**Supplementary Materials**

**Supplementary method**

We searched SEER database through identifying ICD-0-3 site recode for “stomach”, and then further narrowed down using the behavior code “malignant”. Then, the ICD-0-3 histology/behavior codes were applied to select gastric adenocarcinoma cases, getting rid of other gastric tumors (gastrointestinal stromal tumor, neuroendocrine, metastatic disease, unknown).[26](#_ENREF_26),[27](#_ENREF_27) Only patients between 18 and 85 years of age were included. Patients who received radiotherapy and/or chemotherapy before surgery were excluded. All patients were required to receive a standard operation of GC, on basis of the SEER coded description of surgical procedure. Local excision or local destruction procedures were excluded. The following groups of patients were also eliminated: patients younger than 18 years and older than 85 years of age, patients without information of chemotherapy, patients with multiple primary tumors, and patients with unknown or no surgery. Age at diagnosis, sex, race, insurance status, marital status, tumor location, tumor grade, TNM stage, and overall survival (OS) were assessed in this study. OS was computed between the date of surgery and the date of death. Patients alive on the last follow-up date or deaths were considered to be censored observations.

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| **Table S1.** Patient and tumor characteristics by age at diagnosis in China dataset. | | | | |
| **Characteristic** | **Age Category, No. (%)** | | | *P\** |
| 18-49 y | 50-64 y | 65-85 y |
| **Sex** |  |  |  | <0.0001 |
| Female | 603(36.9) | 665(40.7) | 365(22.4) |  |
| Male | 766(22.0) | 1728(49.5) | 995(28.5) |  |
| **Tumor size(cm)** |  |  |  | <0.0001 |
| ＜4 | 635(29.5) | 1013(47.1) | 502(23.3) |  |
| ≧4 | 734(24.7) | 1380(46.4) | 858(28.9) |  |
| **Tumor location** |  |  |  | <0.0001 |
| Upper | 199(14.7) | 672(49.6) | 484(35.7) |  |
| Middle | 380(34.7) | 498(45.5) | 217(19.8) |  |
| Lower | 669(28.2) | 1106(46.7) | 594(25.1) |  |
| Whole | 121(39.9) | 117(38.6) | 65(21.5) |  |
| **Differentiation** |  |  |  | <0.0001 |
| Well | 59(17.8) | 166(50.0) | 107(32.2) |  |
| Moderate | 156(14.2) | 571(52.1) | 368(33.6) |  |
| Poor and undifferentiated | 1154(31.2) | 1656(44.8) | 885(24.0) |  |
| **CEA** |  |  |  | <0.0001 |
| Elevated | 130(15.0) | 436(50.4) | 299(34.6) |  |
| Nomal | 1239(29.1) | 1957(46.0) | 1061(24.9) |  |
| **CA199** |  |  |  | 0.004 |
| Elevated | 208(23.5) | 407(45.9) | 271(30.6) |  |
| Normal | 1161(27.4) | 1986(46.9) | 1089(25.7) |  |
| **Depth of invasion** |  |  |  | 0.005 |
| T1 | 236(29.8) | 369(46.5) | 188(23.7) |  |
| T2 | 114(25.2) | 212(46.9) | 126(27.9) |  |
| T3 | 142(23.5) | 297(49.3) | 164(27.2) |  |
| T4a | 621(25.5) | 1170(48.0) | 649(26.6) |  |
| T4b | 256(30.7) | 345(41.4) | 233(27.9) |  |
| **Lymph node metastasis** | |  |  | <0.0001 |
| N0 | 490(26.4) | 886(47.8) | 477(25.7) |  |
| N1 | 200(25.4) | 361(45.9) | 225(28.6) |  |
| N2 | 220(23.6) | 421(45.2) | 290(31.1) |  |
| N3a | 271(27.5) | 465(47.1) | 251(25.4) |  |
| N3b | 188(33.3) | 260(46.0) | 117(20.7) |  |
| **Distant metastasis** | |  |  | <0.0001 |
| M0 | 1182(25.8) | 2164(47.2) | 1235(27.0) |  |
| M1 | 187(34.6) | 229(42.3) | 125(23.1) |  |
| **Stage** |  |  |  | <0.0001 |
| I | 262(28.0) | 444(47.4) | 230(24.6) |  |
| II | 267(24.6) | 535(49.2) | 285(26.2) |  |
| III | 653(25.5) | 1185(46.3) | 720(28.1) |  |
| IV | 187(34.6) | 229(42.3) | 125(23.1) |  |
| **Use of postoperative chemotherapy** | | |  | <0.0001 |
| No | 481(21.3) | 1036(45.8) | 743(32.9) |  |
| Yes | 888(31.0) | 1357(47.4) | 617(21.6) |  |

\* Chi-square tests.

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| **Table S2.** Patient and tumor characteristics by age at diagnosis in SEER dataset. | | | | |
| **Characteristic** | **Age Category, No. (%)** | | | *P* |
| 18-49 y | 50-64 y | 65-85 y |
| **Sex** |  |  |  | <0.0001 |
| Female | 1777(13.4) | 3384(25.5) | 8087(61.0) |  |
| Male | 1776(9.8) | 5174(28.6) | 11165(61.6) |  |
| **Race** |  |  |  | <0.0001 |
| Non-Hispanic White | 1427(8.7) | 4241(26.0) | 10645(65.3) |  |
| Black | 625(13.9) | 1460(32.4) | 2415(53.7) |  |
| Hispanic | 923(18.3) | 1475(29.2) | 2655(52.5) |  |
| Asian | 512(10.1) | 1244(24.5) | 3331(65.5) |  |
| Other | 41(16.2) | 75(29.6) | 137(54.2) |  |
| Unknown | 25(15.2) | 63(40.1) | 69(43.9) |  |
| **Marital status** |  |  |  | <0.0001 |
| Married | 2112(11.2) | 5373(28.6) | 11301(60.2) |  |
| Single | 939(23.8) | 1362(34.5) | 1650(41.8) |  |
| Other | 319(4.5) | 1375(19.2) | 5466(76.3) |  |
| Unknown | 183(12.5) | 448(30.6) | 835(57.0) |  |
| **Insurance status** |  |  |  | <0.0001 |
| Uninsured | 145(28.7) | 277(54.7) | 84(16.6) |  |
| Insured | 1711(11.1) | 4449(28.8) | 9307(60.2) |  |
| Unknown | 1697(11.0) | 3832(24.9) | 9861(64.1) |  |
| **Tumor location** |  |  |  | <0.0001 |
| Upper | 720(9.5) | 2353(31.2) | 4480(59.3) |  |
| Moderate | 439(12.7) | 973(28.1) | 2051(59.2) |  |
| Lower | 768(9.7) | 1811(22.9) | 5324(67.4) |  |
| Whole | 286(13.0) | 603(27.3) | 1319(59.7) |  |
| Unknown | 1340(13.1) | 2818(27.5) | 6078(59.4) |  |
| **Grade** |  |  |  | <0.0001 |
| I | 344(11.8) | 892(30.6) | 1678(57.6) |  |
| II | 434(6.2) | 1603(22.8) | 4981(71.0) |  |
| III | 1657(11.6) | 3762(26.2) | 8927(62.2) |  |
| IV | 110(13.2) | 248(29.8) | 473(56.9) |  |
| Unknown | 1008(16.1) | 2053(32.8) | 3193(51.1) |  |
| **Stage** |  |  |  | <0.0001 |
| I | 709(8.8) | 2260(28.0) | 5102(63.2) |  |
| II | 353(9.0) | 1022(26.1) | 2539(64.9) |  |
| III | 489(10.5) | 1212(26.0) | 2965(63.5) |  |
| IV | 455(17.6) | 827(31.9) | 1309(50.5) |  |
| Unknown | 1547(12.8) | 3237(26.7) | 7337(60.5) |  |
| **Surgery and chemotherapy** | |  |  | <0.0001 |
| Surgery only | 2201(9.2) | 5905(24.6) | 15934(66.3) |  |
| Surgery plus chemotherapy | 1352(18.5) | 2653(36.2) | 3318(45.3) |  |

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| **Table S3.** Likelihood of Receiving Postoperative Systemic Chemotherapy for Young (18-49 Years) and Middle-Aged (50-64 Years) Male Patients vs Older Male Patients (65-75 Years) Diagnosed as Having Gastric Cancer in China and SEER datasets. | | | | | | | | |
| Variable | China dataset | | | | SEER dataset | | | |
| Receipt of Chemotherapy | | | Odds Ratio for Receiving Chemotherapy (95%CI) | Receipt of Chemotherapy | | | Odds Ratio for Receiving Chemotherapy (95%CI) |
| Yes (%) | No (%) | *P* | Yes (%) | No (%) | *P* |
| All |  |  | <0.0001 |  |  |  | <0.0001 |  |
| 18-49 y | 493(64.4) | 273(35.6) |  | 2.061(1.690-2.525) | 679(38.2) | 1097(61.8) |  | 2.909(2.591-3.265) |
| 50-64 y | 987(57.1) | 741(42.9) |  | 1.506(1.285-1.764) | 1655(32.0) | 3519(68.0) |  | 2.114(1.952-2.289) |
| 65-85 y | 473(47.5) | 522(52.5) |  | 1 [Reference] | 2072(18.6) | 9093(81.4) |  | 1 [Reference] |
| Stage I |  |  | <0.0001 |  |  |  | <0.0001 |  |
| 18-49 y | 66(44.3) | 83(55.7) |  | 2.478(1.496-4.104) | 50(14.7) | 290(85.3) |  | 2.181(1.534-3.100) |
| 50-64 y | 117(36.6) | 203(63.4) |  | 1.903(1.231-2.943) | 169(12.7) | 1162(87.3) |  | 1.817(1.454-2.270) |
| 65-85 y | 38(23.0) | 127(77.0) |  | 1 [Reference] | 209(7.0) | 2798(93.0) |  | 1 [Reference] |
| Stage II |  |  | <0.0001 |  |  |  | <0.0001 |  |
| 18-49 y | 113(72.4) | 43(27.6) |  | 2.068(1.297-3.296) | 115(56.7) | 88(43.3) |  | 3.305(2.400-4.551) |
| 50-64 y | 243(63.3) | 141(36.7) |  | 1.343(0.943-1.913) | 328(50.2) | 325(49.8) |  | 2.506(2.045-3.070) |
| 65-85 y | 114(55.3) | 92(44.7) |  | 1 [Reference] | 422(27.7) | 1102(72.3) |  | 1 [Reference] |
| Stage III |  |  | <0.0001 |  |  |  | <0.0001 |  |
| 18-49 y | 261(70.2) | 111(29.8) |  | 2.309(1.736-3.071) | 164(60.5) | 107(39.5) |  | 3.459(2.607-4.588) |
| 50-64 y | 536(62.4) | 323(37.6) |  | 1.622(1.302-2.020) | 428(53.7) | 369(46.3) |  | 2.585(2.152-3.105) |
| 65-85 y | 270(50.6) | 264(49.4) |  | 1 [Reference] | 591(32.9) | 1205(67.1) |  | 1 [Reference] |
| Stage IV |  |  | 0.796 |  |  |  | <0.0001 |  |
| 18-49 y | 53(59.6) | 36(40.4) |  | 1.160(0.631-2.132) | 137(62.3) | 83(37.7) |  | 3.632(2.582-5.110) |
| 50-64 y | 91(55.2) | 74(44.8) |  | 0.913(0.538-1.550) | 286(57.8) | 209(42.2) |  | 2.756(2.154-3.525) |
| 65-85 y | 51(56.7) | 39(43.3) |  | 1 [Reference] | 280(36.4) | 489(63.6) |  | 1 [Reference] |

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| **Table S4.** Likelihood of Receiving Postoperative Systemic Chemotherapy for Young (18-49 Years) and Middle-Aged (50-64 Years) Female Patients vs Older Female Patients (65-75 Years) Diagnosed as Having Gastric Cancer in China and SEER datasets. | | | | | | | | |
| Variable | China dataset | | | | SEER dataset | | | |
| Receipt of Chemotherapy | | | Odds Ratio for Receiving Chemotherapy (95%CI) | Receipt of Chemotherapy | | | Odds Ratio for Receiving Chemotherapy (95%CI) |
| Yes (%) | No (%) | *P* | Yes (%) | No (%) | *P* |
| All |  |  | <0.0001 |  |  |  | <0.0001 |  |
| 18-49 y | 395(65.5) | 208(34.5) |  | 2.834(2.131-3.769) | 673(37.9) | 1104(62.1) |  | 3.230(2.846-3.665) |
| 50-64 y | 370(55.6) | 295(44.4) |  | 1.940(1.488-2.529) | 998(29.5) | 2386(70.5) |  | 2.287(2.062-2.536) |
| 65-85 y | 144(39.5) | 221(60.5) |  | 1 [Reference] | 1246(15.4) | 6841(84.6) |  | 1 [Reference] |
| Stage I |  |  | <0.0001 |  |  |  | <0.0001 |  |
| 18-49 y | 41(36.3) | 72(63.7) |  | 2.478(1.496-4.104) | 46(12.5) | 323(87.5) |  | 2.191(1.483-3.237) |
| 50-64 y | 42(33.9) | 82(66.1) |  | 1.903(1.231-2.943) | 82(8.8) | 847(91.2) |  | 1.599(1.171-2.184) |
| 65-85 y | 15(23.1) | 50(76.9) |  | 1 [Reference] | 114(5.4) | 1981(94.6) |  | 1 [Reference] |
| Stage II |  |  | <0.0001 |  |  |  | <0.0001 |  |
| 18-49 y | 73(65.8) | 38(34.2) |  | 2.398(1.277-4.502) | 97(64.7) | 53(35.3) |  | 6.158(4.081-9.291) |
| 50-64 y | 88(58.3) | 63(41.7) |  | 1.764(0.943-2.973) | 178(48.2) | 191(51.8) |  | 3.197(2.422-4.219) |
| 65-85 y | 35(44.3) | 44(55.7) |  | 1 [Reference] | 230(22.7) | 785(77.3) |  | 1 [Reference] |
| Stage III |  |  | <0.0001 |  |  |  | <0.0001 |  |
| 18-49 y | 215(76.5) | 66(23.5) |  | 3.807(2.495-5.808) | 150(68.8) | 68(31.2) |  | 5.435(3.877-7.619) |
| 50-64 y | 209(64.1) | 117(35.9) |  | 2.206(1.519-3.204) | 243(58.6) | 172(41.4) |  | 3.473(2.705-4.459) |
| 65-85 y | 81(43.5) | 105(56.5) |  | 1 [Reference] | 328(28.1) | 841(71.9) |  | 1 [Reference] |
| Stage IV |  |  | 0.003 |  |  |  | <0.0001 |  |
| 18-49 y | 66(67.3) | 32(32.7) |  | 4.152(1.661-10.376) | 168(71.5) | 67(28.5) |  | 4.959(3.406-7.220) |
| 50-64 y | 31(48.4) | 33(51.6) |  | 1.925(0.772-4.798) | 205(61.7) | 127(38.3) |  | 3.212(2.364-4.364) |
| 65-85 y | 13(37.1) | 22(62.9) |  | 1 [Reference] | 171(31.7) | 369(68.3) |  | 1 [Reference] |

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| **Table S5.** Overall Adjusted Survival of Young (18-49 Years) and Middle-Aged (50-64 Years) Male Patients vs Older Male Patients (65-75 Years) Diagnosed as Having Gastric Cancer in China dataset. | | | | |
| Patients | Surgery Only | | Surgery Plus Chemotherapy | |
| Patients, No. (%) | Adjusted Hazard Ratio (95% CI) | Patients, No. (%) | Adjusted Hazard Ratio (95% CI) |
| All |  |  |  |  |
| 18-49 y | 273(35.6) | 0.612(0.482-0.776) | 493(64.4) | 0.824(0.674-1.008) |
| 50-64 y | 741(42.9) | 0.642(0.539-0.763) | 987(57.1) | 0.823(0.695-0.974) |
| 65-85 y | 522(52.5) | 1 [Reference] | 473(47.5) | 1 [Reference] |
| Stage I |  |  |  |  |
| 18-49 y | 83(55.7) | 0.326(0.111-0.960) | 66(44.3) | 0.683(0.270-1.727) |
| 50-64 y | 203(63.4) | 0.361(0.186-0.700) | 117(36.6) | 0.579(0.261-1.283) |
| 65-85 y | 127(77.0) | 1 [Reference] | 38(23.0) | 1 [Reference] |
| Stage II |  |  |  |  |
| 18-49 y | 43(27.6) | 0.108(0.032-0.366) | 113(72.4) | 0.636(0.350-1.155) |
| 50-64 y | 141(36.7) | 0.382(0.223-0.654) | 243(63.3) | 0.619(0.386-0.994) |
| 65-85 y | 92(44.7) | 1 [Reference] | 114(55.3) | 1 [Reference] |
| Stage III |  |  |  |  |
| 18-49 y | 111(29.8) | 0.681(0.501-0.925) | 261(70.2) | 0.885(0.687-1.139) |
| 50-64 y | 323(37.6) | 0.658(0.527-0.822) | 536(62.4) | 0.977(0.790-1.209) |
| 65-85 y | 264(49.4) | 1 [Reference] | 270(50.6) | 1 [Reference] |
| Stage IV |  |  |  |  |
| 18-49 y | 36(40.4) | 0.734(0.493-1.093) | 53(59.6) | 0.782(0.486-1.259) |
| 50-64 y | 74(44.8) | 0.837(0.588-1.192) | 91(55.2) | 0.624(0.410-0.950) |
| 65-85 y | 39(43.3) | 1 [Reference] | 51(56.7) | 1 [Reference] |

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| **Table S6.** Overall Adjusted Survival of Young (18-49 Years) and Middle-Aged (50-64 Years) Female Patients vs Older Female Patients (65-75 Years) Diagnosed as Having Gastric Cancer in China dataset. | | | | |
| Patients | Surgery Only | | Surgery Plus Chemotherapy | |
| Patients, No. (%) | Adjusted Hazard Ratio (95% CI) | Patients, No. (%) | Adjusted Hazard Ratio (95% CI) |
| All |  |  |  |  |
| 18-49 y | 208(34.5) | 0.532(0.386-0.733) | 395(65.5) | 0.991(0.723-1.360) |
| 50-64 y | 295(44.4) | 0.787(0.597-1.037) | 370(55.6) | 0.970(0.714-1.318) |
| 65-85 y | 221(60.5) | 1 [Reference] | 144(39.5) | 1 [Reference] |
| Stage I |  |  |  |  |
| 18-49 y | 72(63.7) | 0.363(0.032-4.078) | 41(36.3) | 0.847(0.068-10.625) |
| 50-64 y | 82(66.1) | 0.749(0.138-4.076) | 42(33.9) | 1.282(0.129-12.764) |
| 65-85 y | 50(76.9) | 1 [Reference] | 15(23.1) | 1 [Reference] |
| Stage II |  |  |  |  |
| 18-49 y | 38(34.2) | 0.735(0.301-1.796) | 73(65.8) | 0.880(0.338-2.288) |
| 50-64 y | 63(41.7) | 1.201(0.533-2.706) | 88(58.3) | 0.829(0.339-2.027) |
| 65-85 y | 44(55.7) | 1 [Reference] | 35(44.3) | 1 [Reference] |
| Stage III |  |  |  |  |
| 18-49 y | 66(23.5) | 0.508(0.329-0.786) | 215(76.5) | 0.848(0.568-1.265) |
| 50-64 y | 117(35.9) | 0.830(0.585-1.179) | 209(64.1) | 1.011(0.692-1.478) |
| 65-85 y | 105(56.5) | 1 [Reference] | 81(43.5) | 1 [Reference] |
| Stage IV |  |  |  |  |
| 18-49 y | 32(32.7) | 0.266(0.132-0.537) | 66(67.3) | 0.929(0.428-2.015) |
| 50-64 y | 33(51.6) | 0.276(0.138-0.555) | 31(48.4) | 1.136(0.536-2.407) |
| 65-85 y | 22(62.9) | 1 [Reference] | 13(37.1) | 1 [Reference] |

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| **Table S7.** Overall Adjusted Survival of Young (18-49 Years) and Middle-Aged (50-64 Years) Male Patients vs Older Male Patients (65-75 Years) Diagnosed as Having Gastric Cancer in SEER dataset. | | | | | |
| **Patients** | **Surgery Only** | |  | **Surgery Plus Chemotherapy** | |
| **Patients, No. (%)** | **Adjusted Hazard Ratio (95% CI)** |  | **Patients, No. (%)** | **Adjusted Hazard Ratio (95% CI)** |
| **All** |  |  |  |  |  |
| 18-49 y | 1097(61.8) | 0.445(0.402-0.493) |  | 679(38.2) | 0.772(0.686-0.869) |
| 50-64 y | 3519(68.0) | 0.569(0.538-0.602) |  | 1655(32.0) | 0.869(0.798-0.947) |
| 65-85 y | 9093(81.4) | 1 [Reference] |  | 2072(18.6) | 1 [Reference] |
| **Stage I** |  |  |  |  |  |
| 18-49 y | 290(85.3) | 0.257(0.180-0.366) |  | 50(14.7) | 0.645(0.308-1.349) |
| 50-64 y | 1162(87.3) | 0.389(0.334-0.454) |  | 169(12.7) | 0.623(0.400-0.970) |
| 65-85 y | 2798(93.0) | 1 [Reference] |  | 209(7.0) | 1 [Reference] |
| **Stage II** |  |  |  |  |  |
| 18-49 y | 88(43.3) | 0.318(0.206-0.490) |  | 115(56.7) | 0.664(0.457-0.965) |
| 50-64 y | 325(49.8) | 0.628(0.521-0.758) |  | 328(50.2) | 0.793(0.618-1.016) |
| 65-85 y | 1102(72.3) | 1 [Reference] |  | 422(27.7) | 1 [Reference] |
| **Stage III** |  |  |  |  |  |
| 18-49 y | 107(39.5) | 0.554(0.433-0.710) |  | 164(60.5) | 0.726(0.572-0.922) |
| 50-64 y | 369(46.3) | 0.704(0.613-0.808) |  | 428(53.7) | 0.873(0.745-1.023) |
| 65-85 y | 1205(67.1) | 1 [Reference] |  | 591(32.9) | 1 [Reference] |
| **Stage IV** |  |  |  |  |  |
| 18-49 y | 83(37.7) | 0.650(0.493-0.857) |  | 137(62.3) | 0.956(0.742-1.231) |
| 50-64 y | 209(42.2) | 0.736(0.611-0.887) |  | 286(57.8) | 0.996(0.821-1.208) |
| 65-85 y | 489(63.6) | 1 [Reference] |  | 280(36.4) | 1 [Reference] |

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| **Table S8.** Overall Adjusted Survival of Young (18-49 Years) and Middle-Aged (50-64 Years) Female Patients vs Older Female Patients (65-75 Years) Diagnosed as Having Gastric Cancer in SEER dataset. | | | | | |
| **Patients** | **Surgery Only** | |  | **Surgery Plus Chemotherapy** | |
| **Patients, No. (%)** | **Adjusted Hazard Ratio (95% CI)** |  | **Patients, No. (%)** | **Adjusted Hazard Ratio (95% CI)** |
| **All** |  |  |  |  |  |
| 18-49 y | 1104(62.1) | 0.474(0.420-0.534) |  | 673(37.9) | 0.987(0.866-1.126) |
| 50-64 y | 2386(70.5) | 0.597(0.551-0.646) |  | 998(29.5) | 0.899(0.802-1.008) |
| 65-85 y | 6841(84.6) | 1 [Reference] |  | 1246(15.4) | 1 [Reference] |
| **Stage I** |  |  |  |  |  |
| 18-49 y | 323(87.5) | 0.214(0.133-0.344) |  | 46(12.5) | 0.909(0.329-2.512) |
| 50-64 y | 847(91.2) | 0.433(0.345-0.543) |  | 82(8.8) | 0.838(0.399-1.761) |
| 65-85 y | 1981(94.6) | 1 [Reference] |  | 114(5.4) | 1 [Reference] |
| **Stage II** |  |  |  |  |  |
| 18-49 y | 53(35.3) | 0.599(0.367-0.976) |  | 97(64.7) | 0.603(0.358-1.015) |
| 50-64 y | 191(51.8) | 0.573(0.440-0.747) |  | 178(48.2) | 0.756(0.515-1.109) |
| 65-85 y | 785(77.3) | 1 [Reference] |  | 230(22.7) | 1 [Reference] |
| **Stage III** |  |  |  |  |  |
| 18-49 y | 68(31.2) | 0.677(0.497-0.923) |  | 150(68.8) | 0.853(0.647-1.125) |
| 50-64 y | 172(41.4) | 0.748(0.611-0.918) |  | 243(58.6) | 0.904(0.721-1.133) |
| 65-85 y | 841(71.9) | 1 [Reference] |  | 328(28.1) | 1 [Reference] |
| **Stage IV** |  |  |  |  |  |
| 18-49 y | 67(28.5) | 0.936(0.688-1.273) |  | 168(71.5) | 0.876(0.674-1.139) |
| 50-64 y | 127(38.3) | 0.950(0.749-1.206) |  | 205(61.7) | 0.870(0.685-1.105) |
| 65-85 y | 369(68.3) | 1 [Reference] |  | 544(49.1) | 1 [Reference] |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Table S9**. Chemotherapy interaction with age group for overall survival in patients with stage II and III disease. | | | | | |
| Age group | CT | No CT | Overall survival | | |
| CT vs No CT, | *P* | *P* value for interaction |
| HR (95% CI) |
| **China dataset** | | |  |  |  |
| **Stage II (n = 1087)** | |  |  |  |  |
| 18-49 y | 113 | 85 | 0.877(0.474-1.621) | 0.675 | <0.0001 |
| 50-64 y | 21 | 25 | 0.803(0.537-1.200) | 0.285 |
| 65-85 y | 27 | 22 | 0.681(0.447-1.038) | 0.074 |
| **Stage III (n = 2558)** | |  |  |  |  |
| 18-49 y | 113 | 85 | 0.869(0.682-1.107) | 0.256 | <0.0001 |
| 50-64 y | 21 | 25 | 0.836(0.708-0.987) | 0.034 |
| 65-85 y | 27 | 22 | 0.631(0.517-0.769) | <0.001 |
| **SEER dataset** | |  |  |  |  |
| **Stage II (n = 3914)** | |  |  |  |  |
| 18-49 y | 113 | 85 | 1.023(0.683-1.533) | 0.911 | <0.0001 |
| 50-64 y | 21 | 25 | 0.834(0.679-1.025) | 0.085 |
| 65-85 y | 27 | 22 | 0.620(0.540-0.712) | <0.001 |
| **Stage III (n = 4666)** | |  |  |  |  |
| 18-49 y | 145 | 111 | 0.723(0.572-0.913) | 0.007 | <0.0001 |
| 50-64 y | 210 | 92 | 0.648(0.565-0.743) | <0.001 |
| 65-85 y | 207 | 89 | 0.523(0.477-0.574) | <0.001 |
| CT: chemotherapy. | | | | | |



**Figure S1**

**Figure S1**. Association between age group and survival benefit from chemotherapy in China and SEER datasets. (A, C): stage II disease; (B, D): stage III disease.



**Figure S2**

**Figure S2**. Overall survival plots for different age group in 1 months and 6 months landmark analysis in China and SEER datasets. (A, C): stage II disease; (B, D): stage III disease; CT 0: No chemotherapy; CT 1: chemotherapy.



**Figure S3**

**Figure S3**. Overall survival plots for different age group in 12 months and 36 months landmark analysis in China and SEER datasets. (A, C): stage II disease; (B, D): stage III disease; CT 0: No chemotherapy; CT 1: chemotherapy.