Consumer Interest in Shoulder Replacement Surgery: A Google Trends™ Analysis from 2013 to 2023

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INTRODUCTION:

Shoulder replacement has grown rapidly over the past decade, owing in part to the rise of reverse shoulder arthroplasty and its expanding indications. The interest of industry in shoulder replacement is well documented, however, patient interest in shoulder replacement has not been investigated.

METHODS:

Search inquiry data was queried from Google Trends™ to measure consumer interest in shoulder replacement over the period from 2013 to 2023. The primary search terms were “Shoulder Arthritis” and “Shoulder Replacement" OR "Total Shoulder Replacement." Secondary search terms were “Reverse Shoulder Replacement” OR “Reverse Total Shoulder Replacement.” Searches by geographic location were also conducted.

RESULTS:

Search volume index significantly increased for all search terms during the 10-year interval ($p < 0.001$). Trend analysis of search volume index versus time revealed excellent correlations (R2) for all search terms: "shoulder arthritis" (0.76), "shoulder replacement" or "total shoulder replacement" (0.79), and "reverse shoulder replacement" or "reverse total shoulder replacement" (0.75). When compared with the trend for the search term "shoulder arthritis," an excellent correlation was revealed for "shoulder replacement" or "total shoulder replacement" ($R2 = 0.74$, $p<0.001$) and a strong-moderate correlation was observed for "reverse shoulder replacement" or "reverse total shoulder replacement" ($R2 = 0.69$, $p<0.001$). Over the 10-year period, interest increased the most for "shoulder arthritis" in Connecticut and Alabama, for "shoulder replacement" or "total shoulder replacement" in Mississippi and Montana, and for "reverse shoulder replacement" or "reverse total shoulder replacement" in Utah and Indiana.

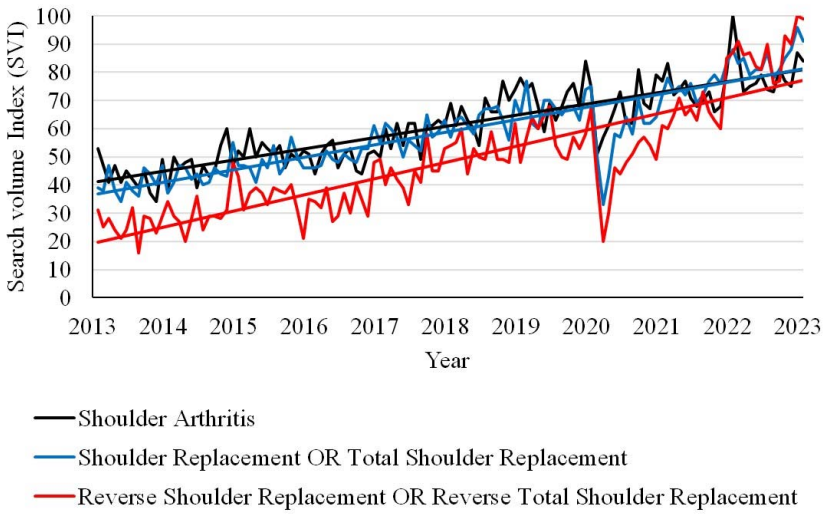
Table 1. Slope, correlation coefficient (R^2), and P-value for linear regression analysis of search volume versus time.

Search Term	Slope	R^2	P
Shoulder Arthritis	0.0109	0.7584	**1.633e-38**
Shoulder Replacement OR Total Shoulder Replacement	0.0126	0.7859	**1.229e-41**
Reverse Shoulder Replacement OR Reverse Total Shoulder Replacement	0.0157	0.7486	**1.778e-37**
Shoulder Replacement OR Total Shoulder Replacement	0.9803	0.7412	<2.20e-16
Reverse Shoulder Replacement OR Reverse Total Shoulder Replacement	1.2056	0.6880	**<2.20E-16**

DISCUSSION AND CONCLUSION:

Our results demonstrate a significant increase in patient interest in shoulder replacements over the past decade and identify geographic hot spots of patient interest. This data will be useful for educating and treating populations interested in shoulder replacements. This is the first study to utilize Google Trends™ to analyze patient interest in shoulder replacement surgery.

Figure 1. Search volume index trends from 2012-2023 with lines of best fit.


Search volume Index (SVI)
100
90
80
70
60
50
40
30
20
10
0
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
Year
Shoulder Arthritis
Shoulder Replacement OR Total Shoulder Replacement
Reverse Shoulder Replacement OR Reverse Total Shoulder Replacement