

Supplementary Table 1: Overview of the literature on sex differences in GIST survival

This table gives an overview of all 117 articles that met the selection criteria and were included in the review of the literature. Articles are subdivided into articles focused on a specific GIST location (e.g. an article with gastric GIST patients only) or articles with all GIST locations but with patients at different disease stages (e.g. an article with patients with localised disease). All articles are only listed once.

Year	Refs	No. of Pts.	Sex	Study Design	Primary Outcome	FU	Study population	Sex differences	Gender prognostic factor?	Better outcome for M/F?
Articles focused on a specific GIST location										
Oesophageal GIST										
2020	Schizas et al., 2020, JBUON	105	M: 55, F: 50	Meta-analysis. Oesophageal GIST	OS	medFU 34m	Oesophageal GISTs from case series and reports were included in this meta-analysis.	No sex difference for OS on univariate analysis.	No (U)	N/A
Gastric GIST										
2000	Nishida et al., 2000, J Exp Clin Canc Res	125	M: 68, F: 56, 1 unknown (?)	Retrospective monocentre cohort	DSS	NS	Primary gastric GIST patients that underwent surgery.	No sex difference for DSS	No (M)	N/A
2003	Wong et al., 2003, Histopathology	108	M: 58, F: 50	Gastric GIST. Retrospective, monocentre cohort.	DSS	medFU 43m	Only gastric GIST after complete surgical resection	No difference on univariate survival analysis	No (U)	N/A
2010	Huang et al., 2010, World J Surg	187	M: 97, F: 90	Retrospective, monocentre cohort. Gastric GIST	OS	medFU 46.2m	Different gastric GIST sites.	No sex difference for OS on univariate analysis and therefore not included on multivariate analysis.	No (U)	N/A
2010	Setoguchi et al., 2010, Cancer Science	104	M: 56, F: 48	Retrospective, multicentre cohort. Gastric GIST	DFS	medFU 16m	Gastric GIST patients.	No sex difference in 5-y postoperative DFS (univariate).	No (U)	N/A
2012	Catena et al., 2012, Onkologie	151	M: 90, F: 61	Retrospective, multicentre cohort. Gastric GIST	DFS	medFU 101m	Patients with primary gastric GIST and surgical resection.	No sex difference for DFS on univariate analysis and therefore not included on multivariate analysis.	No (U)	N/A
2014	Lin et al., 2014, World J Of Surg Oncol	170	M: 93, F: 77	Retrospective, monocentre cohort. Gastric GIST	OS	medFU 38m	Gastric GIST patients who underwent complete surgical resection were included. Gastric GIST only was compared to gastric GIST with gastric cancer.	No sex difference for OS on univariate analysis. More male in group with GIST and gastric cancer.	No (U)	N/A

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2014	Bischof et al., 2014, Ann Surg Oncol	397	M: 199, F: 198	Retrospective, multicentre cohort. Gastric GIST	RFS, OS	medFU 33m	Gastric GIST patients that underwent surgical resection. Outcome from patients with open surgery were compared to patients with minimally invasive surgery.	Male HR OR 2.46 (1.05-5.76, p=0.04) on multivariate analysis. No sex difference for RFS. Males less often minimally invasive surgery (41.3% vs. 58.7%).	Yes (M)	F
2015	Kim et al., 2015, Medicine	1057	M: 531, F: 526	Retrospective, multicentre cohort. Gastric GIST	RFS	medFU 95 m	Patients with gastric GIST who underwent surgical resection.	Female HR RFS 0.48 (0.27-0.85, p=0.011) on multivariate analysis.	Yes (M) RFS	F
2015	Yamamoto et al., 2015, Ann Surg Oncol	482	M: 258, F: 224	Retrospective, multicentre cohort. Gastric GIST	RFS	medFU 58m	Patients with gastric GIST. Symptomatic patients were compared to asymptomatic patients.	In the symptomatic group a higher proportion females (57.7%, p=0.03). No significant sex difference for RFS on multivariate analysis.	No (M)	N/A
2016	Liu et al., 2016, Medicine	241	M: 126, F: 115	Retrospective, monocentre study. Gastric GIST	DFS, DSS	medFU 31.7m	Gastric GIST patients with synchronous gastric cancer were compared to gastric GIST patients only.	More male patients with synchronous gastric cancer. No sex difference for DFS (univariate) nor DSS (multivariate).	No (M)	N/A
2017	Huang et al., 2017, Medicine	214	M: 110, F: 104	Retrospective, monocentre cohort. Gastric GIST	OS	medFU 40m	Gastric GIST patients who underwent surgical resection.	No sex difference on univariable analysis and therefore not included in multivariable model.	No (U)	N/A
2017	Liu et al., 2017, Cancer Med	740	M:368, F:372	Retrospective, multicentre cohort	DFS	medFU 32.2m	Gastric GIST that underwent surgical resection. Tumours with tumour necrosis were compared with tumours without necrosis.	No sex difference in frequency of tumour necrosis. No DSS sex difference on univariate analysis and therefore not included in multivariate analysis.	No (U)	N/A
2018	Zheng et al., 2018, Fut Med	246	M:141, F:105	Prospective follow-up study in 4 centres. Gastric GIST	OS	mFU 34.5m	246 high-risk gastric GIST (>5cm and >5mitoses).	No sex difference for OS in high-risk gastric GIST.	No (U)	N/A
2019	Yang et al., 2019, J of GI Surg	1846	M: 918, F: 928	Retrospective multicentre cohort. Gastric GIST	DSS	medFU 38m	1846 patients with primary gastric GIST.	No sex difference for DSS in high-risk gastric GIST on univariate and therefore not included on multivariate analysis.	No (U)	N/A

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2020	Liu et al., 2020, Med Sci Monit	4086	M: 2032, F: 2054 (2862 in training set)	SEER database (1998-2015)	OS, DSS	medFU 47m	Gastric GIST patients in SEER database with follow-up data.	Male OS HR 1.408 (1.221-1.624, p<0.001) and DSS HR male 1.286 (1.073-1.543, p=0.007) on multivariate analysis.	Yes (M)	F
2021	Shannon et al., 2021, J Surgery	2084	M: 999, F:1085	Retrospective, National Cancer Database USA. Gastric GIST	OS	NS	Primary resection gastric GIST without neoadjuvant imatinib. R0 resections were compared to R1 resections.	Adjusted 5-y OS HR 1.59 male (1.22-2.07, p=0.001). No sex difference incidence R1 vs. R0.	Yes (M)	F
Duodenal and small bowel GIST										
2017	Zheng et al., 2017, Int J of Surg	153	NS GIST	Retrospective monocentre cohort. Small bowel GIST	PFS, OS	medFU 22m	456 patients with small bowel cancer, from whom 153 with GIST.	No sex difference for OS nor PFS.	No (M)	N/A
2018	Liu et al., 2018, BMC Cancer	300	M: 143, F: 148	37 monocentre cases, 263 cases from the literature. Duodenal GIST	DFS, DSS	medFU 25m	Duodenal GIST patients with R0 resection and without neoadjuvant therapy (survival analysis n=202).	No sex difference for DFS nor DSS on univariate analysis and therefore not included in multivariate analysis.	No (U)	N/A
2018	Giuliano et al., 2018, J Surg Oncol	1890	M: 9462, F: 9438	NCD 2004-2014	OS	NS	All small intestine GIST was compared to gastric GIST patients.	Relatively more males with small intestine GIST compared to gastric GIST. Female HR OS 0.62 (0.46-0.84, p=0.002) on multivariable analysis.	Yes (M)	F
2019	Feng et al., 2019, Dig Surg	702	M: 399, F: 303 (DSS in n=584)	SEER database 1973-2013	DSS	NS	Patients with small intestinal GIST (jejunal and ileal). Multivariate analysis in 584 patients without distant metastases who received surgery.	Gender (unclear male/female gender) HR 0.544 (0.360-0.823, p=0.004, multivariate). In entire cohort relatively more male patients with jejunal GIST compared to ileal GIST (p=0.043).	Yes (M)	NS
2019	Uppal et al., 2019, J Surg Oncol	1084	M: 460, F: 414	NCDB 2004-2014. Duodenal GIST	OS	medFU 3.5y	Non-metastatic duodenal GIST patients. Survival analysis in 874 resected patients.	No sex difference for OS after resection of duodenal GIST (univariate nor multivariate).	No (M)	N/A

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2020	Patel et al., 2020, Surgery	1559	M: 780, F: 779	Retrospective, National Cancer Database USA. Small bowel GIST	OS	medFU 38.6m	Small bowel GIST with R0 resection. Low grade (n=1140) and high grade GIST (n=268) were analysed separately.	Male patients more often adjuvant therapy (53.1% vs. 47.1%, p=0.018). In low grade GIST, female sex OS HR 0.53 on multivariate analysis (p-.003). No sex difference in high grade small bowel GIST.	Yes (M)	F
Anorectal GIST										
2017	Hawkins et al., 2017, Ann Surg Oncol	333	M: 188, F: 145	SEER database 1998-2012. Anorectal GIST	OS	NS	Anorectal GIST patients who underwent surgical resection.	No sex difference for OS on univariable analysis and therefore not included in multivariable analysis.	No (U)	N/A
2020	IJzerman et al., 2020, EJSO	210	M: 132, F: 78	Retrospective, multicentre cohort. Rectal GIST	RFS	medFU 28m	Rectal GIST patients from 5 European countries. 109 patients in survival analysis.	No sex difference for RFS on univariate analysis.	No (U)	N/A
Articles including all GIST locations and patients at different disease stages										
Patients with surgical resection of primary GIST										
2007	Takahashi et al., 2007, Int J Clin Oncol	303	M:154, F: 139	Retrospective monocentre cohort. 1987-2003	DSS	medFU 65.5m	Patients after surgical resection of primary GIST.	No sex difference in 5-year survival rate on univariate analysis.	No (U)	N/A
2007	Hsu et al., 2007, Am J of Surg	100	M: 48, F: 52	Retrospective cohort, 2 centres	RFS, OS	medFU 49m	Patients with small bowel or gastric GIST undergoing surgical resection.	No sex difference for RFS nor OS on multivariate analyses.	No (M)	N/A
2007	Huang et al., 2007, Surgery	289	M: 140, F: 149	Retrospective cohort, 2 centres	DSS	medFU 41m	Primary resected GIST.	No difference on univariate survival analysis	No (U)	N/A
2008	Hassan et al., 2008, Ann of Surg Onc	191	M: 108, F: 83	Retrospective, monocentre cohort	DFS, DSS	medFU 63m	Surgically resected GIST patients.	No significant sex difference for DFS nor OS on multivariate analyses (NB male HR OS 1.7 (95%CI 1.0-2.8) p=0.05	No (M)	N/A
2009	Song et al., 2009, Hep-Gastroent	235	M : 81, F: 54	Retrospective, monocentre cohort	OS	medFU 36.8m	Surgically resected GIST patients.	No sex difference for OS on univariate analysis and therefore not included on multivariate analysis.	No (U)	N/A

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2010	Rutkowski et al., 2010, Cancer	640	M: 295, F: 345	Retrospective multicentre cohort (Polish GIST registry)	DFS	medFU 39m	Primary GIST with resection.	Male gender negative impact on DFS on univariate analysis (HR NS)	Yes (U)	F
2010	Martin-Broto et al., 2010, Ann of Onc	162	M: 82, F: 80	Retrospective cohort	RFS	medFU 84m	Patients after surgical resection of primary GIST.	No sex difference for RFS on univariate analysis.	No (U)	N/A
2010	Arne et al., 2010, J of Int Canc, (Suppl. Table 4)	204	M: 106, F: 98	Retrospective, population based study in Sweden	OS	NS	All pre-imatinib era treated patients with surgical resection (all R0).	OS HR Male 5.44 (1.62-18.2, p=0.006, multivariate)	Yes (M)	F
2012	Pedroso et al., 2012, Ann Surg Oncol	594	M: 298, F: 296	SEER database, gastric GIST	OS, DSS	NS	Surgically resected gastric GIST. Pre-TKI cohort (1990-1994, n=189) compared to post-TKI cohort (2002-2003, n=405).	Female HR 6-y OS 0.596 (95%CI 0.413-0.861, p=0.006) in post-TKI era. No OS sex difference in pre-TKI era, besides, no sex differences in DSS.	Yes (M, post-TKI era)	F
2013	Lv et al., 2013, PLOS one	114	M: 67, F: 47	Retrospective, monocentre cohort	RFS	medFU 50m	Patients with R0 resection of primary GIST. 65% gastric GIST.	5-year RFS rate male 55.7% vs. 80.6% for female patients. For unclear reasons, not included in multivariate analysis.	Yes (U)	F
2013	DeMatteo et al., 2013, Ann Surg	106	M: 60, F: 46	Retrospective analysis on ACOSOG Z9000 study	RFS, OS	medFU 7.7y	Patients with high-risk, primary GIST and adjuvant imatinib.	No sex difference for mutation status. No sex difference for RFS on multivariate analysis nor for OS on univariate analysis.	No (M)	N/A
2013	Kang et al., 2013, Asia-Pac J of CO	213	M: 89, F: 124	Retrospective, multicentre study	RFS, OS	medFU 18.4m	GIST patients who underwent surgery. Influence of VEGF was established.	No sex difference for RFS nor OS on univariate analysis.	No (U)	N/A
2014	Lv et al., 2014 Gastroent Res and Prac	1923	M: 864, F: 878	Retrospective, multicentre study	OS	NS	All GIST patients diagnosed in Shanghai from 2001 to 2010.	5-year OS 83% for male vs. 87% for female patients. Male gender HR 1.47 on multivariate analysis (p=0.004).	Yes (M)	F
2014	Cananzi et al., 2014, Lang Arch Surg	104	M: 47, F: 57	Retrospective, monocentre cohort	DFS	medFU 41m	All patients had their primary GIST resected by the same surgeon.	No sex difference for DFS.	No (M)	N/A
2014	Wang et al., 2014, BMC Surgery	401	M: 221, F: 180	Retrospective, monocentre cohort	RFS, OS	NS	Patients with operable GIST.	Better 5-y OS and 5-y RFS for female patients on univariate analysis. Not included in multivariate model.	Yes (U)	F

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2015	Han et al., 2015, World J Surg	101	M: 54, F: 47	Retrospective, monocentre cohort	OS	medFU 62m	Primary localized duodenal or small intestine GIST patients who underwent surgical resection.	No sex difference on univariate analysis.	No (U)	N/A
2015	Liu et al., 2015, Cell Biochem Biophys	168	M: 113, F: 55	Retrospective, monocentre cohort	OS	NS	Patients what underwent surgical resection	No sex difference on univariate OS analysis	No (U)	N/A
2015	Yanagimoto et al., 2015, Gastric Cancer	712	M: 382, F: 330	Retrospective, monocentre cohort	RFS	medFU 50.2m	Primary GIST with complete resection from 1980-2010.	No significant sex difference for RFS (male HR 1.406, p=0.12).	No (M)	N/A
2015	Li et al., 2015, Int C Lin Exp Pathol	112	M: 64, F: 48	Retrospective, monocentre cohort	OS	NS	Patients who underwent surgical resection.	No sex difference for OS on univariate analysis.	No (U)	N/A
2016	Stotz et al., 2016, Plos One	149	M: 85, F: 64	Retrospective, monocentre cohort	RFS, OS	medFU 4.8y	Primary GIST after surgical resection.	No sex difference for RFS nor OS on univariate analysis.	No (U)	N/A
2016	Feng et al., 2016, Medicine	274	M: 138, F: 136	Retrospective, monocentre study	DFS	medFU 30m	Primary GIST patients after complete resection. Influence of different lymphocyte ratio's on RFS were investigated.	No sex difference for RFS on univariate analysis and gender was not included in multivariable analysis. Male did have more often high preoperative monocyte to lymphocyte rate and high monocyte-to-white blood cell ratio.	No (U)	N/A
2017	D'Ambrosio et al., 2017, EJC	233	M: 113, F: 102	Retrospective analysis from prospectively collected database	RFS, DSS	medFU 68m	Primary resectable GIST >2 cm with available data.	No sex difference for RFS nor DSS and therefore not included on multivariate analysis.	No (U)	N/A
2017	Lin et al., 2017, J Canc Res Clin Oncol	234	M: 140, F: 94	Retrospective monocentre cohort	OS	medFU 54m	High-risk GIST patients who received IM after surgical resection.	No sex difference for OS on univariate analysis and therefore not included in multivariate analysis.	No (M)	N/A
2018	Nishida et al., 2018, Ann Surg Oncol	665	M: 339, F: 326	Retrospective, multicentre cohort	RFS, OS	medFU 4.67y	Primary GIST who underwent R0 or R1 surgery. Ruptured tumours were compared to non-ruptured tumours.	Male OS HR 2.347 (1.738-3.168, p=0,0045) on multivariate analysis. No sex difference for RFS.	Yes (M)	F

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2018	Lu et al., 2018, <i>Medicine</i>	691	M: 410, F: 281	Retrospective, monocentre cohort	RFS, OS	medFU 64m	Primary GIST patients who underwent surgical resection. Ruptured GISTs were compared to non-ruptured GIST.	No sex difference for RFS nor DSS on univariate analysis and therefore not included in multivariate analysis.	No (U)	N/A
2018	Liu et al., 2018, <i>Human Path</i>	1022	M: 540, F: 482	Retrospective, multicentre cohort (2004-2015)	OS	medFU 24m	Patients who underwent surgical resection.	No sex difference for OS on univariate analysis and therefore not included on multivariate analysis.	No (U)	N/A
2018	Liu et al., 2018, <i>J of GI surg</i>	506	M: 285, F: 221	Retrospective, multicentre cohort (2001-2015)	OS	medFU 31.4m	High-risk GIST patients undergoing complete surgical resection.	No sex difference for OS on univariate analysis and therefore not included on multivariate analysis.	No (U)	N/A
2018	Hatipoglu et al., 2018, <i>Rev Esp Enferm Dig</i>	135	M: 76, F: 59	Retrospective monocentre cohort	OS	NS	GIST patients in one centre that underwent surgical resection.	No sex difference on univariable analysis.	No (U)	N/A
2018	Lei et al., 2018, <i>JBUON</i>	108	M: 51, F: 57	Retrospective, monocentre cohort	PFS, OS	medFU 48m	Patients who underwent tumour resection for high-risk GIST. Patients with adjuvant imatinib were compared to patients without adjuvant imatinib.	No sex difference for PFS nor OS on univariate analysis and therefore not included on multivariate analysis.	No (U)	N/A
2018	Cananzi et al., 2018, <i>J Surg Onc</i>	127	M: 75, F: 65	Retrospective, monocentre cohort (2000-2014 Milan)	DFS	NS	GIST patients who underwent surgery.	No sex difference for DFS.	No (U)	N/A
2019	Chen et al., 2019, <i>Int J Health Plann Mgmt</i>	6583	M: 3359, F: 3223	SEER database (1973-2013)	DSS, OS	NS	GIST patients with surgical resection and known marital status.	Male more often married (72.5% vs. 51.6%). Female HR DSS 0.707 (0.611-0.819, p<0.001) on multivariate analyses (also for OS)	Yes (M)	F
2019	Inaba et al., 2019, <i>Surg Endos</i>	5096	M:2496, F: 2610	NCD database 2010-2014	OS	NS	Patients with small intestine or gastric GIST who underwent surgical resection. Outcomes after laparoscopic resection were compared to open resections.	Female HR OS 0.59 (0.48-0.73, p<0.01)	Yes (M)	F
2019	Wan et al., 2019, <i>Canc Med</i>	800	M: 364, F: 436	Retrospective, monocentre cohort	RFS, OS	medFU 43m	Primary GIST with GI bleeding were compared to GIST patients without bleeding.	No sex difference for RFS nor OS on univariate analysis and therefore not included on multivariate analysis.	No (U)	N/A

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2019	Chen et al., 2019, EJSO	183	M: 94, F: 89	Retrospective, monocentre cohort	RFS	mFU 57m	Experimental group from one Chinese centre, including patients with primary surgical resection without perioperative TKI.	No sex difference for RFS on univariate analysis and therefore not included in multivariate analysis.	No (U)	N/A
2019	Shen et al., 2019, Canc Med	1163	M: 629, F: 534	Retrospective, monocentre cohort	DFS, OS	medFU 43m	Survival analysis was performed for 348 cases were qualified as high-risk GIST (modified NIH) after R0 resection with follow-up data.	Female HR DFS 0.591 (0.404-0.865, p=0.007) on multivariate analysis. No sex difference for OS nor in patients with low-risk GIST.	Yes, DFS (M)	F
2020	Chang et al., 2020, BMC Gastroenterology	646	M: 347, F: 299	Retrospective, monocentre cohort	RFS, OS	medFU 49m	All GIST patients surgically treated. Preoperative neutrophil-to-lymphocyte ratio (NLR) and platelet-to-lymphocyte ratio (PLR) were compared.	Male patients more often high NLR. No significant difference for PLR. No sex difference for RFS nor OS on univariate analyses and therefore not included on multivariate analysis.	No (U)	N/A
2021	Patel et al., 2021, Am. J of Surg	2064	M: 847, F: 1217	Retrospective, National Cancer Database USA	OS	medFU 38.4m	GIST \leq 3 cm undergoing resection.	5-yOS HR female 0.44 (0.30,-0.66, p<0.001, multivariate)	Yes (M)	F
2021	Tyler et al., 2021, J Surgic Oncol	195	M: 116, F: 79	Retrospective study, two sarcoma centres	RFS and OS	MedFU 70m	Patients undergoing surgery for primary GIST without neoadjuvant therapy. Tumours with necrosis were compared with tumours without necrosis.	No sex difference for incidence of tumour necrosis. No sex difference for OS. Male HR 2.99 (1.33-6.73, p=0.008) for RFS. Both multivariate.	Yes (RFS, no OS) (M)	F
2021	Wu et al., 2021, World J of GE	983	M: 506, F: 477	Retrospective, monocentre cohort	RFS, OS	medFU 1468d	GIST patients undergoing resection.	No sex difference for RFS nor OS on univariate analysis and therefore not included in multivariate analysis.	No (U)	N/A
Advanced GIST patients (i.e. inoperable/metastatic/recurrent disease)										
2007	Gold et al., 2007, Ann of Surgic Onco	119	M: 70, F: 29	Retrospective, monocentre cohort. (M1 at MSKCC 1981-1998)	OS	NS	Metastatic GIST patients diagnosed before July 1998	Female 25m vs. male 17 months on univariate analysis (p<0.01), no difference on multivariate analysis	No (M)	N/A
2008	Blanke et al., 2008, JCO (phase 3)	694	M: 376, F: 318	Prospective, clinical trial	OS	medFU 4.5y	Metastatic or surgically unresectable GIST were eligible for this phase III open-label clinical trial comparing imatinib 400 mg with imatinib 800 mg.	Male HR OS 1.308 (95CI: 1.030-1.663, p=0.0279, multivariate)	Yes (M)	F

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2008	Blanke et al., 2008, JCO (phase 2)	147	M: 83, F: 64	Prospective, clinical trial	OS	medFU 63m	Advanced GIST patients treated with 400 mg or 600 mg imatinib.	Female OS HR 0.487 (p=0.0093) on multivariate analysis (n=124).	Yes (M)	F
2010	MetaGIST, 2010, JCO	1640	NS	Retrospective analysis on data from three RCTs.	PFS, OS	medFU 45m	Advanced GIST patients randomized to imatinib 400 mg vs. 800 mg in three trials combined.	Male poor prognostic factor for PFS and OS. Female sex PFS HR 0.83 (p=0.0021) and OR HR 0.78 (p=0.0026).	Yes (M)	F
2012	George et al., 2012, Ann of Onc	340	M: 217, F: 123	Retrospective, multicentre cohort	TTP, PFS, OS	NS	Advanced GIST patients treated with sunitinib in three GIST studies.	Male HR TTP 1.32, male PFS HR 1.33, male HR OR 1.45, all on multivariate analyses.	Yes (M)	F
2012	Kang et al., 2012, Acta Oncol	290	M: 163, F: 127	Retrospective, multicentre cohort	PFS, OS	medFU 42.8m	Locally advanced unresectable, metastatic or recurrent GIST.	No sex difference for PFS nor OS on univariate analysis and therefore not included on multivariate analysis (appendix Table 3).	No (U)	N/A
2012	Italiano et al., 2012, Ann Surg Oncol	223	M: 131,	Retrospective, multicentre cohort	RFS, OF	medFU 27m	Imatinib- and sunitinib resistant metastatic GIST patients.	No sex difference on univariate RFS nor OS analyses and therefore not included on multivariate analysis.	No (U)	N/A
2013	Rutkowski et al., 2013, Med Oncol	430	M: 226, F:204	Retrospective, Polish GIST Registry (2001-2010)	PFS, OS	medFU 51m	Inoperable/metastatic/recurrent GIST patients treated with imatinib in reference centres	No sex difference for RFS nor OS on univariate analysis and therefore not included in multivariate analysis.	No (U)	N/A
2013	An et al., 2013, Ann of Surg Onc	249	M: 147, F: 102	Retrospective, monocentre cohort	PFS, OS	medFU 44m	Patients with advanced GIST: surgical cytoreduction (n=35) vs. non-surgical cytoreduction (n=214) prior to imatinib treatment.	No sex difference for PFS nor OS (univariate nor multivariate). No difference in sex distribution among the group.	No (M)	N/A
2013	Osuch et al., 2013, Polski Przeg Chirurg	279	M: 145, F: 134	Retrospective, multicentre cohort	PFS, OS	mFU 48m	Patients with advanced GIST treated with imatinib.	No significant sex difference in PFS nor OS, data not shown.	No (M)	N/A
2014	Park et al., 2014, Ann of Surg Onc	134	M: 80, F:54	Retrospective, monocentre cohort	PFS, OS	medFU 58.9m	Recurrent or metastatic GIST patients. Outcome of patients with resection of residual disease and imatinib were compared to imatinib only.	Male HR PFS 2.20 (95% CI 1.17-4.14, p=0.015) on multivariate analysis. No sex difference for OS on multivariate analysis.	Yes PFS (M)	F
2014	Bauer et al., 2014, EJSO	239	M: 122, F: 177	Retrospective, multicentre cohort	OS	medFU 5.1y	Patients that underwent surgical resection of residual metastatic disease.	Male HR OS 1.90 (1.00-3.59, p=0,038)	Yes (M)	F

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2015	Rubio-Casadevall et al., 2015, Ann Surg Oncol	171	M: 102, F: 69	Retrospective, multicentre cohort	PFS, OS	medFU 56.6m	Unresectable, locally advanced or metastatic GIST treated with imatinib for at least 6 months without progressive disease. Patients from Spanish GIST Registry whose treatment was initiated from 2001-2008.	No sex difference for PFS on multivariate analysis nor for OS on univariate analysis (and therefore not included in multivariate analysis).	No (M)	N/A
2016	Patrikidou et al., 2016, EJC	228	M: 144, F: 84	BFR14 trial	PFS, OS	medFU 73m	Advanced GIST patients treated with imatinib 400 mg.	Female HR OS 0.485 (95%CI 0.294-0.798, p=0.044) and female HR PFS 0.513 (0.351-0.759, p=0.006) on multivariate analyses. mPFS for females was 49months compared to 24 for males.	Yes (M)	F
2017	Casali et al., 2017, JCO	946	M: 573, F: 373	Prospective, clinical trial	PFS, OS	medFU 10.9y	Metastatic GIST patients treated with imatinib 400 mg of 800 mg daily.	HR female 0.83 (0.70-0.97, p=0.02) for OS on multivariate analysis. No sex difference in PFS.	Yes (M)	F
2017	Heinrich et al., 2017, JAMA Oncol	695	NS	S0033 trial	OS	medFU 9.4y	Patients with advanced GIST that received imatinib 400 of 800 mg daily in trial setting. Current report on long-term outcome.	Male HR OS 1.79 (1.36-2.35, p<0.0001) on multivariable analysis.	Yes (M)	F
2017	Shi et al., 2017, Medicine	144	M: 90, F: 54	Retrospective, multicentre cohort	OS	medFU 48.2m	GIST patients with liver metastases.	No sex difference for OS on multivariate analysis.	No (M)	N/A
2018	Rutkowski et al., 2018, Tumori Journal	385	M: 194, F: 191	Retrospective, multicentre cohort	PFS, OS	medFU 55m	Patients with metastatic/unresectable GIST treated initially with imatinib.	No sex difference for 5-y RFS nor 5-y OS on univariate analysis.	No (U)	N/A
2018	Gatainidis et al., 2018, J of GI Canc	514	M: 280, F: 234	SEER 2004-2013	DSS	medFU 25.5m	Patients with GIST and distant metastases at diagnosis. Outcome of patients with surgery was compared to outcome without surgery.	No sex difference for DSS nor OS on univariate analysis and therefore not included in multivariate model.	No (U)	N/A
2019	Kim et al., 2019, Cancer Medicine	379	M: 229, F: 150	Retrospective, monocentre cohort	PFS, OS	medFU 6.1y	Patients with metastatic or recurrent GIST treated with 400 mg imatinib.	No sex difference for PFS nor OS on univariable analysis and therefore not included in multivariable analysis.	No (U)	N/A
2019	Brzozowska et al., 2019, Med Sc Mon	1640	M: 914, F: 726	Retrospective, multicentre cohort	OS	medFU 71m	Advanced GIST patients treated with imatinib, sunitinib or sorafenib.	Female HR OS 0.811 (p<0.001) on multivariate analysis (age and sex only).	Yes (M)	F

Supplementary Table 1: Overview of the literature on sex differences in GIST survival

2019	Yang et al., 2019, Clin and Transl Onc	4224	M: 2188, F: 2036	SEER database liver, lung and bone metastases (2010-2015)	OS	NS	From a total of 4224 patients, 440 with metastases: 388 liver, 20 bone, 32 lung.	In group with liver metastases (n=388), worse OS for male patients (HR 1.65 (1.15-2.36, p=0.006) on multivariate analysis.	Yes (M)	F
2019	Hung et al., 2019, Cancer Control	188	M: 122, F: 66	Retrospective, monocentre cohort	PFS, OS	medFU 40.8m	Patients with unresectable or recurrent GIST treated with imatinib.	No sex difference for PFS nor OS on multivariate analysis.	No (M)	N/A
GIST patients at different disease stages combined										
2000	Denatteeo et al., 2000, Ann Surg	200	M: 112, F: 88	Retrospective, monocentre cohort. MSKCC 1982-1998	DSS	medFU 14 months	46% had primary disease without metastasis, 47% had metastasis, and 7% had isolated local recurrence. In patients with primary disease who underwent complete resection of gross disease (n = 80), the 5-year actuarial survival rate was 54%	Entire cohort: Male RR 1.6 (1.0-2.6) on multivariate analysis. Complete resection group: no significant sex difference, no RR given	Yes (M)	F
2001	Clary et al., 2001, Ann of Surg Onc	239	M:138, F:101	Retrospective, monocentre cohort. MSKCC (1982-1999)	DSS	medFU 24 months	239 GIST and 322 LMS patients were compared. 112 GIST patients had local disease (primary GIST tumour only) at presentation.	GIST-all: male HR 1.38 (multivariate, P<0.01). GIST-primary: male HR 1.47 (p=0.04, multivariate)	Yes (M)	F
2005	Tran et al., 2005, Am J of Gastroent	1458	M: 788, F: 670	Retrospective, national cohort. (SEER 1992-2000)	Risk of mortality	NS	Patients with localized disease and advanced disease.	Difference in 5-yr mortality risk: female HR 0.83 (0.71-0.97, p=0.02). No difference in 1-yr mortality risk: HR female 0.89. Most likely univariate.	Yes (U)	F
2007	Perez et al., 2007, J Gastrointest Surg	1535	NS	Retrospective, multicentre cohort. (SEER 1991-2002)	OS	35m	1873 in total: 82% GIST and 18% smooth muscle neoplasm. The aim was to determine outcome after different surgical approaches.	Gender OS HR 1.46 (1.20-1.79, p=0.001, multivariate), reference not specified.	Yes (M)	NS
2008	Gouveia et al. 2008, World J Surg	104	M:46, F: 58	Retrospective, monocentre cohort	RFS, DSS	medFU 42.6m	All primary GIST patients between 1989 and 2006.	No sex difference for RFS nor DSS on univariate analyses.	No (U)	N/A
2008	Artinyan et al., 2008, Cancer	552	M: 240, F:312	Retrospective, national cohort (SEER 1995-2004)	OS	NS	Metastatic GIST patients diagnosed in 1995-2000 (n=140) compared to diagnosed in 2001-2004 (n=412)	Female HR OS 1.05 (0.76-1.45, p=0.77, multivariate)	No (M)	N/A

Supplementary Table 1: Overview of the literature on sex differences in GIST survival

Epidemiol biomarkers										
2009	Hou et al., 2009, Modern Path	297	M: 373, F:240 (NS in subgroup)	Retrospective multicentre cohort.	DFS	NS	All GIST patients with follow-up data.	No sex difference for DFS on multivariate analysis.	No (M)	N/A
2009	Woodall et al., 2009, Arch Surg	2537	M: 1329, F: 1207	Retrospective, national cohort (SEER 1977-2004)	OS	medFU 21m	All GIST patients in the SEER database 1977-2004.	Male OS HR 1.33 (95CI 1.15-1.54, p<0.001) on univariate analysis. For unclear reasons, not included on multivariate analyses.	Yes (U)	F
2011	Calabuig et al., 2011, J of Int Surg Path	145	M: 86, F: 59	Retrospective, monocentre cohort	PFS, OS	medFU 52m	All GIST patients treated in one Spanish centre.	No sex difference for PFS nor OS on univariate analysis and therefore not included in multivariate analysis.	No (U)	N/A
2012	Call et al., 2012, BMC	1215	M: 628, F: 586	Retrospective, patient reported cohort	OS	medFU 5.2y	Patients from 48 different countries, diagnosed and treated in all settings.	Relatively more female in younger age groups. OS HR male 1.5 (p=0.0010, univariate)	Yes (U)	F
2013	Seker et al., 2013, Hep-Gastroen	333	M: 204, F: 129	Retrospective, multicentre cohort	OS	medFU 26m	All GIST patients were included. Patients with complete surgical resection were compared to metastatic patients.	No sex difference for OS on univariate analysis.	No (U)	N/A
2014	Chiang et al., 2014, BMC Cancer	2986	M: 1641, F: 1345	Taiwan Cancer Registry	OS	NS	All GIST patients from the Taiwan Cancer Registry 1998-2008.	Female HR OS 0.68 (95%CI 0.60-0.77, p<0.001) on multivariable analysis.	Yes (M)	F
2015	Rubio-Casadevall et al., 2015, World J Of Surg Onc	132	M: 67, F: 53	Retrospective, multicentre cohort	OS	medFU 97m	All GIST patients from two cancer registries in Spain (1996-2006).	No sex difference on multivariate analysis.	No (M)	N/A
2015	Kramer et al., 2015, BMC	212	M: 96, F: 116	Retrospective cohort, German Registry	DSS and OS	medFU 4.3y	Patients <50yrs (n=87) compared to patients >50yrs (n=125).	In young cohort longer DSS for female patients (p=0.033), not in older cohort (p=0.596, both univariate)	<50yrs Yes (U)	F
2015	Kukar et al., 2015, J of Surg Oncol	4411	M: 2804, F: 1607	SEER 1990-2009	DSS	NS	GIST in uncommon locations were investigated.	Female HR DSS 0.80 (0.70-0.92, p=0.002) in entire cohort on multivariate analysis. Also in surgical	Yes (M)	F

Supplementary Table 1: Overview of the literature on sex differences in GIST survival

								resection group a significant DSS benefit for females (HR 0.73).		
2015	Guller et al., 2015, BMC Cancer	5138	M: 2709, F: 2429	SEER database 1998-2011	DSS, OS	medFU 37m	All histologically confirmed GIST patients from 1998-2011 in the SEER database were included.	Female HR DSS 0.77 (0.68-0.88, p<0.001) and HR OS 0.70 (0.63-0.78, p<0.001) on multivariable analyses.	Yes (M)	F
2015	Ma et al., 2015, Canc Epid Biom Prev	6142	M: 3263, F: 2879	SEER 2001-2011	DSS, OS	NS	All GIST patients in SEER database 2001-2011.	Male HR DSS 1.36 (1.20-1.55) and OS 1.41 (1.28-1.54) on multivariate analyses.	Yes (M)	F
2016	Smith et al., 2016, Int J Cancer	1705	M: 885, F: 820	SEER 2001-2009	OS	NS	All GIST patients were included and risk factor for additional malignancies were identified.	Female HR OS 0.68 (0.56-0.82, p<0.001) on multivariate analysis.	Yes (M)	F
2017	Fero et al., 2017, JAMA surgery	392	M: 207, F: 185	Retrospective cohort, SEER patients 2001-2013	DSS	NS	392 adolescents and young adults (AYA) and 5373 older adults (OA) patients diagnosed with GISTs: 207 [52.8%] male AYA patients and 2767 [51.5%] male OA patients.	Male AYA patients HR DSS 1.78 (1.04-3.04, p=0.04, multivariate). No sex difference in frequency of surgery.	Yes (M)	F
2017	Guller et al., 2017, Gastric Cancer	5096	M: 2682, F: 2414	SEER database 1998-2011 (overlap cohort Guller 2015)	DSS, OS	medFU 37m	All histologically confirmed GIST cases with available tumour site were included.	Female HR DSS 0.80 (0.70-0.90, p<0.001) and female HR OS 0.72 (0.65-0.80, p<0.001).	Yes (M)	F
2018	Van der Graaf et al., 2018, BJS	1749	M: 945, F: 804	Retrospective, national cohort	relative survival (RS)	medFU 69.9m	All GIST patients from the Netherlands (no micro-GIST).	5-y RS Male 74.9% (95%CI 65.6-76.0) vs. 81.3% (95% CI 77.3-85.1) for female patients.	Yes (U)	F
2018	Li et al., 2018, JBUON	420	M: 216, F: 204	Retrospective monocentre cohort	OS	medFU 29-34m	143 GIST patients with metastatic or recurrent GIST were compared to 278 patients without metastasis or recurrent disease.	No sex difference for OS on univariate analysis and therefore not included on multivariate analysis.	No (U)	N/A
2018	Song et al., 2018, EJSO	5622	M: 2951, F: 2671	SEER database (2004-2015)	OS, CSS	medFU 34m	All GIST patients with available follow-up data from 2004-2015.	Female HR OS 0.769 (95%CI 0.661-0.895, p=0.001). Sex difference for CSS significant but not specified.	Yes (M)	F

Supplementary Table 1: Overview of the literature on sex differences in GIST survival

2018	Gaitanidis et al., 2018, <i>Langenbeck's Arch of Surg</i>	201	NS in subgroup	SEER database lymph node metastases (2004-2014)	OS	NS	In total 1430 patients, subgroup for OS in 201 patients with synchronous distant metastasis.	No difference on univariate analysis (therefore not included in multivariate).	No (U)	N/A
2019	Ulanja et al., 2019, <i>J of Rac and Ethc H Disp</i>	7204	M: 3445, F: 3759	SEER database 2002-2015	OS	NS	All GIST patients from the SEER database in the timeframe were included.	Male HR OS 1.48 (1.27-1.74, p<0.001) on multivariate analysis.	Yes (M)	F
2019	Chen et al., 2019, <i>BioMed Res Int</i>	6713	M: 3522, F: 3191	SEER Database (2004-2014)	OS, DSS	medFU 45m	All GIST patients were included and subdivided in a training set (n=4699) and validation set (n=2014) to develop a nomogram. Survival analysis in training set.	Male worse OS and DSS on multivariate analysis (HR DSS 1.269, 95%CI 1.1063-1.516, p=0.008)	Yes (M)	F
2020	Calderillo et al., 2020, <i>JCO Global Oncol</i>	624	M: 274, F: 350	Retrospective, multicentre cohort (Chile and Mexico)	OS	NS	All GIST patients with at least 3 months follow-up and available data.	No sex difference for OS (Kaplan Meier method compared by log-rank test).	No (U)	N/A
2020	Rong et al., 2020, <i>Biol of Sex Diff</i>	1050	M: 512, F: 538	SEER database (2010-2016)	OS	NS	Characteristics of male and female gastric GIST patients (all stages) were compared.	Male patients were more often married, underwent less often surgery, and had relatively larger tumours. Mitotic index appeared to be lower in female patients. After PSM a better OS for female patients. Male HR OS 1.677 (1.150-2.444, p=0.007) on multivariate analysis after PSM.	Yes (M)	F
2020	Shen et al., 2020, <i>World J of Surg Oncol</i>	8511	M: 4434, F: 4077	SEER database (1988-2016)	DSS, OS	medFU 44m	Patients with GIST after another malignancy (n=851) were compared to patients with GIST as first malignancy (n=7660).	More males in group with GIST after another malignancy (56.5%). Female HR DSS 0.76 (0.69-0.83, p<0.001) on multivariate analyses and female advantage for OS as well.	Yes (M)	F
2020	Florindez et al., 2020, <i>Am J of Clin Onc</i>	3866	M: 1981, F: 1885	SEER database (2010-2015)	DSS, OS	NS	All adult GIST patients from SEER database 2010-2015.	Male worse OS on all three multivariate analyses: entire cohort, metastatic cohort (n=656) and localized cohort (n=3210). However, no sex difference for DSS.	No (M)	N/A

Supplementary Table 1: Overview of the literature on sex differences in GIST survival

2021	Cavnar et al., 2021, Ann Surg	1000	M: 532, F: 468	Retrospective monocentre cohort. MSKCC (1982-2016)	OS, RFS	medFU 4.6y	Patients who underwent surgery, stratified by presentation status: primary tumour only, primary with synchronous metastasis or metachronous recurrence/metastases. Patients treated in the pre-imatinib era were compared to patients treated in the imatinib era.	No sex differences in RFS and OS in pre-imatinib nor imatinib era (multivariate). Male seemed to be more often M1 at diagnosis (p=0.025).	No (M)	N/A
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Pts. = patients, M = Male, F = female, FU = follow-up duration, medFU = median follow-up duration, mFU = mean follow-up duration, m = months, y = years OS = overall survival, DSS = disease specific survival, RFS = recurrence free survival, PFS = progression-free survival, CSS = cancer specific survival, NS = not specified, N/A = not applicable