

Supplemental Digital Content 4. Summary of Qualitative Synthesis Findings by Each Factor Across the 29 Included Studies

Factor	# Studies	Qualitative Conclusion	# Concordant	# Discordant	# Null Findings	Studies
Income	10	Patients with higher incomes or from higher income zip codes were often more likely to receive robotic surgery at a higher rate than those with lower income.	6	0	4	Addae et al. (2017), Concors et al. (2019), Fantus et al. (2018), Gabriel et al. (2016), Konstantinidis et al. (2020), Lo et al. (2020), Mirkin et al. (2018), Ofshteyn et al. (2020), Parascandola et al. (2020), Simon et al. (2021), Spaulding et al. (2021)
Education	6	Patients with higher education or those residing in a zip code with a higher percentage of high school graduates were often more likely to undergo robotic surgery compared to those with lower education.	4	0	2	Fantus et al. (2018), Gabriel et al. (2016), Lo et al. (2020), Ofshteyn et al. (2020), Parascandola et al. (2020), Spaulding et al. (2021)
Gender/Sex	22	Females were often less likely to receive robotic surgery than males.	12	1	9	Abd El Aziz et al. (2020), Addae et al. (2017), Alharthi et al. (2020), Bell et al. (2019), Buonpane et al. (2017), Chung et al. (2021), Concors et al. (2019), Fernandez et al. (2013), Gabriel et al. (2016), Halabi et al. (2013), Konstantinidis et al. (2020), Lo et al. (2020), Miller et al. (2016), Mirkin et al. (2018), Moghadamyeghaneh et al. (2015),

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Age	21	Younger patients were often more likely to receive robotic surgery compared to older patients.	13	0	8	Ofshiteyn et al. (2020), Osagiede et al. (2019), Parascandola et al. (2020), Shootman et al. (2017), Simon et al. (2021), Sujatha-Bhaskar et al. (2017), Yeo et al. (2016) Abd El Aziz et al. (2020), Addae et al. (2017), Alharthi et al. (2020), Buonpane et al. (2017), Chung et al. (2021), Concors et al. (2019), Fernandez et al. (2013), Gabriel et al. (2016), Halabi et al. (2013), Konstantinidis et al. (2020), Lo et al. (2020), Miller et al. (2016), Mirkin et al. (2018), Moghadamyeghaneh et al. (2015), Ofshiteyn et al. (2020), Osagiede et al. (2019), Parascandola et al. (2020), Shootman et al. (2017), Simon et al. (2021), Sujatha-Bhaskar et al. (2017), Yeo et al. (2016)
Race/Ethnicity	22	Black/African American patients were often less likely to undergo robotic surgery compared to White patients.	12	3	7	Abd El Aziz et al. (2020), Addae et al. (2017), Alharthi et al. (2020), Buonpane et al. (2017), Chung et al. (2021), Concors et al. (2019),

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Insurance Status	18	Patients with private insurance were often more likely to receive robotic surgery compared to those with Medicare, Medicaid, or uninsured.	14	2	2	<p>Damle et al. (2016), Fernandez et al. (2013), Gabriel et al. (2016), Halabi et al. (2013), Konstantinidis et al. (2020), Lo et al. (2020), Mirkin et al. (2018), Moghadamyeghaneh et al. (2015), Ofshteyn et al. (2020), Osagiede et al. (2019), Parascandola et al. (2020), Simon et al. (2021), Shootman et al. (2017), Spaulding et al. (2021), Sujatha-Bhaskar et al. (2017), Yeo et al. (2016)</p> <p>Addae et al. (2017), Alharthi et al. (2020), Buonpane et al. (2017), Chung et al. (2021), Concors et al. (2019), Gabriel et al. (2016), Halabi et al. (2013), Konstantinidis et al. (2020), Lo et al. (2020), Mirkin et al. (2018), Ofshteyn et al. (2020), Osagiede et al. (2019), Parascandola et al. (2020), Sastow et al. (2019), Simon et al. (2021), Spaulding et al. (2021), Sujatha-Bhaskar et al. (2017), Yeo et al. (2016)</p>

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Co-Morbidities	24	<p>Patients and hospitals with higher Elixhauser/Charlson-Deyo Comorbidity index scores were often associated with lower robotic utilization compared to those with no co-morbidity index score of zero.</p> <p>Results were less consistent when specific comorbidities were examined, although, some evidence suggests that being obese or having diabetes, hypertension, dyspnea, chronic heart failure, chronic pulmonary disease, renal failure, or steroid use was associated with a lower likelihood of receiving robotic surgery.</p>	13	0	11	<p>Ab El Aziz et al. (2020), Addae et al. (2017), Alharthi et al. (2020), Bell et al., (2019) Buonpane et al. (2017), Chung et al. (2021), Concors et al. (2019), Fernandez et al. (2013), Gabriel et al. (2016), Halabi et al. (2013), Konstantinidis et al. (2020), Lo et al. (2020), Miller et al. (2016), Mirkin et al. (2018), Moghadamyeghaneh et al., (2015), Ofshteyn et al. (2020), Osagiede et al. (2019), Parascandola et al. (2020), Panteleimontis et al. (2018) Simon et al. (2021), Shootman et al. (2017), Spaulding et al. (2021), Sujatha-Bhaskar et al. (2017) Yeo et al. (2016)</p>
Location	14	<p>Metropolitan and urban areas were often associated with a greater likelihood of robot utilization compared to rural areas.</p> <p>Greater travel distance (≥ 25 miles) was often associated with increased likelihood of robotic utilization compared to < 25 miles. West regions had a decreased likelihood of utilization compared to South and Northeast regions.</p>	11	2	1	<p>Alharthi et al. (2020), Buonpane et al. (2017), Chung et al. (2021), Concors et al. (2019), Gabriel et al. (2016), Gabriel Lee et al. (2017), Lo et al. (2020), Mirkin et al. (2018), Moghadamyeghaneh et al. (2015), Ofshteyn et al. (2020),</p>

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Hospital Volume	6	High volume centers were often more likely to utilize robotic surgery than low volume facilities.	6	0	0	Osagiede et al. (2019), Simon et al. (2021), Villano et al. (2020), Yeo et al. (2016) Fantus et al. (2018), Moghadamyeghaneh et al. (2015), Ofshteyn et al. (2020), Simon et al. (2021), Villano et al. (2020), Yeo et al. (2016)
Hospital Type	17	Academic/research and teaching hospitals were often associated with the highest odds of robotic utilization compared to other hospital types.	14	2	1	Addae et al. (2017), Alharthi et al. (2020), Buonpane et al. (2017), Chung et al. (2021), Concors et al. (2019), Fantus et al. (2018), Gabriel et al. (2016), Konstantinidis et al. (2020), Lo et al. (2020), Mirkin et al. (2018), Ofshteyn et al. (2020), Parascandola et al. (2020), Simon et al. (2021), Spaulding et al. (2021), Sujatha-Bhaskar et al. (2017), Villano et al. (2020), Yeo et al. (2016)
Hospital Size (Number of Beds)	4	Larger hospitals were often more likely to utilize robotic surgery than smaller hospitals.	2	1	1	Addae et al. (2017), Chung et al. (2021), Moghadamyeghaneh et al. (2015), Spaulding et al. (2021)
Tumor Site	5	Rectal surgeries were often more likely to utilize robotic surgery than colon	5	0	0	Ab El Aziz et al. (2020), Addae et al. (2017),

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		surgeries. Among colon surgeries, irritable bowel disease, right colectomies, and lower anterior resections were more likely to receive robotic surgery compared to colon cancer, left colectomies, and abdominal perineal resections, respectively.				Lo et al. (2020), Parascandola et al. (2020), Shootman et al. (2017), Yeo et al. (2016)
Tumor Size	4	There were no consistent findings regarding robotic utilization between smaller and larger tumor sizes.	0	3	1	Gabriel et al. (2016), Lo et al. (2020), Simon et al. (2021), Sujatha-Bhaskar et al. (2017)
Tumor Grade	3	Moderately differentiated tumors were often more likely to receive robotic surgery than well differentiated tumors.	2	0	1	Gabriel Lee et al. (2017), Simon et al. (2021), Villano et al. (2020)
Clinical/Pathological Stage	14	Early stages were often associated with a higher likelihood of robotic utilization compared to later and more advanced stages.	10	2	2	Buonpane et al. (2017), Concors et al. (2019), Fantus et al. (2018), Fernandez et al. (2013), Gabriel et al. (2016), Gabriel Lee et al. (2017), Lo et al. (2020), Mirkin et al. (2018), Ofshteyn et al. (2020), Osagiede et al. (2019), Parascandola et al. (2020), Simon et al. (2021), Sujatha-Bhaskar et al. (2017), Villano et al. (2020)
Treatment	7	Receiving chemotherapy or radiation was often associated with a greater likelihood of robotic utilization.	2	1	4	Buonpane et al. (2017), Concors et al. (2019), Fernandez et al. (2013), Lo et al. (2020), Mirkin et al. (2018), Parascandola et al. (2020),

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American Society of Anesthesiologists Classification	3	There was no evidence of a difference in surgical approach across ASA classes.	0	0	3	Simon et al. (2021) Fernandez et al. (2013), Miller et al. (2016), Shootman et al. (2017)
Year of Diagnosis or Surgery	5	Robotic utilization was often more common in recent years compared to older years	5	0	0	Addae et al. (2017), Osagiede et al. (2019), Parascandola et al. (2020), Simon et al. (2021), Yeo et al. (2016)

Note. # Concordant refers to the number of studies that were consistent in the direction of the differences in robotic utilization. # Discordant refers to the number of studies that were inconsistent, or those that found a difference in the opposite direction relative to the other studies. # Null Findings refers to the number of studies that reported no evidence of a difference in robotic utilization.