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Review

Psychological distress in newly diagnosed patients with gastrointestinal cancer: A scoping review

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ABSTRACT

Objective: A cancer diagnosis often triggers significant emotional and psychological challenges, underscoring the importance of addressing psychological distress. While psychological distress in patients with gastrointestinal (GI) cancer has been widely studied, less attention has been focused on those who are newly diagnosed. This scoping review aims to map the existing literature on psychological distress in newly diagnosed patients with GI cancer.
Methods: A scoping review was conducted following the framework outlined by Arksey and O'Malley. The last search was carried out on September 23, 2024, across PubMed, CINAHL, EMBASE, Scopus, and PsychINFO for literature published between January 2013 and September 2024. The search terms included "newly diagnosed," "distress," "patients," and "gastrointestinal cancer." A meta-analysis was conducted using the R package to synthesize the prevalence of psychological distress across studies, with a random-effects model applied to account for heterogeneity.
Results: Fifteen studies were included in the analysis, revealing an average prevalence of psychological distress of 28.1% (99% CI: 181.84, 433.39). Psychological distress was most prevalent during the diagnostic phase and gradually decreased over time. Factors such as older age, advanced cancer stage, poor performance status, and a lack of social support contributed to increased psychological distress. Additionally, only 20% of the studies were intervention-based.
Conclusions: Approximately one-third of newly diagnosed patients with GI cancer may experience psychological distress. Early identification and intervention to address this distress before treatment initiation are crucial for improving patient outcomes.
Systematic review registration: osf.io/n2796.

Introduction

Gastrointestinal (GI) cancer—which encompasses malignancies of the esophagus, stomach, liver, pancreas, colon, and rectum—poses a significant global health burden;[1,2] it is among the most prevalent and lethal cancers worldwide, accounting for a substantial share of cancer-related morbidity and mortality.[3,4] It is responsible for approximately 25% of all cancer cases and one-third of cancer deaths.[5] Its incidence is especially the highest in Eastern Asia.[6]

Receiving a cancer diagnosis can be life-threatening. Cancer diagnosis, along with the subsequent demands for intensive treatment regimens, can be overwhelming for patients,[7,8] potentially leading to an increase in anxiety and depression.[9,10] This burden is especially pronounced in patients with gastrointestinal (GI) cancer, where psychological distress following a diagnosis may be exacerbated by a range of additional factors. The time taken by patients with GI cancer to visit general practitioners is known to be much longer than that for other cancers[11] since most GI cancers are asymptomatic in the early phases.[12] This may increase the risk of patients being diagnosed with cancer at an advanced stage, thereby increasing patients' psychological distress at diagnostic phase. The psychological distress may be further compounded by the complexity of the treatments patients will undergo.[13,14] Surgery, the primary treatment for GI cancer, can also cause psychological distress in patients due to uncertainty, a lack of control over the situation, and fear of death.[15] GI cancer is often aggressive and causes significant physical side effects, including pain, nausea, and fatigue.[8,16]

Although cancer care primarily focuses on treatment and physical aspects, the integration of psychological distress management into

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comprehensive cancer care is also important, as highlighted by extensive research in the field of psycho-oncology. A substantial body of research has demonstrated a significant interplay between psychological and physical distress in patients with cancer, emphasizing the impact of emotional well-being on treatment outcomes and quality of life.[17] A recent meta-analysis of 14 studies showed that the cancer patients receiving psychological interventions reported significantly better quality of life compared to those in the control group.[18] Similar results were obtained for overall survival, although the difference was not statistically significant.[18] Hence, some scholars advocate for providing psychological support from the patients' diagnostic phase, before the initiation of their treatment to improve patients' psychological health and outcomes.[19]

However, among the enormous psychological distress-related review articles on patients with cancer, only small numbers of studies are conducted on patients with GI cancer,[10,20] particularly during their diagnostic phase. There have been systematic reviews of psychological interventions[20] and the prevalence of psychological distress in patients with gastric cancer;[10] notwithstanding, both studies targeted patients during or after treatment only.

Considering the potential effect of psychological distress on GI cancer patient outcomes, which may be at its peak during the diagnostic phase, we sought to address these knowledge gaps through reviewing the relevant literature. With this scoping review, we aimed to map the evidence in the literature on psychological distress in patients newly diagnosed with GI cancer.

Methods

We conducted this study based on the Arksey and O'Malley's methodological framework for scoping reviews;[21] it provides a structured approach for mapping key concepts and identifying gaps in the literature. We registered the protocol with the Open Science Framework to ensure the transparency and reproducibility of the review process (https://osf.io/n2796/).

Step 1. Identifying the research question

We established a PCC (Population, Concept, and Context) mnemonic[21] for this scoping review as follows:

- **Population**: newly diagnosed patients with GI cancer
- **Concept**: psychological distress (as the dependent variable)
- **Context**: none specified

In terms of population, the definition of "newly diagnosed patients with cancer" may vary among the studies, but it typically refers to those who have received a cancer diagnosis within the past month.[22–24] Some studies expand this definition to include the period from cancer confirmation to the commencement of primary treatment.[25] For this review, we included studies that explicitly referred to participants as "newly diagnosed patients" and operationalized this group as individuals whose initial data collection occurred at or after their cancer diagnosis but prior to the commencement of treatment. In accordance with the proposed mnemonic, we devised the following research question: "What is the scope of the literature investigating psychological distress for patients with newly diagnosed with GI cancer?"

Step 2. Identifying relevant studies

We established the search terms of *newly diagnosed*, *distress*, *gastrointestinal (esophagus, stomach, colon, liver, pancreas, or rectum)*, *cancer*, and *patients* with a help of a research librarian and entered these into five electronic databases: PubMed, CINAHL, EMBASE, Scopus, and PsychInfo on September 23, 2024 for studies published from January 2013 to September 2024. Supplementary file presents an example of our detailed search strategy.

In order to provide a broad overview of the literature on psychological distress in newly diagnosed patients with GI cancer, the detailed inclusion criteria were as follows: (1) studies which named their participants as "newly diagnosed patients", or where the initial data collection of the participants took place after their diagnosis of GI cancer; (2) the dependent variable was psychological distress, including anxiety, depression, and emotional distress. We excluded studies if (1) the dependent variable included distress other than psychological distress (e.g., sexual distress, physical distress etc.), if they were not (2) original research articles, (3) peer-reviewed articles, (4) quantitative studies, (5) written in English, or (6) accessible.

Step 3. Study selection

We selected articles after reviewing the titles and abstracts, followed by a full-text review based on the inclusion criteria. Two reviewers conducted the process and disagreements were resolved through discussion. After completing the selection process, we manually searched the reference lists of the selected articles; however, we did not include any additional articles. We did not appraise the methodological quality of the included studies as this is not recommended in scoping reviews.[25]

Step 4. Data extraction

We extracted data from the selected articles and summarized them in a standardized table using an Excel spreadsheet. The data include the author, year of publication, country, aim, participants, an operational definition of patients newly diagnosed with cancer, the design, the independent and dependent variables with the instruments used, the details of the intervention (content, duration, mode, and time) in experimental studies, data collection time points, statistical analytic methods, and outcomes related to psychological distress (e.g., prevalence or changes of psychological distress etc.).

Step 5. Collating, summarizing, and reporting the results

We have organized the findings methodically and presented them in a narrative format. This ensured a thorough account of the study's characteristics, investigation of the prevalence and factors contributing to psychological distress, and evaluation of the interventions employed.

A meta-analysis was conducted to synthesize the prevalence of psychological distress among newly diagnosed patients with GI cancer. Studies that included data on the total number of participants and those experiencing psychological distress were selected for inclusion. Given the observed heterogeneity across the included studies, a random-effects model was used to provide a more comprehensive estimate of the prevalence. The analysis was conducted using the "meta" package[26] (Balduzzi et al., 2019) in R software (version 4.3.1). To evaluate heterogeneity, the Q-statistic, I^2, and τ^2 were calculated. A 99% confidence interval (CI) was employed to provide a more accurate and conservative estimate of the prevalence.

Results

Characteristics of the included studies

Finally, 15 articles on psychological distress in patients with GI cancer were included for review (Fig. 1), and characteristics of these studies are provided in Table 1. Three studies were conducted in South Korea;[27–29] two each in the US,[30,31] Australia,[32,33] China,[34,35] and Taiwan[36,37] and one each in the UK,[38] the Netherlands,[39] Japan,[40] and Turkey.[41] The most common cancer type was colorectal cancer in seven studies (46.7%),[30,31,33,35,38,39,41] followed by gastric cancer,[27,28,34] hepatocellular cancer,[36,37] pancreatic cancer,[29,32] and esophageal cancer.[40] Most studies targeted only patients (86.7%), but both patients and caregivers were participants in two studies.[30,32] The number of participants ranged

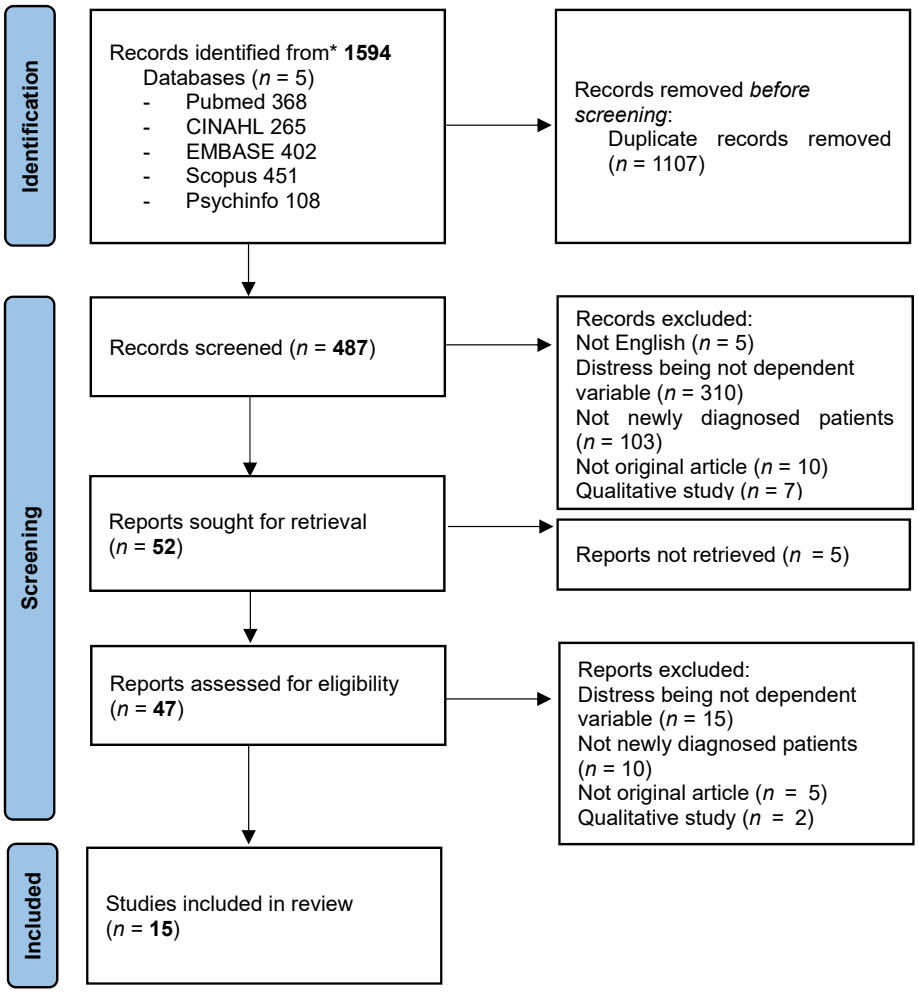

Fig. 1. PRISMA flow sheet. PRISMA, Preferred Reporting Items for Systematic reviews and Meta-Analyses.

from 40 to 1966, with a mean of 317.9. The reported mean age of the participants ranged from 51.5 to 70.5 years. For study designs, longitudinal studies were the most common study design (53.3%), followed by three intervention studies,[29,37,38] two cross-sectional studies,[28,35] and one secondary data analysis.[31]

Definition of "newly diagnosed patients"

Although the included studies did not explicitly provide the operational definition of "newly diagnosed patients", the authors inferred these definitions based on the inclusion criteria or initial data collection period of each study. Generally, the term referred to patients who had received a cancer diagnosis but had not yet started their first treatment, aligning with the definition outlined in the Method section. However, it was defined differently in four studies. Two studies delineated "newly diagnosed patients" in their article, but the data collection was conducted in patients who had undergone their first treatment,[34] or eight weeks after diagnosis.[29] In other two studies, the phrases "after diagnosis" or "before chemotherapy" were used to describe the patients but the actual data collection period was five months after diagnosis[33] or after first course of chemotherapy.[41]

Measurement of psychological distress

Psychological distress variables included psychological symptoms, anxiety, depression, depressive symptoms, and mental health. The most widely used instrument was Hospital Anxiety and Depression (anxiety or depression alone or both) (53.3%).[27,31,34–36,39–41] Other instruments included the Emotional Thermometer,[30] the Hamilton Rating Scale for Depression,[31] the Multidimensional Fatigue Inventory for assessing motivational anhedonia of depressive symptoms,[39] the Linear Analog Self–assessment Scale,[28] the Brief Symptom Inventory,[33] the Beck Depression Inventory,[37] and the Center for Epidemiological Studies–Depression (CES-D) Scale.[29]

Some studies have investigated the presence of psychological distress,[27,30–32,35,39] whereas others have only presented scores measured using psychological distress instruments.[28,33,35,37,41] In terms of the most common variables assessed (besides psychological distress), quality of life was the most common (33.3%).

Prevalence of psychological distress in newly diagnosed patients with GI cancer

The prevalence of psychological distress in patients with GI cancer was clarified in seven studies and ranged from 13.4% to 55%.[27,30–32,35,39,40] For the meta-analysis, given the substantial heterogeneity (I^2 = 97.3%), the random-effects model was deemed more appropriate for this analysis. The random-effects model estimated the overall prevalence of psychological distress among newly diagnosed patients with GI cancer at 280.72 per 1000 patients (99% CI: 181.84, 433.39) (Fig. 2). In other words, the average prevalence of psychological

Table 1
Characteristics of the included studies.

Author (year)	Country	Aim	Participants (*N*), (mean age ± SD) /final staging	Definition of newly diagnosed patients*	Design	Independent variable (instrument)	Dependent variable (instrument)
Acquati et al. (2020)	USA	To investigate the patterns of psychological distress, sexual functioning, sexual distress, and relationship satisfaction among rectal cancer patient-partner couples	Rectal cancer couples ($N = 40$; patient $n = 20$, partner $n = 20$), (patient = 53.2 ± 11.31, partner = 51.5 ± 11.01) / stage I–IV (stage III: 60%)	Before initiating treatment*	Longitudinal study	NA	1) Psychological distress (Emotional Thermometer) 2) Sexual distress (General Measure of Sexual Satisfaction) 3) Sexual functioning (Female Sexual Function Index; International Index of Erectile Function) 4) Relationship satisfaction (General Measure of Relationship Satisfaction)
Chen et al. (2019)	Taiwan	To identify the factors for determining changes in physical and depressive symptom	Hepatocellular carcinoma ($N = 128$), (60.4 ± NR) / BCLC 0-D (stage 0: 32.5%)	Patients who first visited clinic*	Longitudinal study	NA	1) Psychological symptoms (HADS) 2) Physical symptom (ESAS)
Chung et al. (2018)	Korea	To assess the prevalence of and factors associated with anxiety and depression	Advanced gastro-intestinal cancer ($N = 120$), (Median age = 63.0, range 34–88) / NR	Patients requiring chemotherapy*	Longitudinal study	NA	1) Anxiety and depression (HADS; PHQ-9) 2) Quality of life (EORTC QLQ-C30)
Gonzalez-Mercado et al. (2021)	USA	To investigate whether gut microbial taxa abundances and predicted functional pathways correlate with depressive symptoms at the end of CRT	Rectal cancer patients programmed to receive CRT ($N = 40$), (58.9 ± 11.3) / stage III	Programmed to receive CRT*	Cross-sectional study	Gut microbiome (stool sample)	Depressive symptom (HAM-D_{17})
Hinnen et al. (2022)	Netherlands	To examine the trajectory of core depressive symptoms during the course of illness	Colorectal cancer ($N = 539$; survivors $n = 471$, deceased $n = 68$), (67.7 ± NR) / stage I–IV (stage III: 28.9%)	Before treatment*	Prospective longitudinal study	NA	<Core depressive symptoms> 1) Motivational anhedonia (Multidimensional fatigue Inventory) 2) Consummatory anhedonia (HADS-D) 3) Negative affect (emotional functioning subscale of EORTC QLQ-C30)
Janda et al. (2017)	Australia	To investigate anxiety and depression in patients and their carer	Pancreatic cancer ($n = 136$), (65.8 ± 10.3) / stage NR; their carers ($n = 84$), (age NR)	As early as possible after diagnosis*	Secondary data analysis	NA	1) Anxiety and depression (HADS) 2) Quality of life (Patients: Functional assessment of cancer Therapy General & Hepatobiliary; Carer: General Population version)
Lee et al. (2022)	Korea	To examine the mediating effects of illness perception on psychological distress and identify the factors influencing illness perception	Gastric cancer ($N = 184$), (56.9 ± 11.9) / early gastric cancer only	Before treatment*	Cross-sectional study	1) Illness perception (Brief illness Perception Questionnaire) 2) Social support (Multidimensional Scale of Perceived Social Support) 3) Physical symptoms (developed by research team)	Psychological distress (Linear analog Self–assessment Scale)

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Table 1 (*continued*)

Author (year)	Country	Aim	Participants (*N*), (mean age ± SD) /final staging	Definition of newly diagnosed patients*	Design	Independent variable (instrument)	Dependent variable (instrument)
						4) Satisfaction with patient education (developed by research team)	
Occhipinti et al. (2015).	Australia	1) To describe the trajectory of post-traumatic growth 2) To assess heterogeneity of post-traumatic growth over time 3) To describe the relationships between post-traumatic growth and distress	Colorectal cancer ($N = 1966$; remained participants $n = 837$), (64.63 ± 10.35) / stage I–III (stage III: 42.3%)	5 months post diagnosis*	Longitudinal study (for 5 years)	NA	1) Psychological distress (BSI-18) 2) Posttraumatic growth (not validated instrument)
Ohkura et al. (2022)	Japan	To identify psychological distress and stress coping strategies, and risk factors for psychological distress	Esophageal cancer ($N = 102$), (Median age = 68.2, range 44–86) / stage I–IV (stage I: 36.3%)	Before definitive diagnosis*	Longitudinal study	NA	1) Psychological distress (HADS) 2) Coping (MAC)
Polat et al. (2014)	Turkey	To evaluate quality of life, level of anxiety and depression before and after a 6-month follow-up period	Colorectal cancer ($N = 50$), (Median age = 56.5, range 29–77) / stage II–IV (stage III: 32%)	Before CTx*	Longitudinal study	NA	1) Anxiety and depression (HADS) 2) Quality of life (EORTC QLQ-C30 scale; EQ-5D)
Zhang et al. (2016)	China	To explore the association between type D personality and mental health, quality of life, and overall survival	Gastric cancer ($N = 830$; type D = 191, non-type D = 639), (age NR) / stage I–IV (majority stage NR)	After the first treatment*	Longitudinal study	Type D personality (type D Personality Scale)	1) Mental health (HADS) 2) Quality of life (EORTC QLQ-C30, QLQ-STO 22) 3) Survival (one & three-year overall survival)
Zhou et al. (2016)	China	To investigate the association between KRAS gene mutations and depression	Metastatic colorectal cancer ($N = 62$), (70.5 ± 4.43) / metastatic status	Before disclosing diagnosis to patients*	Cross-sectional study	KRAS mutation (PCR testing): Wild-type/mutation	Anxiety and depression (HADS)
Lan et al. (2015)	Taiwan	To examine the effects of acupressure on fatigue and depression	Hepatocellular carcinoma ($N = 62$; EG = 31, CG = 31), (Mean age NR) / staging NR	Before treatment*	Quasi-experimental study	NA	1) Depression (T1 and T5: BDI; T1-T5: VAS) 2) Fatigue (T1 and T5: TFRS; T1-T5: VAS)
Sheperd et al. (2019)	UK	To evaluate the effectiveness of consultation support intervention	Colorectal cancer ($N = 137$, EG = 65, CG = 67), (EG = 62.71 ± 11.35; CG = 61.5 ± 11.99) / stage II–IV (majority stage NR)	Patients considering chemotherapy following surgery*	Longitudinal parallel group randomized controlled trial	NA	1) Anxiety and depression (HADS) 2) Decision self-efficacy (DSE) 3) Decisional conflict (DCS) 4) Decision regret (DRS) 5) Preparedness for decision making (PfDM)
Woo et al. (2019)	Korea	To evaluate the effectiveness of early palliative care	Advanced pancreatobiliary cancer ($N = 288$, EG = 144, CG = 144), (EG median age = 66.0, range 40–86; CG median age = 67.0, range 42–89) / advanced or metastatic status	8 weeks after diagnosis*	Intervention study	NA	1) Depression (CES-D) 2) Pain (BPI) 3) Quality of life (EORTC QLQ-C30) 4) Pain relief 5) Sleep disturbance (Insomnia Severity Index) 6) Satisfaction with pain control 7) Global assessment and clinical global impression 8) Overall survival

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Table 1 (*continued*)

Author (year)	Intervention			Data collection time points	Statistical analysis	Psychological distress-related results
	Contents	Duration	Mode / Time			
Acquati et al. (2020)	NA	NA	NA	- T1: Time of diagnosis - T2: 3 weeks after radiation - T3: 4 weeks after surgery - T4: After CTx, and ostomy closure surgery	1) Paired *t*-test 2) Repeated-measures ANOVA	Psychological distress: 55% of patients, 78.9% of partners (T1)→ 23% and 46% (T4); a significant decrease in patients only
Chen et al. (2019)	NA	NA	NA	- T1: Newly diagnosed - T2: 1 month after Tx - T3: 3 months after Tx - T4: 6 months after Tx	1) Univariate analysis 2) GEE	1) Depression score: steady decrease from T1 to T4 2) Factors of depression at T1: Age, alcohol intake, higher BCLD stage, GOT&GPT level, types of treatment 3) Longitudinal factors of depression: Higher BCLC stage, treatment type, AFP level
Chung et al. (2018)	NA	NA	NA	- T1: At diagnosis of cancer - T2: 3 months after enrollment	1) Independent *t*-test, chi-square test for comparing values between patients with and without anxiety or depression 2) Multivariate logistic regression analysis	1) Anxiety/depression: 30.8% by HADS or PHQ-9 (T1) (specifically, 9.2% with HADS-A, 26.7% with HADS-D, 25.8% with PHQ-9) 2) Those without anxiety or depression at T1: Increased level at T2 3) Those with anxiety or depression at T1: No change at T2 without psychiatric intervention; decreased level at T2 after psychiatric intervention 4) Predictors of anxiety/depression (T1): Lower performance status, gastric cancer, knowing advanced cancer
Gonzalez-Mercado et al. (2021)	NA	NA	NA	- T1: Prior CRT - T2: Last week of CRT	1) Spearman correlation test 2) Regression analysis	1) Prevalence of depressive symptom: 25% of patients (T1) → 38% (T2) 2) Depressive symptom: T1 < T2 3) Positive correlation with depressive symptom: Gemella, Bacillales family XI, Actinomyces, Streptococcus, Lactococcus, Weissella, and Leuconostocaceae 4) Negative correlation with depressive symptoms: Coprobacter, Intestinibacter, Intestimonas, Lachnospiraceae, Phascolarctobacterium, Ruminiclostridium, Ruminococcaceae (UCG-005 and uncultured), Tyzzerella, and Parasutterella 5) Statistically significant correlations between the abundances of MetaCyc pathways and depression at the end of CRT
Hinnen et al. (2022)	NA	NA	NA	- T1: Diagnostic phase - T2: 4 weeks after surgery (treatment phase) - T3: 1 year after diagnosis (follow-up phase) - T4: 2 years after diagnosis (follow-up phase) - T5: Interrupted by death (palliative phase)	1) Pearson correlation test 2) Mixed model analysis	1) Core depressive symptoms: Three all correlated 2) Prevalence of consummatory anhedonia: Decreasing from T1 to T3, with a slight increase in T4 [14.1% (T1) → 15.2% (T2) → 10.7% (T3) → 12.7% (T4)] 3) Associated factors of consummatory anhedonia: Illness phase (highest in palliative phase) 4) Prevalence of negative affect: Decreasing trend from T1 to T4 [28.5% (T1) → 19.8% (T2) → 14.5% (T3) → 14.6% (T4)] 5) Associated factors of negative affect: Sex, age, higher educational level, illness phase (highest in diagnostic and palliative phase)
Janda et al. (2017)	NA	NA	NA	NA	1) Intraclass correlation coefficient, kappa statistic between patient and carer 2) Independent *t*-test, ANOVA, Man-Whitney *U* test, Kruskal–Wallis test, Chi-square test, Fisher's exact test	1) Prevalence of anxiety: Patients (15%) < carers (39%); depression: Patients (15%) ≈ carers (14%) 2) Prevalence of depression: Patients (15%) ≈ carers (14%) * Association between the anxiety and depression levels of patients and carers 3) Associated factors of anxiety and depression - Anxiety: Accessed professional psychological help (patients & carers), age (carer) - Depression: CTx (patients), age (carer)
Lee et al. (2022)	NA	NA	NA	One time	1) Independent *t*-test 2) Chi-square test 3) Pearson's correlation 4) Multiple linear regression	1) Psychological distress: Moderate level 2) Illness perception: Partial mediation effect between social support, satisfaction with patient education, and psychological distress; full mediation effect between symptoms, and psychological distress

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Table 1 (*continued*)

Author (year)	Intervention			Data collection time points	Statistical analysis	Psychological distress-related results
	Contents	Duration	Mode / Time			
Occhipinti et al. (2015).	NA	NA	NA	- T1: 5 months after diagnosis - T2: 12 months after diagnosis - T3: 24 months after diagnosis - T4: 36 months after diagnosis - T5: 48 months after diagnosis - T6: 60 months after diagnosis	Latent difference score models	1) Psychological distress: steady decrease from T1 to T6, and wide variability at individual level 2) Previous upward changes in benefit finding predicted upward changes in psychological distress 3) Previous upward changes in psychological distress predicted upward changes in psychological distress
Ohkura et al. (2022)	NA	NA	NA	- T1: Before diagnosis - T2: Pre-treatment (at determination of clinical stage) - T3: Within 14 days of esophagectomy - T4: 1 month after surgery - T5: 3 months after surgery	Logistic regression	1) Prevalence of psychological distress: 40.2% at pre-treatment 2) Associated factors of psychological distress: fighting spirit, anxious preoccupation (T1); fighting spirit, helpless/ hopeless (T2); helpless/ hopeless (T3); helpless/ hopeless, fighting spirit, final disease staging after esophagectomy (T4); helpless/ hopeless (T5)
Polat et al. (2014)	NA	NA	NA	- T1: First CTx cycle - T2: 6th CTx cycle (final)	1) Paired *t*-test 2) Pearson's correlation	1) Anxiety: $5.7 \pm 4.2 \rightarrow 5.5 \pm 3.7$; depression: $3.6 \pm 3.5 \rightarrow 4.3 \pm 3.2$ (both not significant) 2) Associated factors of T1 anxiety: EORTC-QLQ general health state 3) Associated factors of T1 depression: EQ-5D-VAS, EORTC-QLQ general health state 4) Associated factors of T2 anxiety: EQ-5D index, EORTCQLQ general health state 5) Associated factors of T2 depression: EQ-5D general health state, EQ-5D VAS, and EORTC-QLQ general health state
Zhang et al. (2016)	NA	NA	NA	- T1: Time of diagnosis - T2: After 6 months	1) Chi-square test 2) ANCOVA 3) Log-rank test 4) *Cox* proportional hazards regression model	1) Prevalence of anxiety: Approximately 14% (T1) → 22% (T2) 2) Prevalence of depression: Approximately 8% (T1) → 12% (T2) 2) Mental health: Higher anxiety and depression in type D personality than in non-type D personality
Zhou et al. (2016)	NA	NA	NA	One time	1) Descriptive statistics 2) Chi-square test 3) Multiple linear regression analysis	1) Prevalence of anxiety: 72.6% of patients 2) Prevalence of depression: 45.2% of patients 3) KRAS mutation: a Probable associated factor of depression severity
Lan et al. (2015)	Acupuncture at eight auricular acupoints	5 days	Face-to-face, 30 minutes*2 times*day	- T1: Before treatment - T2: 2 days after first CTx of TACE - T3: 3 days after first CTx of TACE - T4: 4 days after first CTx of TACE - T5: 5 days after first CTx of TACE	1) Paired *t*-test 2) Independent *t*-test 3) Repeated measures ANOVA	1) Depression: T1 < T5 in both experimental and control groups 2) No significant mean difference of depression between groups 3) Depression levels fluctuate over time in both groups
Sheperd et al. (2019)	1) Three appointments 2) Summary and audio recording of the appointments	6 mths	Face-to-face/Not mentioned	- T1: Baseline - T2: After 1st medical appointment - T3: After 2nd medical appointment - T4: After 3rd medical appointment - T5: 3 mths after discharge from clinic	1) Two-way mixed ANOVA (interaction of time and arm on dependent variable) 2) Independent *t*-test	Anxiety and depression: No significant differences in EG, CG before and after intervention

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Table 1 (*continued*)

Author (year)	Intervention			Data collection time points	Statistical analysis	Psychological distress-related results
	Contents	Duration	Mode / Time			
Woo et al. (2019)	1) Pain and depression nursing assessment 2) Pain control based on guidelines 3) Depression control by psychoeducation / consultation 4) Patient education	4 wks	Face-to-face or telephone coaching	- T1: Baseline - T2: 4 weeks	1) Mann–Whitney *U*-test 2) Chi-square or Fisher's exact test 3) Wilcoxon signed-rank test	Depression: No significant difference between EG and CG

Note * explicitly stated in the article.

AFP, Alpha-fetoprotein; BCLC, Barcelona Clinic Liver Cancer system; BDI, Beck Depression Inventory; BPI, Brief Pain Inventory; BSI-18, Brief Symptom Inventory-18; CES-D, Center for Epidemiological Studies–Depression Scale; CG, control group; CRT, Chemoradiotherapy; CRS, Decision Regret Scale; CTx, chemotherapy; DCS, Decisional Conflict Scale; DRS, Decision Regret Scale; DSE, Decision Self-efficacy scale; EG, experimental group; EORTC QLQ-C30, European Organization for Research and Treatment of Cancer Quality of Life Questionnaire Core 30; ESAS, Edmonton Symptom Assessment System; EQ-5D, EuroQol 5 Dimension; HADS, Hospital Anxiety and Depression Scale; GOT, glutamic oxaloacetic transaminase; GPT, glutamic pyruvic transaminase; HADS-D, Hospital anxiety and Depression Scale-Depression subscale; HAM-D_{17}, the clinician-rated 17-item Hamilton Rating Scale for Depression; KRAS, Kirsten Rat Sarcoma Viral Oncogene Homolog; MAC, mental adjustment to cancer; mths, months; NR, Not reported; PCR, Polymerase chain reaction; PfDM, Preparation for Decision-Making scale; PHQ-9, Patient Health Questionnaire-9; TFRS, Tang Fatigue Rating Scale; QLQ-STO22, Quality of Life Questionnaire developed by the EORTC; VAS, Visual analogue scale; wks, weeks.

distress of newly diagnosed patients with GI cancer from the included studies was 28.1%

Changes in psychological distress level

Of the eight studies that repeatedly measured patients' psychological distress level from the diagnostic phase, five reported psychological scores at each measurement time point.[27,31,33,36,39] Among these, two studies observed the highest psychological level at diagnostic phase, which gradually declined overtime. In one study, psychological distress levels were measured at the time of diagnosis, and again at 1, 3, 6 months after treatment,[36] while the other assessed the level at six intervals, from 5 to 60 months after diagnosis, both displaying a steady decrease.[33]

Conversely, two studies showed opposite trends. One study found higher psychological distress level after chemotherapy (specific timing not provided) compared to before treatment.[31] Another study also reported a slightly higher psychological distress level at 4 weeks after surgery.[39] These conflicting results were also described in the study of Chung et al.,[27] which reported differing trends based on baseline psychological distress levels. For patients with gastrointestinal cancer without significant psychological distress at baseline, anxiety and depression level increased at 3 months after diagnosis. In contrast, those with significant baseline psychological distress at baseline had similar anxiety and lower depression level at 3 months after diagnosis.

Associated factors of psychological distress in patients newly diagnosed with GI cancer

For patients with hepatocellular cancer, associated factors included older age, drinking habits, higher Barcelona Clinic Liver Cancer (BCLC) stage (0 < D, A < D), higher AST and ALT levels, and type of treatment (liver resection > Radio-Frequency Ablation, Radio-Frequency Ablation > Transarterial Embolisation/Transarterial chemoembolization).[36] The psychological distress level of patients with gastric cancer were affected by factors such as lower performance status, types of cancer (gastric cancer > esophageal, colorectal, liver, pancreatic, or bile duct cancer), knowledge of advanced cancer,[27] illness perception,[28] and type D personality.[34]

Among patients with colorectal cancer, sex, age, education level, illness phase,[39] general health state,[41] and the KRAS mutation[35] were associated with psychological distress. For patients with esophageal cancer, coping strategies for a fighting spirit and anxious preoccupation influenced their psychological distress levels.[40]

Longitudinal associated factors in patients newly diagnosed with GI cancer

For patients with hepatocellular cancer, the following were longitudinally associated with psychological distress level: jobs (from the diagnostic phase to 1 and 3 months), a higher BCLC stage (C or D > 0, from baseline to 1 month; D > 0 from baseline to 3 and 6 months), treatment type (liver resection > Transarterial Embolisation/Transarterial chemoembolization, from baseline to 1 month), and alpha-fetoprotein (AFP) level (from baseline to 1, 3, and 6 months).[37] Among patients with gastric cancer, those who visited psycho-oncology clinics had lower longitudinal psychological distress levels.[27]

Psychological distress in newly diagnosed patients and their caregivers

Two studies examined the psychological distress levels of patients newly diagnosed with cancer, as well as their caregivers. Both studies found that caregivers experienced higher levels of psychological distress[30,32] with anxiety being particularly pronounced.[31] One study further explored factors contributing to psychological distress among caregivers and discovered that younger caregivers reported significantly higher levels of distress.[32]

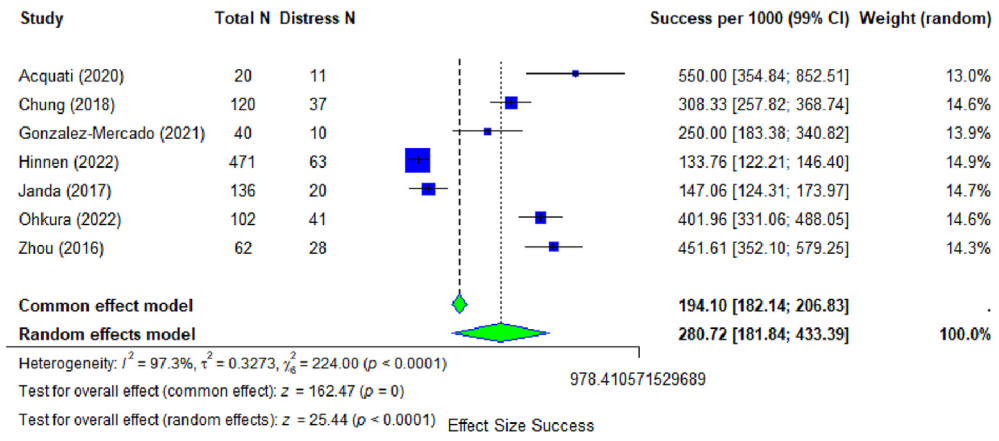

Fig. 2. Forest plot of psychological distress prevalence among newly diagnosed patients with GI cancer. GI, gastrointestinal.

Interventions for reducing psychological distress

Interventions for patients newly diagnosed with cancer include acupuncture,[37] psycho-social interventions such as consultations,[38] and psycho-education.[29] In one study, acupuncture was administered for 4 minutes, twice a day for 5 days to patients newly diagnosed with hepatocellular carcinoma who were waiting for the first chemotherapy cycle.[37] However, the intervention did not significantly alleviate patients' depression level. Another study provided three consultation interventions to newly diagnosed patients with colorectal cancer over a 6-month period. These consultations focused on reviewing the treatment option (initial session), and the ongoing treatment (second and third sessions).[38] Despite this, it was not effective in decreasing patients' anxiety nor depression. A third study provided psycho-education for depression for newly diagnosed patients with metastatic pancreatic cancer and biliary tract cancer for 8 weeks, either via telephone or during scheduled outpatient care. However, the study lacked detailed description of psycho-education, such as contents or dose, frequency, and the intervention was ineffective in reducing patients' depression level.[29]

Discussion

Our scoping review revealed the average prevalence of psychological distress of newly diagnosed patients with GI cancer from the included studies was 28.1%. Longitudinal studies reported conflicting findings regarding changes in psychological distress from the diagnostic phase—some observed a steady increase, while others noted a steady decrease. Additionally, higher levels of psychological distress were reported in caregivers.

The reported prevalence of psychological distress in our review aligns with findings from a similar study, which reported that 39.7% of patients with GI cancer experienced significant psychological distress.[42] Another longitudinal study involving 5660 cancer patients found that over 40% experienced highest psychological distress at the diagnostic phase, compared to other periods.[43] Similarly, another large study in Australia involving 22,505 patients with and without cancer demonstrated that psychological distress was most pronounced within a year of diagnosis.[44]

The high prevalence of psychological distress in these patients may stem from concerns about the treatment process and are uncertain about the treatment outcome. Despite advancement in cancer survival rate, many patients with cancer relate it with death, and perceive diagnosis as "life-threatening",[45,46] which can trigger existential concerns of life and death. Studies suggest that the psychological distress in the diagnostic phase could predict long-term psychological distress at 12 months or after[47] and quality of life,[41] emphasizing the need for greater attention to the psychological distress of these patients.

Although some studies identified the diagnostic phase as the peak period of psychological distress,[27,33,36] others have reported contradictory findings,[27,31,39] particularly in patients undergoing chemotherapy.[27,31] This could imply the burden of chemotherapy on cancer patients. Similarly, a longitudinal study of breast cancer patients found that the highest psychological distress level at 1–2 days after chemotherapy, compared to immediately before chemotherapy and 6 months later.[48] However, a comprehensive understanding of changes in psychological distress from the diagnostic phase onward was not possible, as the data collection periods were inconsistently reported across the studies. For example, Gonzalez et al., described the data collection period as the "last week of chemotherapy",[31] without specifying the timespan from diagnosis, while Occhipinti et al., reported it as "5 months after diagnosis",[33] lacking details about patients' treatment context at the time. To address these gaps, researchers should provide detailed information on data collection timelines and treatment contexts to enable a more thorough understanding of changes in psychological distress over time. This can contribute to building knowledge evidence on the changes of psychological distress of patients with GI cancer from the diagnostic phase onward. Consequently, researchers and health care providers can better identify the most vulnerable period during the cancer care continuum and deliver the appropriate psychological distress intervention at the period.

These findings demonstrate the need for appropriate psychological support and management to alleviate the psychological distress patients experience after cancer diagnosis. However, only 20% of these were intervention studies for reducing patients' psychological distress. In addition to the limited number of intervention studies aimed at reducing psychological distress, the current literature has not yielded significant results.[29,37,38] These insignificant results may be attributed to the variations in content, duration, mode, and timing of the interventions. For example, studies included in our review provided acupressure,[37] consultation support,[38] and early palliative care[29] respectively. *The Principles and Guidance for Pre-habilitation within the Management of and* Support *for Cancer* of the Macmillan Cancer Support Group also recommends universal psychological support for patients with cancer before initiation of treatment with minimal specialist staffing, training, and resources.[49] Intervention providing psychological support could be developed based on the previous systematic review and meta-analysis studies for reducing psychological distress in cancer patients during or after treatment. Qualitative studies assessing patients' needs on psychological programs after cancer diagnosis could also provide a useful insight for developing interventions for these patients.

One surprising finding of our review was the higher caregivers' psychological distress levels patients in the diagnostic phase.[30,32] Similar results were reported in a study comparing psychological distress between patients with lung cancer and their caregivers, which showed that 7.8% of patients and 33.6% of caregivers were distressed.[50] Another recent study of patients with advanced solid cancer and their caregivers

showed that 26% and 53% of patients and caregivers, respectively, were distressed.[51] This may be because caregivers feel distressed due to uncertainty over patient's treatment results, and they take on additional roles and duties as caregivers.[46] Another possible explanation is the interdependence of psychological distress between patients and caregivers.[52] Emotional contagion—one's emotional state affecting the other—may explain this.[53] Since patients and caregivers spend a lot of time together, in addition to emotions, mood might affect them in the long term. The high prevalence of psychological distress in caregivers and the interdependence of psychological distress between them and patients indicates the need for more studies targeting both patients and caregivers or caregivers alone in the diagnostic phase.

The factors associated with psychological distress have been examined both cross-sectionally and longitudinally. Factors that appeared repeatedly included older age, advanced-stage cancer, and poor health status. However, most studies have primarily investigated patients' demographic and clinical factors related to psychological distress, with few exploring perceptions,[28] personality,[34] and coping strategies.[40] Personal qualities or beliefs may have a greater effect on psychological distress than demographic or clinical characteristics.

Clinical and research implications

The findings of this review have significant implications for clinical practice and research. From a clinical perspective, the high prevalence of psychological distress in patients newly diagnosed with GI cancer underscores the need for routine psychological screenings and early intervention as integral components of standard cancer care. Health care providers should receive training to enable them to recognize and address the psychological needs of patients after diagnosis. The integration of psycho-oncological support into multidisciplinary cancer care teams is an effective means of addressing these needs.

Interventions for reducing psychological distress for newly diagnosed patients with GI cancer in clinical setting should be provided based on the evidence. Given the limited number of intervention studies in our review, more research should be conducted and its scope needs to be expanded. This can help health care providers provide patients with a more effective and efficient psychological intervention after cancer diagnosis.

For researchers, a definition of newly diagnosed patients should be clarified in their studies and we suggest using the term for patients after cancer diagnosis and before treatment initiation. Also, detailed reporting of the data collection period, such as reporting both time from diagnosis and information on patients' treatment context is needed, especially for longitudinal studies. More studies on psychological distress of patients and caregiver dyads after cancer diagnosis and exploring patients' needs at the diagnostic phase could also aid in build a more robust evidence on literature on patients newly diagnosed with GI cancer.

Limitations

The findings of this scoping review are subject to some limitations that should be considered when interpreting the results. First, the review was limited to studies published in English only, which may have introduced a language bias. This could exclude relevant research conducted in non-English-speaking countries where cultural, health care, and social factors may influence psychological distress in patients newly diagnosed with GI cancer.

Second, the studies included in this review exhibited significant heterogeneity in the timing of data collection, sample sizes, and the measurement tools used to assess psychological distress. Consequently, the synthesized prevalence of psychological distress among newly diagnosed patients with gastrointestinal cancer should be interpreted with caution, given the substantial heterogeneity of the included studies ($I^2 = 97.3\%$).

Finally, the studies included in this scoping review do not fully reflect the diverse circumstances of patients newly diagnosed with GI cancer. The included studies do not provide sufficient detail on factors such as family dynamics, social support networks, and socioeconomic determinants, which we were unable to assess in sufficient depth regarding their impact on psychological distress. This may be due to an incomplete understanding of patient experiences in the existing literature.

Conclusions

This scoping review emphasizes the significant prevalence of psychological distress among patients newly diagnosed with GI cancer and the need to integrate comprehensive psychological distress assessment and psychological interventions at the time of cancer diagnosis. Furthermore, the review identified a gap in the current literature, a lack of interventions studies in the diagnostic phase that address the psychological needs of patients. Research should be conducted to develop targeted, holistic interventions that incorporate psychological support from the time of diagnosis as well as standardized guidelines for implementing psycho-oncological care within multidisciplinary cancer treatment teams.

Ethics statement

Not required.

Data availability statement

The authors confirm that the data supporting the findings of this study are available within the article.

Declaration of generative AI and AI-assisted technologies in the writing process

No AI tools/services were used during the preparation of this work.

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CRediT authorship contribution statement

Conceptualization: JYL; Data curation: JYL, SMH; Formal analysis: JYL, SMH; Methodology: JYL, SMH; Project administration: JYL, SMH; Validation: SMH; Writing – original draft: JYL; Writing – review & editing: JYL, SMH. All authors had full access to all the data in the study, and the corresponding author had final responsibility for the decision to submit for publication. The corresponding author attests that all listed authors meet authorship criteria and that no others meeting the criteria have been omitted.

Declaration of competing interest

The authors declare no conflict of interest.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.apjon.2025.100672.

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