

Return to work after upper gastrointestinal cancer surgery: questionnaire-based observational study

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Abstract

Background

Return to work (RTW) is an important component of cancer survivorship. However, evidence on RTW after upper gastrointestinal cancer surgery remains limited.

Methods

We performed a questionnaire-based observational study between August 2023 and August 2025. Patients who underwent curative surgery for upper gastrointestinal cancer, attended postoperative outpatient follow-up visits, and had been employed at the time of cancer diagnosis were eligible for this analysis. Questionnaire data were linked with retrospectively collected clinical data.

Results

Among 410 patients who completed the questionnaire, 207 had been employed at the time of cancer diagnosis and were included in the analysis. Of these 207 patients, 144 had returned to work (70%). Patients who returned to work were younger than those who did not (median age, 62.5 vs. 65.0 years; $P = 0.013$). Multivariable logistic regression analysis identified age as an independent factor associated with RTW ($P = 0.009$). The cumulative probability of RTW was significantly higher in patients aged < 65 years than in those aged ≥ 65 years ($P = 0.011$). Approximately 85% of patients who ultimately returned to work had resumed work by 6 months. Sensitivity analysis revealed that the association was no longer statistically significant after further adjustment for employment status (full time or part time worker).

Conclusions

Age was an independent factor associated with RTW, and most RTW events occurred within 6 months after surgery. Age may reflect not only clinical status but also social and occupational circumstances, and may help identify patients who need survivorship care and timely RTW support.

Introduction

Improvements in cancer survival have led to a growing number of cancer survivors. Although cancer is more common in older adults, a substantial proportion of patients are diagnosed during their working years. Of the 4.4 million people diagnosed with cancer in Europe each year, around 36% are of working age (20–64 years).[1] In Japan, approximately 26,000 new cases of esophageal cancer and 105,000 new cases of gastric cancer are diagnosed annually; of these, approximately 22% and 13%, respectively, occur in patients aged under 65 years.[2],[3] Recent international consensus work has highlighted that people affected by cancer continue to experience substantial unmet supportive care needs and that

comprehensive survivorship care should be a core component of future supportive cancer care.[4] Return to work (RTW) is an important component of cancer survivorship and represents a complex challenge involving multiple interrelated factors, including not only physical recovery but also psychological effects and workplace-related barriers.

Successful RTW after cancer treatment is a clinically meaningful outcome because it reflects functional recovery and has important implications not only for the well-being of survivors but also for society.[5] Previous evidence has shown that cancer survivors are more likely to experience adverse employment outcomes than healthy controls.[6],[7] RTW after curative surgery for upper gastrointestinal cancer may be particularly challenging because treatment for esophageal and gastric cancer is often highly invasive and is associated with prolonged postoperative burden, including weight loss, reduced physical function, nutritional impairment, and postoperative complications.[8]–[11] However, evidence on RTW after upper gastrointestinal cancer surgery remains limited. Identifying patients at higher risk of delayed or unsuccessful RTW may help clinicians provide more individualized postoperative support and survivorship care. Better understanding of factors associated with RTW could inform patient counseling and postoperative supportive care, including rehabilitation, nutritional intervention, and social support. [12],[13]

Therefore, the present study aimed to investigate RTW after curative surgery for upper gastrointestinal cancer using a questionnaire-based survey combined with clinical data from electronic medical records. We evaluated RTW status, time to RTW, and factors associated with RTW, with particular attention to demographic, clinical, and occupational characteristics.

Methods

Study design and participants

This questionnaire-based observational study included patients who underwent curative surgery for upper gastrointestinal cancer and attended postoperative outpatient follow-up visits between August 2023 and August 2025. Patients were included regardless of the interval since surgery. Participation in the questionnaire survey was voluntary. The questionnaires were distributed during outpatient visits. Participants were asked to complete the questionnaires on the day of the visit and submit them to a collection box placed at the outpatient reception desk. When same-day completion was difficult, participants were allowed to return the questionnaires at their next outpatient visit. The completed questionnaires were subsequently entered into the study database by the investigators. Questionnaire data were linked with retrospectively collected clinical data from electronic medical records. Patients who had been employed at the time of cancer diagnosis were eligible for the present analysis.

Questionnaire content

The questionnaire collected information on living situation, employment status, and physical activity using the International Physical Activity Questionnaire (IPAQ),[14] as well as health-related quality of life using the EORTC QLQ-C30.[15] Employment-related items included occupational category, employment type, workplace size, current work status, RTW status, time to RTW after treatment, and self-reported barriers to returning to work. The questionnaire also included patient-reported items on physical functioning, symptoms, emotional well-being, social and financial impact, and overall health and quality of life.

Clinical variables

Clinical variables were extracted retrospectively from electronic medical records. These included age, sex, preoperative body mass index (BMI), psoas muscle index (PMI), serum albumin, C-reactive protein (CRP), tumor location, pathological stage, surgical procedure, postoperative complications, adjuvant chemotherapy, and postoperative weight loss at 3 and 6 months. PMI was calculated from preoperative computed tomography images at the level of the third lumbar vertebra by manually tracing the bilateral psoas muscle area and normalizing it to height squared (cm^2/m^2).[16] Time from surgery to questionnaire was calculated from the date of surgery and the date of questionnaire completion. Postoperative complications were graded according to the Clavien–Dindo classification, and complications of grade III or higher were considered major complications.[17] Clinical variables also included comorbidity data, from which the Charlson Comorbidity Index was derived for sensitivity analyses.[18]

Statistical analysis

Continuous variables are expressed as medians with interquartile ranges, whereas categorical variables are presented as numbers with percentages. Comparisons between patients with and without RTW were performed using the Mann–Whitney U test for continuous variables and the chi-square test or Fisher’s exact test for categorical variables, as appropriate. To identify factors independently associated with RTW, multivariable logistic regression analysis was performed. Covariates were chosen a priori based on clinical relevance and plausibility as determinants of postoperative recovery and work resumption. The primary model included age, sex, preoperative BMI, preoperative CRP, surgical procedure, and postoperative complications (Clavien–Dindo grade $\geq$ III). Odds ratios (ORs) and 95% confidence intervals (CIs) were calculated. Sensitivity analyses were performed to evaluate the robustness of the association between age and RTW. These analyses included a model in which age was dichotomized at 65 years and additional models further adjusted for pathological stage, time from surgery to questionnaire, Charlson Comorbidity Index, and employment status. The cumulative probability of RTW after surgery was graphically illustrated among patients with available information on RTW timing. Differences in the cumulative probability of RTW between groups were compared using Gray’s test. In addition, the adjusted probability of RTW according to age was estimated from the multivariable logistic regression model. All tests were two-sided, and a P value < 0.05 was considered statistically significant. All

statistical analyses were performed using EZR (Saitama Medical Center, Jichi Medical University, Saitama, Japan).[19]

Results

Patient selection, interval from surgery to questionnaire, and overall RTW rate

Among 410 patients who completed the questionnaire, 207 had been employed at the time of cancer diagnosis and were included in the analysis (Fig. 1). Of these 207 patients, 144 had returned to work, yielding an overall RTW rate of 70%. The median interval from surgery to questionnaire completion was 20 months (interquartile range, 6–48 months).

Patient characteristics according to RTW status

Characteristics according to RTW status are shown in Table 1. Patients in the RTW group were younger than those in the non-RTW group (median age, 62.5 vs. 65.0 years; $P = 0.013$). They also had a higher BMI (21.8 vs. 20.8 kg/m²; $P = 0.032$), higher serum albumin levels (4.1 vs. 3.9 g/dL; $P = 0.008$), and lower CRP levels (0.07 vs. 0.11 mg/dL; $P < 0.001$). Full-time employment at diagnosis was more common in the RTW group than in the non-RTW group (59% vs. 38%; $P = 0.014$).

Table 1
Patient characteristics according to return-to-work (RTW) status

Factors	Total (n = 207)	RTW rate (%)	Returned to work (n = 144)	Not returned to work (n = 63)	P value
Patient-related					
Age	63.0 (56.5– 70.0)		62.5 (56.0– 69.0)	65.0 (59.5– 72.5)	0.013
Sex					0.857
Male	160 (77)	70	112 (78)	48 (76)	
Female	47 (23)	68	32 (22)	15 (24)	
BMI, kg/m ²	21.6 (19.0– 24.2)		21.8 (19.7– 24.3)	20.8 (18.3– 23.9)	0.032
PMI, cm ² /m ²	477 (371– 590)		485 (372– 613)	466 (359– 557)	0.286
Albumin, g/dL	4.1 (3.8– 4.4)		4.1 (3.9–4.3)	3.9 (3.7–4.4)	0.008
CRP, mg/dL	0.07 (0.03– 0.14)		0.07 (0.03– 0.12)	0.11 (0.05– 0.31)	< 0.001
Tumor-related					
Tumor location					0.067
Esophagus	117 (57)	64	75 (52)	42 (67)	
Stomach / EGJ	90 (43)	79	69 (48)	21 (33)	
Pathological stage					0.437
0–I	96 (46)	75	72 (51)	24 (38)	
II	47 (23)	66	31 (22)	16 (25)	
III	48 (23)	65	31 (22)	17 (27)	
IV	16 (8)	63	10 (7)	6 (10)	
Treatment-related					
Values are presented as median (interquartile range) or number (%). Percentages were calculated using the number of patients with available data as the denominator. RTW rate (%) represents the proportion of patients who returned to work within each category. BMI, body mass index; CRP, C-reactive protein; EGJ, esophagogastric junction; PMI, psoas muscle index; RTW, return to work					

Factors	Total (n = 207)	RTW rate (%)	Returned to work (n = 144)	Not returned to work (n = 63)	P value
Patient-related					
Surgical procedure					0.053
Esophagectomy	122 (59)	63	77 (53)	45 (71)	
Total gastrectomy	11 (5.3)	81	9 (6)	2 (3)	
Partial gastrectomy	74 (36)	78	58 (40)	16 (25)	
Postoperative complications					0.170
Clavien–Dindo 0–I	165 (80)	71	117 (81)	48 (76)	
Clavien–Dindo II	24 (12)	75	18 (13)	6 (10)	
Clavien–Dindo ≥ III	18 (9)	50	9 (6)	9 (14)	
Adjuvant chemotherapy					0.740
Yes	59 (29)	68	40 (28)	19 (30)	
No	148 (71)	70	104 (72)	44 (70)	
Postoperative weight loss, %					
at 3 months	7.1 (2.8–13.0)		7.8 (3.9–13.7)	5.3 (2.1–11.9)	0.113
at 6 months	8.9 (4.2–15.9)		9.0 (5.6–16.1)	8.9 (1.3–15.0)	0.314
Occupation-related					
Employment status					0.014
Full time worker	109 (53)	76	85 (59)	24 (38)	
Part-time worker	98 (47)	60	59 (41)	39 (62)	
Employment category					0.350
Self-employed / owner	45 (23)	78	35 (25)	10 (20)	
Employed worker	147 (76)	73	107 (75)	40 (80)	
Company size					0.720
Values are presented as median (interquartile range) or number (%). Percentages were calculated using the number of patients with available data as the denominator. RTW rate (%) represents the proportion of patients who returned to work within each category. BMI, body mass index; CRP, C-reactive protein; EGJ, esophagogastric junction; PMI, psoas muscle index; RTW, return to work					

Factors	Total (n = 207)	RTW rate (%)	Returned to work (n = 144)	Not returned to work (n = 63)	P value
Patient-related					
1–499 workers	171 (85)	69	118 (84)	53 (88)	
≥ 500 workers	30 (15)	77	23 (16)	7 (11)	
Status at the time of questionnaire					
Interval from surgery to questionnaire, months	20 (6–46)		20 (6–49)	19 (4–41)	0.359
QLQ-C30 Physical Functioning score	87 (80– 100)		87 (82–100)	87 (80–93)	0.029
Values are presented as median (interquartile range) or number (%). Percentages were calculated using the number of patients with available data as the denominator. RTW rate (%) represents the proportion of patients who returned to work within each category. BMI, body mass index; CRP, C-reactive protein; EGJ, esophagogastric junction; PMI, psoas muscle index; RTW, return to work					

There was no significant difference in sex ($P = 0.857$), tumor location ($P = 0.067$), and surgical procedure ($P = 0.053$) between the groups. Pathological stage, postoperative complications, and adjuvant chemotherapy were not significantly associated with RTW. The RTW rate was 75% in patients with pathological stage 0–I ($P = 0.437$) and 50% in those with major complications (Clavien–Dindo grade $\geq$ III; $P = 0.170$). Postoperative weight loss at 3 and 6 months was not significantly associated with RTW (7.8% vs. 5.3% and 9.0% vs. 8.9%, respectively; $P = 0.740$).

In contrast, the QLQ-C30 physical functioning score was significantly higher in the RTW group (87 [82–100] vs. 87 [80–93]; $P = 0.029$).

RTW rates according to patient characteristics

Figure 2 presents RTW rates across predefined patient subgroups according to demographic, clinical, and occupational characteristics. The overall RTW rate was 70%, shown as a reference line in the figure. RTW rates declined with increasing age, from 76% in patients aged < 60 years and 71% in those aged 60–64 years to 70% in those aged 65–69 years and 58% in those aged ≥ 70 years. RTW rates were higher in patients with gastric cancer than in those with esophageal cancer (79% vs. 64%). Similarly, patients with Clavien–Dindo grade $\geq$ III complications had a lower RTW rate than those with grade $\leq$ II complications (50% vs. 71%). Full-time workers showed a higher RTW rate than part-time workers (78% vs. 60%). In contrast, RTW rates were broadly similar according to sex, pathological stage, adjuvant chemotherapy, and company size.

Multivariable analysis

Multivariable logistic regression analysis identified age as an independent factor associated with RTW (Table 2). Each 1-year increase in age was associated with a lower likelihood of RTW (OR, 0.949; 95% CI, 0.912–0.987; $P = 0.009$). In contrast, sex, preoperative BMI, preoperative CRP, surgical procedure, and postoperative complications were not significantly associated with RTW in the primary model.

Table 2
Multivariable logistic regression analysis for return to work

Covariates	OR	95% CI	P value
Age (per 1-year increase)	0.949	0.912–0.987	0.009
Sex, male	1.530	0.662–3.550	0.318
Preoperative BMI	1.070	0.967–1.180	0.188
Preoperative CRP	0.546	0.274–1.090	0.084
Esophagectomy (reference: gastrectomy)	0.607	0.300–1.230	0.164
Clavien–Dindo, $\geq$ III	0.454	0.160–1.290	0.138

The cumulative probability of RTW

Figure 3 shows the cumulative probability of RTW after surgery among patients with available data on the timing of RTW. Figure 3A presents the cumulative probability according to age group, and Fig. 3B according to tumor location. Most RTW events occurred within 6 months after surgery; approximately 85% of patients who ultimately returned to work had resumed work by 6 months, and approximately 94% had done so by 12 months. Thereafter, the cumulative probability increased more gradually. The cumulative probability of RTW was significantly higher in patients aged < 65 years than in those aged ≥ 65 years ($P = 0.011$) and in patients with gastric or esophagogastric junction cancer than in those with esophageal cancer ($P = 0.018$).

Adjusted probability of RTW according to age

Figure 4 shows the adjusted probability of RTW according to age, estimated from the multivariable logistic regression model. The predicted probability of RTW decreased progressively with increasing age, indicating an inverse association between age and RTW after adjustment for sex, preoperative BMI, preoperative CRP, surgical procedure, and postoperative complications.

Sensitivity analyses of the age effect

Figure 5 summarizes the sensitivity analyses of the association between age and RTW. In the primary analysis, older age was associated with a lower likelihood of RTW. When age was alternatively modeled as a categorical variable using a cutoff of 65 years, the direction of association was similar, although it

did not reach statistical significance (Supplementary Table 1). The inverse association between age and RTW remained directionally consistent in models additionally adjusted for pathological stage (Supplementary Table 2), time from surgery to questionnaire (Supplementary Table 3), and Charlson Comorbidity Index (Supplementary Table 4). However, the association was attenuated and no longer statistically significant after further adjustment for employment status (Supplementary Table 5).

Subgroup analysis in patients aged < 65 years

In a subgroup analysis limited to patients aged < 65 years, full-time employment at diagnosis was more common in the RTW group than in the non-RTW group (77% vs. 50%; $P = 0.010$) (Table 3). Patients in the RTW group also had higher serum albumin levels (4.2 vs. 3.9 g/dL; $P = 0.013$) and lower CRP levels (0.06 vs. 0.08 mg/dL; $P = 0.023$). Age, sex, BMI, postoperative weight loss at 6 months, tumor location, and pathological stage were not significantly different between the two groups.

Table 3
Subgroup analysis in patients aged < 65 years: univariate analysis for return to work

Factors	Returned to work (n = 87)	Not returned to work (n = 30)	P value
Age	57 (52–62)	59 (55–62)	0.147
Sex, male, n (%)	64 (74)	19 (63)	0.352
BMI, kg/m ²	21.9 (19.7–24.4)	20.3 (17.8–23.6)	0.088
Albumin, g/dL	4.2 (4.0–4.4)	3.9 (3.7–4.4)	0.013
CRP, mg/dL	0.06 (0.02–0.09)	0.08 (0.04–0.41)	0.023
Weight loss at 6M, %	12.3 (6.5–19.7)	7.6 (1.3–15.8)	0.156
Esophageal cancer, n (%)	46 (53)	21 (70)	0.135
Pathological stage ≥ III	23 (26)	12 (40)	0.173
Full-time worker, n (%)	67 (77)	15 (50)	0.010

Discussion

In this questionnaire-based observational study of patients who underwent curative surgery for upper gastrointestinal cancer, 70% of those who had been employed at the time of cancer diagnosis returned to work by the time of the survey. Age was identified as an independent factor associated with RTW, with older patients showing a lower likelihood of work resumption after surgery. Full-time employment at diagnosis was also more common in the RTW group than in the non-RTW group. In addition, cumulative probability analysis showed that most RTW events occurred within 6 months after surgery, and RTW was

achieved more frequently in patients with gastric or esophagogastric junction cancer than in those with esophageal cancer.

In the present study, nearly one-third of patients did not return to work despite curative treatment, underscoring the need for high-quality survivorship care and occupational support after upper gastrointestinal cancer surgery.[6] At the same time, more than half of the patients aged ≥ 70 years still returned to work in the present study. A recent systematic review showed that RTW among cancer survivors is influenced by multiple sociodemographic, clinical, psychological, and occupational factors, and emphasized the importance of individualized intervention programs and adapted work environments.[5] In this context, older age may be interpreted not simply as a barrier to RTW, but as a marker of patients who may benefit from closer assessment and more individualized support. Clinically, this perspective shifts the focus from age as a negative predictor to age as a signal for proactive survivorship care and occupational support after surgery.

Another notable finding was the time course of RTW. Most RTW events occurred within 6 months after surgery, and the cumulative probability increased only gradually thereafter. This pattern suggests that the first 6 postoperative months may represent a particularly important window for survivorship-oriented interventions, including rehabilitation, nutritional support, symptom management, and work-related counseling. Meanwhile, the continued increase up to 12 months indicates that delayed RTW is still possible in some patients, and that support should not necessarily be discontinued after the early postoperative period. Although the overall RTW rate in the present study was similar to that reported in a Dutch study of colorectal cancer, the timing of RTW differed substantially. In that study, nearly 70% of patients returned to work within 2 years after the start of sick leave, and metastases, postoperative complications, emotional distress, and work-related factors were associated with delayed RTW.[20] In our cohort, however, the predictors of RTW were not entirely the same, although age was a common factor in both studies. This suggests that factors influencing work resumption may differ between colorectal cancer and upper gastrointestinal cancer surgery.

The cumulative probability curves also showed significant differences according to tumor location. RTW was achieved earlier and more frequently in patients with gastric or esophagogastric junction cancer than in those with esophageal cancer. This difference may be related to differences in treatment burden, as treatment for esophageal cancer often involves highly invasive multimodal therapy and esophagectomy, which can be followed by prolonged nutritional impairment, gastrointestinal symptoms, and reduced health-related quality of life.[21],[22] However, in the present study, postoperative weight loss was not associated with RTW, whereas physical functioning was significantly higher in patients who returned to work. These findings suggest that functional status, rather than simple nutritional measures, may be more relevant in determining RTW.

Previous research has shown that nutritional impairment commonly persists after upper gastrointestinal surgery and may adversely affect quality of life.[23]–[25] In our cohort, neither preoperative BMI nor postoperative weight loss was associated with RTW, suggesting that RTW is a multifactorial outcome

that may not be fully explained by nutritional indicators alone. This may partly reflect the characteristics of the study population. Patients with severe malnutrition, marked functional decline, or early death were therefore less likely to be included, potentially leading to an underestimation of the impact of severe nutritional deterioration on RTW.

In the subgroup analysis limited to patients aged < 65 years, full-time employment at diagnosis, higher albumin, and lower CRP were associated with RTW. These findings suggest that, among younger patients, both employment-related background and preoperative general condition may be relevant to work resumption. However, serum albumin and CRP may also reflect disease severity, as these markers have been reported to be associated with tumor stage in esophageal cancer.[24] Although the sensitivity analysis using a cutoff of 65 years showed a similar direction of association, statistical significance was not reached. This finding may be explained by the reduced statistical efficiency caused by dichotomizing age, suggesting that age may be more appropriately handled as a continuous variable when evaluating its association with RTW.

This study has several clinical implications. First, RTW should be recognized as a relevant survivorship endpoint after upper gastrointestinal cancer surgery. Second, older patients may warrant earlier and more proactive support regarding postoperative work resumption. Third, the concentration of RTW within the first 6 months after surgery suggests that this period may be the optimal target for multidisciplinary intervention. Such support may include nutritional care, rehabilitation, management of postoperative symptoms, and coordination with employers or occupational support systems.

Several limitations should be acknowledged. First, this was a single-center observational study, which may limit generalizability. Second, RTW status and some work-related variables were assessed using a questionnaire and may have been subject to recall bias. Third, the interval from surgery to questionnaire completion was not fixed, and patients were included regardless of postoperative interval. Fourth, not all potentially relevant psychosocial and workplace factors were fully analyzed in the present study. Fifth, because the questionnaire was administered during outpatient follow-up visits within a defined study period, not all patients who underwent surgery were necessarily surveyed, which may have introduced some selection bias. Finally, because of the observational design, causal relationships cannot be established. However, despite these limitations, this study provides clinically relevant insight into RTW after upper gastrointestinal cancer surgery and helps address an understudied aspect of survivorship in patients undergoing surgery for esophageal and gastric cancer.

In conclusion, among patients who had been employed at the time of cancer diagnosis, 70% returned to work after curative surgery for upper gastrointestinal cancer. Older age was independently associated with a lower likelihood of RTW, and most RTW events occurred within 6 months after surgery. These findings may help identify patients at risk of delayed or unsuccessful work resumption and support the development of postoperative survivorship care strategies after upper gastrointestinal cancer surgery.

Declarations

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Competing interests: The authors declare that they have no competing interests.

Ethics approval: This study was approved by the Institutional Review Board of Kansai Medical University (approval number: 2023012) and was conducted in accordance with the Declaration of Helsinki and the Ethical Guidelines for Medical and Biological Research Involving Human Subjects in Japan.

Consent to participate: Written informed consent was waived because this questionnaire-based study did not involve biological specimens. Completion and return of the questionnaire were regarded as implied consent to participate.

Data availability: The datasets are not publicly available because they contain potentially identifiable patient information, but are available from the corresponding author on reasonable request and with permission from the institutional review board.

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Figures

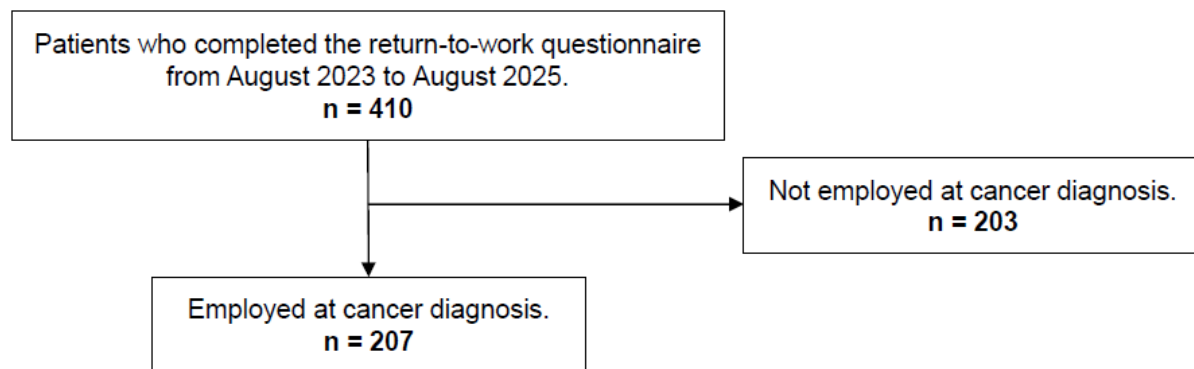


Figure 1

Patient flowchart.

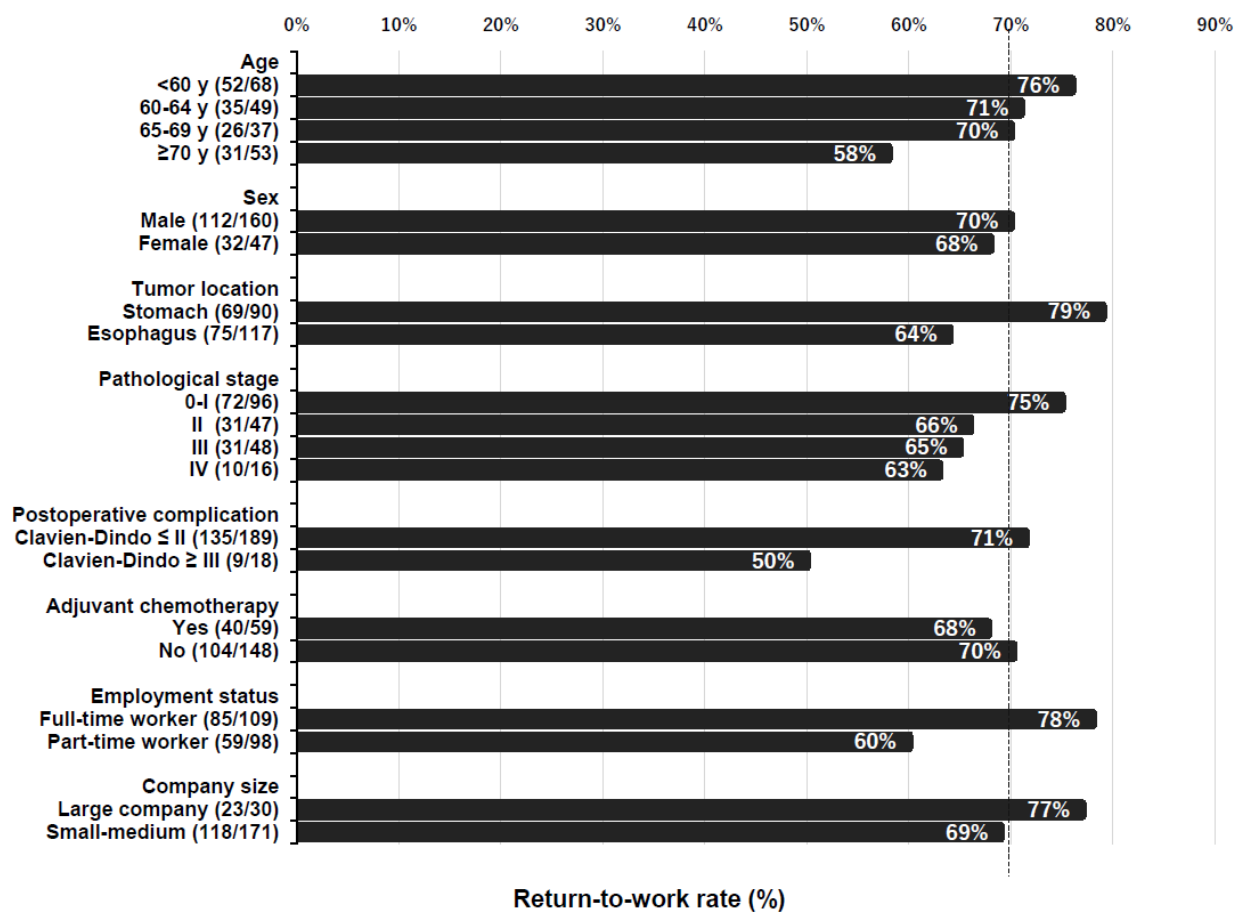


Figure 2

Return-to-work rates according to age, sex, tumor location, pathological stage, postoperative complications, adjuvant chemotherapy, employment status, and company size.

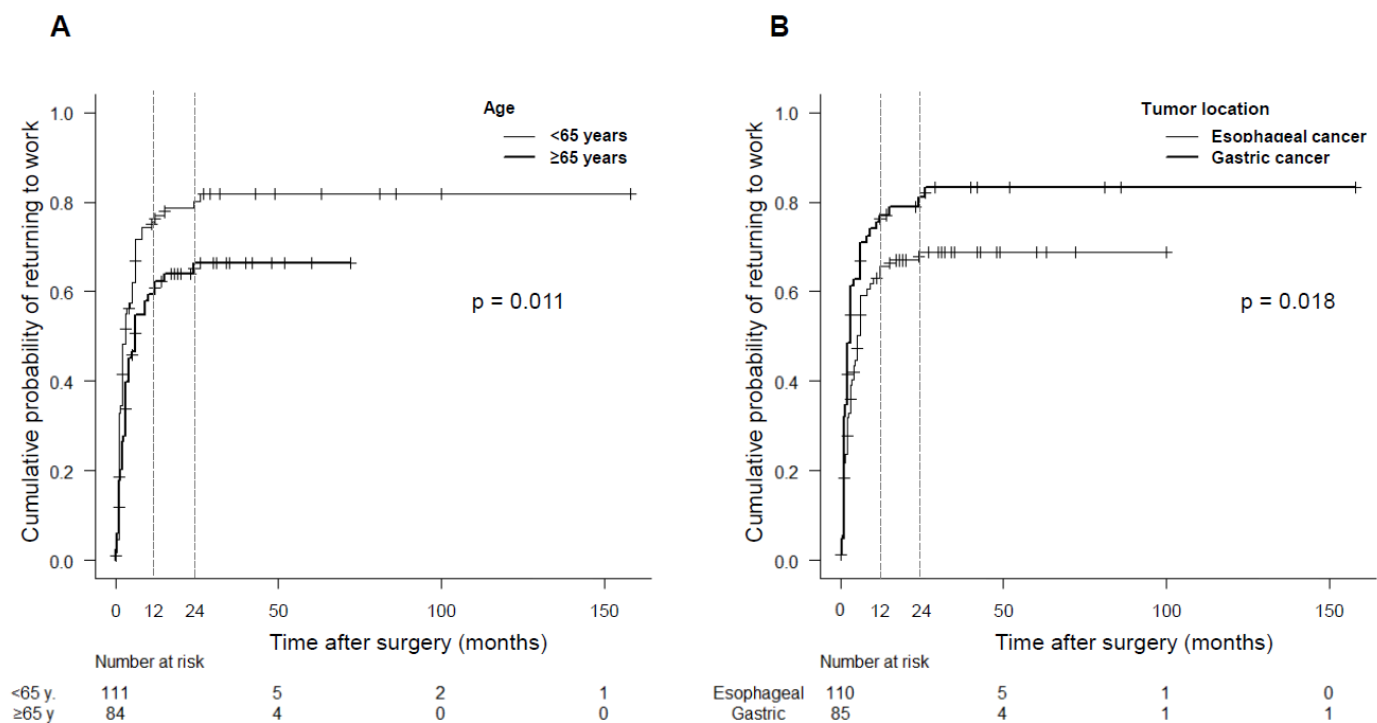


Figure 3

Cumulative probability of return to work (RTW) after surgery among patients with available data on the timing of RTW. (A) Cumulative probability according to age group. (B) Cumulative probability according to tumor location.

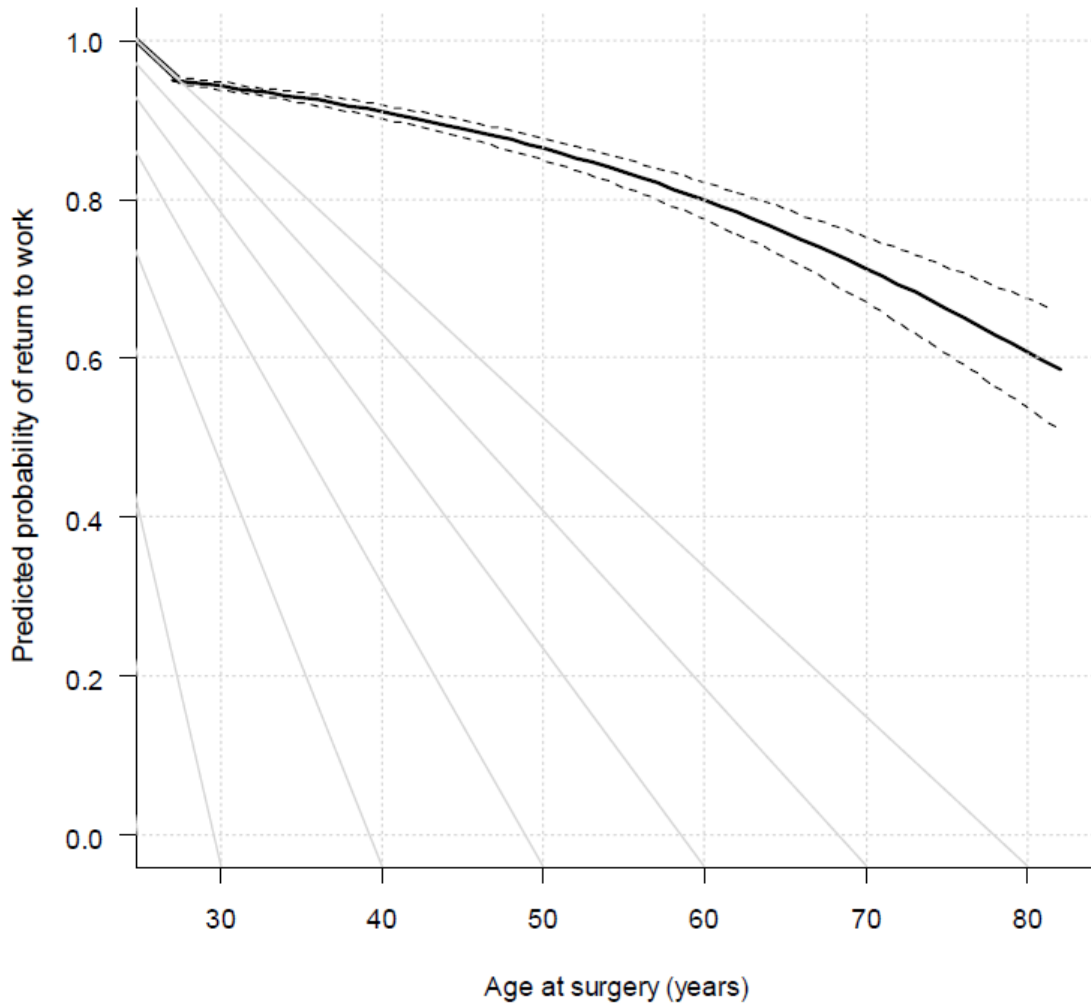


Figure 4

Predicted probability of return to work according to age. The predicted probability was estimated from a multivariable logistic regression model adjusted for sex, preoperative BMI, preoperative CRP, surgical procedure, and postoperative complications (Clavien–Dindo grade $\geq$ III). Shaded areas indicate 95% confidence intervals.

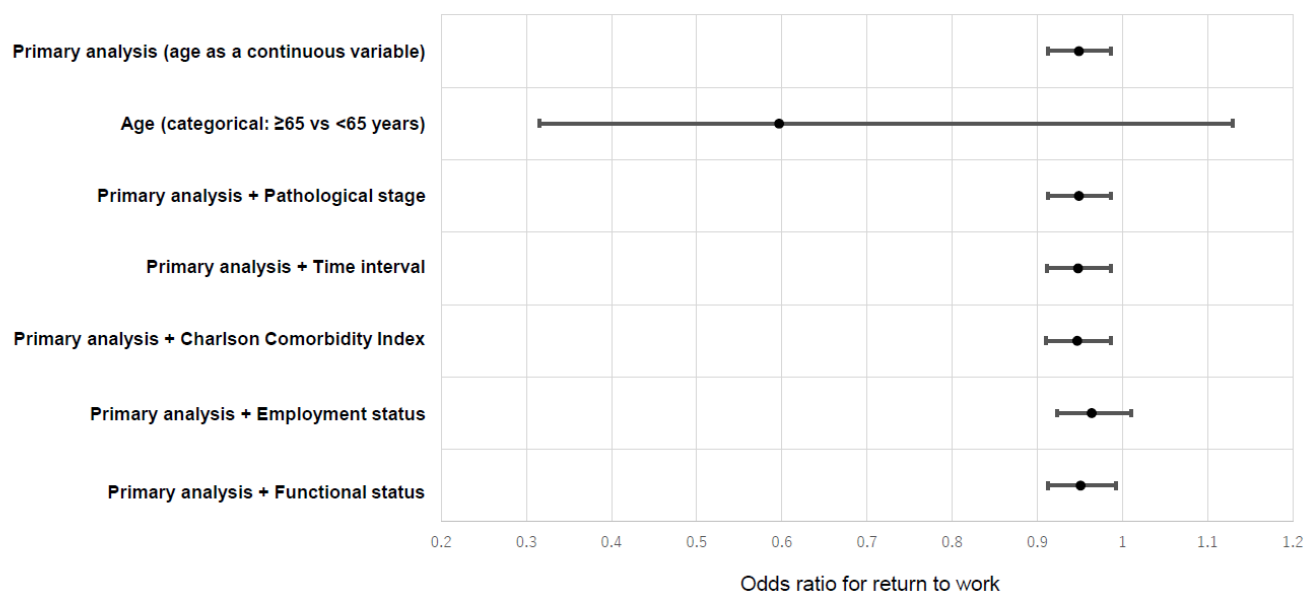


Figure 5

Forest plot showing the association between age and return to work across sensitivity analyses. Odds ratios (ORs) for return to work were estimated using multivariable logistic regression models. Points indicate ORs, and horizontal bars represent 95% confidence intervals (CIs). The first row shows the OR for age modeled as a continuous variable in the primary analysis. The second row shows the OR for age modeled as a categorical variable (≥65 vs. <65 years). The subsequent rows show the ORs for age obtained after sequential adjustment for pathological stage, time from surgery to questionnaire, Charlson Comorbidity Index, and employment status.

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [RTWSupplementaryTables.docx](#)