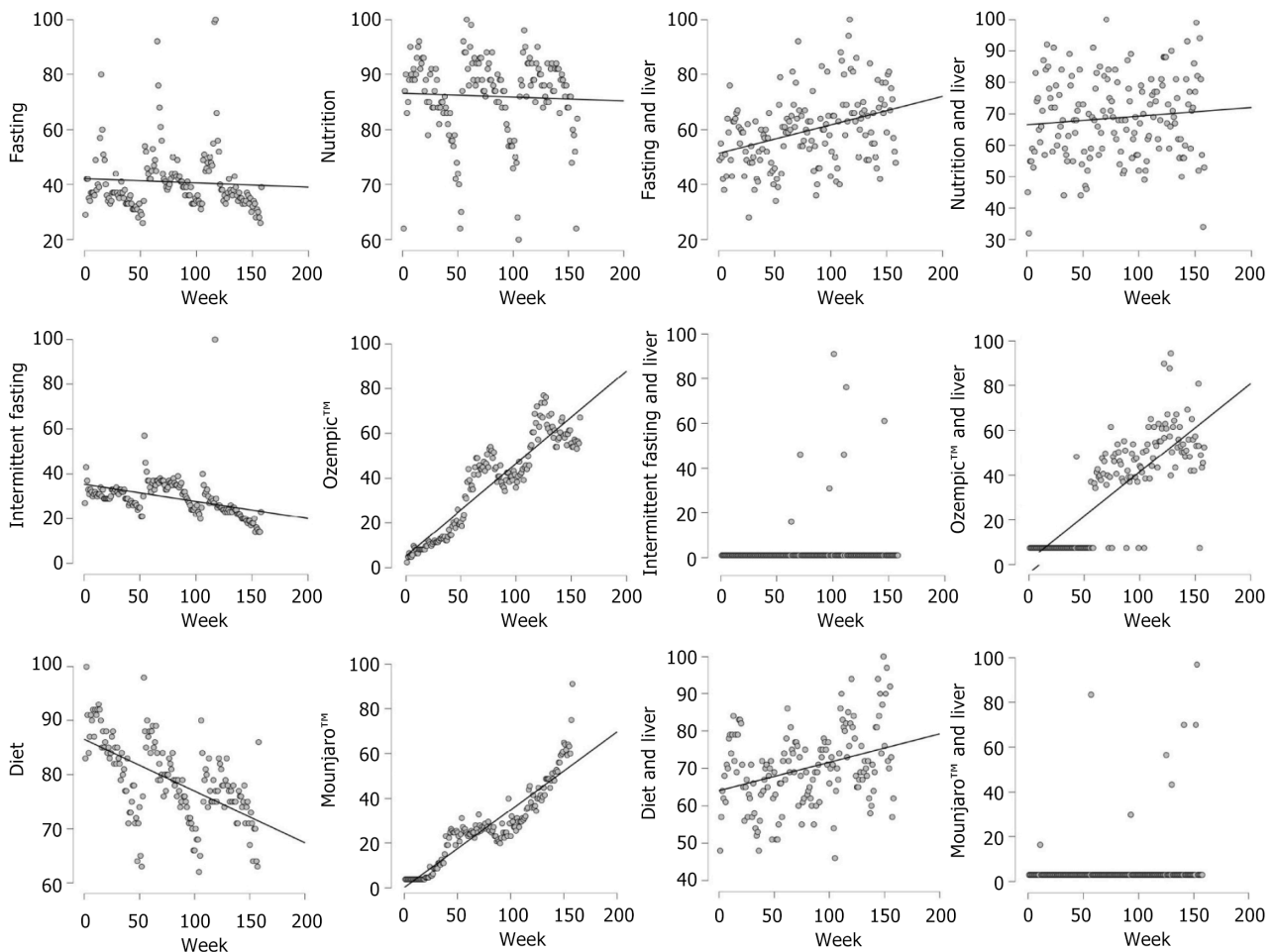


Figure 1 Course and trend over time for weekly internet search terms; note that there is periodicity in some searches which was not assessed in the present work.

shift in public focus, influenced by the rising popularity of GLP-1 RAs, which are reshaping attitudes toward weight management and nutrition. In contrast, search interest in "fasting" and "nutrition" remained stable, suggesting that traditional dietary approaches may be waning in popularity. Fortunately, fasting or diet are increasingly associated in searches vis-à-vis searches regarding the liver, indicating some degree of knowledge for hepatic health in the public. Additionally, interest in GLP-1 RA and the liver shows a very strong escalation. The increase in combined searches for Semaglutide and the liver may reflect the available published research, which indicates that GLP-1 RAs may exert beneficial effects on hepatic function and insulin sensitivity, while also demonstrating potential in reducing hepatic steatosis, mitigating inflammation, and promoting the resolution of non-alcoholic steatohepatitis[6]. Thus, it seems that there is sustained interest in broader health and nutrition topics, modulated by the search for information on current pharmacotherapy. These findings highlight an evolving landscape in public health behavior, which may warrant further exploration.

FOOTNOTES

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