

Evaluation of the Impact of COVID-19 on Internet Searches for Bariatric Surgery in United Kingdom

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The COVID-19 pandemic has significantly decreased the provision of UK bariatric surgery. We hypothesised that Internet searches for bariatric surgery might have increased during COVID. This study evaluated the impact of COVID on Internet searches for bariatric surgery in the UK population.

MUhYf]U'g UbX aYh\cXg: A Google Trends data search using search topics: 'gastric bypass surgery', 'sleeve gastrectomy', 'adjustable gastric band' and 'gastric balloon' was performed. Relative Search Volume (RSV) indices were reported from March 2017 to March 2022. Mean RSV pre-COVID (March 2017-March 2020) and during COVID (March 2020-March 2022) were compared. ANOVA was performed to determine the impact of COVID on RSV

RYgi`hg: Pre-COVID, gastric bypass surgery was most searched, whilst during COVID, sleeve gastrectomy became most commonly searched. ANOVA analysis revealed a significant increase in searches during COVID for sleeve gastrectomy (20.4% pre-COVID vs. 47.2% during COVID; $p < 0.001$), gastric bypass surgery (25.4% vs. 30.7%; $p < 0.001$) and gastric balloon (8.4% vs. 12.0%; $p < 0.001$) but not adjustable gastric band (38.7% vs. 37.8%; $p = 0.350$).

CcbW i g]cb: During the pandemic there was a significant increase in Internet searches for bariatric surgery, likely reflecting lack of availability of bariatric surgery during this time.

KYykcfXg: Bariatric and metabolic surgery; Google trend; Public perception; Relative search volume; COVID-19 and obesity

The Google Trends Data (GTD) reflects individual daily searches made on Google, and can be used to check the interest in each keyword. Carneiro and Mylonakis used the more generic GT tool to show that disease activity can be tracked [10]. GTD has been used recently to measure a variety of public interests around the world. GTD regarding bariatric surgery represent a specific trend and is increasingly being studied by healthcare providers.

Relative Search Volume (RSV) or relative popularity is the ratio of a query's search volume to the sum of the search volumes of all possible queries. The resulting numbers then get scaled on a range of 0 to 100 based on the proportion of the topic to all searches.

The aim of this study was to examine the impact of the COVID-19 pandemic on Internet searches of bariatric surgery, to include different types of bariatric surgery before and during the pandemic.

Materials and Methods

Potential search terms were identified by the authors using an exploratory method reported by Bramer, et al., using the most recent International Federation for the Surgery of Obesity and Metabolic Disorders (IFSO) Global Registry reports, the most common procedures were identified [11,12]. Internet search terms likely to be used for specific bariatric operations were explored, to include "Roux-en-Y gastric bypass", "One-anastomosis gastric bypass", "gastric bypass", "Sleeve gastrectomy", "gastric sleeve", "lap band", "gastric band" and "gastric balloon" (AC and RW). Initial searches indicated that some terms had limited yield on Google Trends; therefore, the list of terms was reduced to include the classic bariatric operations "gastric bypass", "gastric sleeve", "adjustable gastric band" and "gastric balloon". The RSV for each of these terms is used to compare the data generated from GTD within UK population before and after the pandemic.

Search criteria were entered into Google Trends to generate a graph of searches for the UK over time. A value of 100 represents peak search volume as a percentage, with values below this the corresponding percentage over time. Using the data generated by GT, a database was created for the interest volume for each search term from March 2017 to March 2022, and scatterplots were created. Each individual point represents perceived interest in a term for the corresponding month and year. Fitted spline polynomial trend lines approach was chosen to best fit the data over a range of data points. The impact of the COVID pandemic was assessed by comparing March 2017-March 2020 (pre-COVID) and March 2020-March 2022 (during COVID). Trend analyses were completed using Microsoft Excel Version 14.3.5 and SPSS v 25. ANOVA was used to compare Pre-COVID and during COVID search volumes. $P < 0.05$ was considered to be statistically significant.

Results

In the pre-COVID era, adjustable gastric band was the most commonly searched for procedure (RSV=38.7%), followed by gastric bypass (RSV=25.4%), sleeve gastrectomy (RSV=20.4%) and then gastric balloon (RSV=8.5%). There was a notable seasonality effect, with an increase in interest in all procedures just prior to summer.

At the commencement of the COVID pandemic, there was a significant increase in relative search volumes (RSV) for all specific bariatric operations except for adjustable gastric band. The RSV for sleeve gastrectomy was (RSV=20.4% pre-COVID vs. 47.2% during

COVID; $p < 0.001$) followed by gastric bypass (25.4% pre-COVID vs. 30.7% during COVID; $p < 0.001$) and gastric balloon (8.4% pre-COVID vs. 12.0% during COVID; $p < 0.001$), but not for adjustable gastric band surgery (38.7% pre-COVID vs. 37.8% during COVID; $p = 0.350$) (Table 1).

Table 1. Mean Relative Search Volume (RSV) for different bariatric surgery procedures comparing Pre-COVID and COVID periods.

Rahiri, et al., used GT to explore the New Zealand public's interest in bariatric surgery between 2007 and 2017. This study also indicated increased interest in bariatric surgery especially sleeve gastrectomy [13]. Similarly, recent data from the US and Asia-Pacific Bariatric/Metabolic Surgery Survey (APMBSS) reflects the upward trend in sleeve gastrectomy. This is in contrary to the published UK National Bariatric Surgery Registry (NBSR) 2020 report that indicated Roux-en-Y Gastric Bypass (RYGB) (49%) followed by sleeve gastrectomy (35%) as the most common bariatric procedures performed in the UK [14].

Our findings reflect an interesting noticeable shift in the UK public interest in bariatric surgery when looking for the online advertised treatment options. However, it is not known whether this reflects a genuine interest in finding a suitable treatment option for those who are living with obesity, or if it indicates increased viewing of the internet including a general interest in online bariatric advertisements [15].

To our knowledge, our study is the first study to assess changes in the public interest in bariatric surgery, while internet searching before and during the COVID-19 pandemic.

However, these results should be analysed carefully when considering treatment options with patients during consultations. It is rather important to be aware of this media effect on patient's choice of their preferred bariatric procedure and that the final decision should be based on a mutual agreement, based on a clinician evidence and patients' needs rather than a biased choice based on unaccredited advertisements and untrusted web Mdto#
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