別添１

厚生労働科学研究費補助金

がん対策推進総合研究事業

がん患者の自殺予防プログラムの開発と

その実装に向けた教育研修に関する研究

令和5年度～令和7年度　総合研究報告書

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令和　8（2026）年　5月

別添２

厚生労働科学研究費補助金研究報告書目次

目　　次

Ⅰ．総合研究報告書
がん患者の自殺予防プログラムの開発とその実装に向けた教育研修に関する研究
藤森麻衣子 --------- 3

資料）資料1:Regional disparities in suicide among patients with cancer: A nationwide population-based study in Japan --------- 10.

資料2:Exploratory Analysis of Nationwide Japanese Patient Safety Reports on Suicide and Suicide Attempts Among Inpatients With Cancer Using Large Language Model. --------- 17

資料3:Suicide risk among individuals diagnosed cancer during versus before the COVID-19 pandemic: a nationwide population-based study. --------- 29

資料4:Nationwide retrospective survey on healthcare professionals' perceptions of suicide-related behaviors among people with head and neck cancer in Japan. --------- 33

資料5:Suicide Prevention in Japanese Cancer Care Hospitals: A Topic Modeling Analysis of Manuals and Workflows. --------- 41

資料6:医療安全管理部門による自殺事故対策の取り組みについての全国アンケート調査. --------- 51

資料7:「がん医療における自殺対策の手引き2025年度版」概要版 --------- 58

資料8:One-year prevalence and associated factors of suicidal ideation among patients with newly diagnosed head and neck cancer in Japan: a longitudinal study. --------- 66

Ⅱ．研究成果の刊行に関する一覧表 --------- 67

別添３

厚生労働科学研究費補助金（がん対策推進総合研究事業）
総合研究報告書

がん患者の自殺予防プログラムの開発とその実装に向けた教育研修に関する研究

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研究要旨
研究 1 自殺リスク因子を含む実態解明では、1-1 頭頸部がん患者の希死念慮に影響する危険因子と保護因子を探索することを目的とした前向きコホート研究、および 1-2 がん患者の自殺件数およびリスク因子を含む実態を明らかにすることを目的とした医療安全情報収集等事例データベース解析を実施した。国立がん研究センター中央病院頭頸部外科に通院している頭頸部がん患者を対象とした縦断調査（解析対象 215 例）の結果、プライマリエンドポイントである面接評価による希死念慮 1 年有症率は 14/210(7.0%)であった。初療 1 年間の希死念慮との関連が示唆された因子は、PS 1 以上、精神科受診歴であった。先行研究と一致したリスク因子が示唆された。医療安全情報収集等事例データベース解析では、13 年間の報告データからがん患者による自殺および自殺未遂は 213 件抽出された。約半数のがん患者がうつ症状を示していたが、専門的精神ケアの提供は限定的であった。入院中のがん患者において、精神的苦痛や情報共有不足、痛みのマネジメント不全などが自殺の背景にあることが明らかになり、これらに対する多角的な介入が今後の自殺予防策として求められる。
研究 2 ハイリスク集団への自殺予防介入法の開発として、2-1 医療安全の視点に基づく病院内での自殺対策全国実態調査、2-2 国内外論文や取り組みに関する資料収集およびレビュー、2-3 院内がん患者自殺対策マニュアル開発を実施した。2-1 では、医療の質・安全学会の会員を対象にオンライン質問紙調査を実施し、280 名から回答を得た。がん診療連携拠点病院では、2022 年 8 月の認定要件の改正により自殺対策フローの作成が進んだことや、回答者（医療者）の患者の自殺経験の有無により、院内での自殺対策への取り組みや自殺の課題に関する認識に差があることが明らかになった。2-2 では、航空業界における Pilot Peer Support Program に関するヒアリングにより、ピアサポートプログラムについて情報共有し、意見交換を行った。また、がん診療連携拠点病院 14 施設から自殺対策マニュアル・フロー図を収集、解析し、結果を予防プログラムに反映させた。2-3 では、本研究班のこれまでの研究成果、関連文献レビュー、自殺対策に関する資料をもとに、「がん医療における自殺対策の手引き」を作成した。執筆には、分担研究者（リエゾン精神医学、心療内科学、医療安全管理学等の専門家）、研究協力者（精神医学、医療統計学、腫瘍内科学等の専門家）に加え、がん患者代表者など 15 名が参画した。執筆内容について、16 学会および患者・市民による外部評価を受けた。評価コメントを反映し、概要版と本編を作成した。
研究 3 医療従事者に対する教育研修プログラム開発として、研究 2 で開発された自殺予防介入法に関する資料による事前学習と院内自殺対策に関するグループワークを含む医療従事者を対象とした教育研修プログラムを開発した。令和 8 年 1 月までに研修会を 5 回開催し、実施可能性および有用性を評価するため、参加前後にアンケート調査を実施した。参加者総数は 132 名（看護師 63%、医師 24%、心理師 9%）であった。参加した医療者全員が完遂したことから、実施可能であると考えられる。
本研究は、がん医療における自殺対策を、実態把握から介入法開発、教育実装へと体系的に展開した点に意義があり、今後の院内自殺対策の普及・標準化に寄与することが期待される。

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Ａ．研究目的
実証的ながん患者の自殺予防対策の実現を目指し、以下の 3 点を目的とする。1）がん患者の自殺リスク因子を含む実態を分析する。2）医療機関におけるハイリスク集団への自殺予防プログラムを開発する。3）医療従事者に対する教育研修プログラムを開発する。
令和 4-6 年度革新的自殺研究推進プログラム「がん患者の自殺に関する全国実態分析とがん診療病院自殺対策プログラムの検討」において実施されている全国がん登録情報を用いた自殺の実数モニタリングを継続することに加え、本研究ではリスク因子を含む実態調査を行う。医療の質・安全学会会員を対象とした院内自殺対策に関する調査、自殺対策に関する国内外論文や取り組みの資料収集及びレビュー、医療従事者を対象とした面接調査を実施し、臨床実装可能な自殺予防介入法素案、介入法マニュアルを作成する。作成された介入法をマニュアルに基づき医療従事者が実施スキルを習得することを目的に教育研修プログラムを開発する。

Ｂ．研究方法
<u>研究 1 自殺リスク因子を含む実態解明</u>
研究 1-1. 頭頸部がんを有する患者の心理・社会・身体状態の推移と関連要因の検討
国立がん研究センター中央病院頭頸部外科に通院している、頭頸部がん患者 200 名を対象とした、前向きコホート研究を行った。調査時期は初診後、治療前、初回治療終了後、治療 6 か月後、12 か月後とした。アンケート調査項目は、抑うつ: Patient Health Questionnaire-9 、希死念慮: The Suicide Behaviors Questionnaire-Revised 、羞恥心・偏見 :Shame & Stigma Scale 、QOL: Euro Qol-5 Dimensions 5-Levels 、アルコール依存: Cutting down・Annoyance by criticism・Guilty feeling・Eye-openers、ニコチン依存: Fagerstrom Test for Nicotine Dependence、症状評価: PRO-CTCAE であった。インタビュー調査項目は、精神疾患簡易構造化面接法によるうつ病・アルコール依存と乱用、コロンビア自殺重症度評価尺度であった。
（倫理面への配慮）
人体から取得された試料を用いないが、個人情報を取得して研究を実施するため、「人を対象とする生命・医学系研究に関する倫理指針」に従い、研究対象者から適切な同意を受ける。具体的には、研究の概要を説明した文書をアンケート用紙とともに配布し、同意書へのサインを記入されたことをもって適切な同意が取得されたものとした。
研究 1-2. 医療安全情報収集事例データベースを用いたリスク因子分析
日本医療機能評価機構のウェブサイト上に公開されている日本全国の主要な医療機関から報告された医療安全情報収集事例データベースを用いた。対象は、2010 年 1 月から 2022 年 12 月までの 13 年間のがん患者およびその他身体疾患を有す患者の入院中に発生した自殺・自殺企図に関するインシデント報告である。報告内容について事例の背景因子の記述統計量を算出し、自由記述について事故内容や対策案を BERT ベースのトピックモデリング手法である BERTopic と呼ばれる自然言語処理手法を用いたトピック分析を行い、さらに OpenAI の GPT-4o を用いて報告内容のラベリングを行った。これらの患者の事前状態と対策案との関連を検討するためにロジスティック回帰分析を行った。
（倫理面への配慮）
本研究は、国立がん研究センターの倫理審査により承認を得て行ったが、インシデント報告として匿名化され公開されている二次データのみを用いており、個人が特定される情報は一切含まれていないため、個別同意は得ていない。分析に際しては、報告内容の尊厳を損なわないよう十分に配慮して実施された。

<u>研究 2 ハイリスク集団への予防介入法の開発</u>
研究 2-1. 医療安全の視点に基づく病院内での自殺対策：全国実態調査
2023 年 2 月に医療の質･安全学会の会員（3,321 名）を対象にオンライン質問紙調査を実施した。
（倫理面への配慮）
侵襲及び介入を伴わず、人体から取得した試料も用いない研究であるため、インフォームド・コンセントを要さなかった。
研究 2-2. 国内外論文や取り組みに関する資料収集およびレビュー
①他業種のスタッフケアの取り組みとして、航空業界における Pilot Peer Support Program についてヒアリングを実施した。
②2023 年 4～5 月にがん診療を行っている病院に対して、スノーボールサンプリング方法にて自殺対策マニュアル・フロー図を収集した。

研究 2-3 自殺予防マニュアルの開発
研究 2-2 で収集した自殺対策マニュアル・フロー図をテキスト化した。記載内容を明らかにするために、自然言語処理の手法であるトピック分析（多数の文書から主要なテーマを抽出する技術）を用いて、自殺対策マニュル・フロー図の主要なテーマを推定した。トピック分析には、単語の出現頻度からトピックを推定する「トピックモデル」と、深層学習を用いて文脈を考慮する「BERTopic」の２種類を用いて分析結果の妥当性を確認した。次に推定されたトピックの名称を、がん患者の自殺の研究者 4 名により３回の議論を経て決定した。用いたデータは、単語や段落の出現確率が出力されるトピックモデルの結果である。また、各トピックに抽出される段落の重複を考慮して一定以上の出現確率の段落を対象にした。
（倫理面への配慮）
侵襲及び介入を伴わず、人体から取得した試料も用いない研究であるため、インフォームド・コンセントを要さなかった。
研究 2-3. 2023 年度までに実施したがん患者の自殺・希死念慮のリスクおよび介入に関する国内外の論文レビューや収集した取り組みに関する資料と専門家によるパネルディスカッションにより、がん患者の自殺対策プログラムを開発する。
（倫理面への配慮）
侵襲及び介入を伴わず、人体から取得した試料も用いない研究であるため、インフォームド・コンセントを要さなかった。

研究 3 医療従事者に対する教育研修プログラム開発
3-1. 研究 2 で開発したがん患者の自殺対策プログラム等の資料と専門家によるパネルディスカッションにより、医療従事者を対象とした教育研修プログラムを開発する。
3-2. 医療従事者を対象としたがん患者の自殺対策研修会を実施し、実施可能性および有用性を評価する。参加者を対象とし、参加前後にアンケート調査を実施する。【参加前調査項目】背景：年齢、性別、職種、医療従事年数、自殺対策研修会の経験の有無；日本語版 Attitudes Toward Suicide Prevention (ASP-J)：ASP は、Appleby らによって開発された自殺予防に対する医療従事者の否定的態度の測定に焦点化した 14 項目の自己記入式質問票である(Herron J, 2001)。回答はリッカート式の 5 件法（1 強く反対、2 反対、3 どちらでもない、4 賛成、5 強く賛成）で評価される。本質問紙の日本語訳版の妥当性と信頼性は確認されている(川島, 2013)。【参加後調査項目】参加者背景：年齢、性別、所属施設、職種；研修会の満足度：11 件法（0 全く満足できなかった-10 とても満足できた）で回答を得る。；研修会の評価：目標の達成度について、6 件法（0-100%）で回答を得る。；日本語版 Attitudes Toward Suicide Prevention (ASP-J)；意見・感想：自由記述。参加者背景について記述統計量を算出する。研修完遂率を研修会完遂者数/研修会申込者数により算出する。ASP-J の平均値を算出し、参加前後の平均値の差を t 検定を用いて評価する。$P<0.05$ を有意差ありと判断する。自由記述の内容分析を行う。
（倫理面への配慮）
介入・侵襲を伴わず、個人の生命・健康に関する情報を取り扱わない。調査への協力は任意であり、調査回答フォームに調査協力への同意に関するチェックボックスを設け、クリックがされたことをもって適切な同意が取得されたものとする。

C．研究結果
研究 1 自殺リスク因子を含む実態解明
研究 1-1. 頭頸部がんを有する患者の心理・社会・身体状態の推移と関連要因の検討
2022年2月～2022年11月に、国立がん研究センター中央病院頭頸部外科初診・初療の成人患者224例が登録された。その内9例は登録後不適格と判断された。2023年12月までに全てのフォローアップ調査を完了した。2024年度は解析対象215例のデータを固定し、解析を行なった。
登録時患者背景：平均年齢64.1歳（標準偏差13.1）、男性166名（77.2%）、既婚153名（71.2%）、同居者あり171名（79.5%）、子供あり159名（73.9%），教育歴専門学校/大学以上128名（59.5%）、雇用状況フルタイム勤務89名（41.4%）；がん部位：下咽頭54名（25.1%）、口腔31名（14.4%）、舌28名（13.0%）、喉頭23名（10.7%）；病期：0期26名（12.1%）、I期45名（20.9%）、II期37名（17.2%）、III期30名（13.9%）、IV期73名（33.9%）；ECOG Performance Status (PS) 0 168名（78.1%）
プライマリエンドポイントである面接評価による希死念慮1年有症率は14/210(7.0%)であった。また、質問紙（SBQ-R）で評価した希死念慮（カットオフ値 合計7点以上）1年有症率は35/210（16.7%）であった。Firth’s penalized logistic regressionを用いた多変量解析の結果、初療1年間の希死念慮との関連が示唆された因子は、PS 1 以上 ($p<0.001$)、精神科受診歴（$p=0.079$）であった。
研究 1-2. 医療安全情報収集事例データベースを用いたリスク因子分析
がん患者213例のうち約50%が抑うつ症状、30%以

上が自殺念慮を示していた。約7%は安楽死を希望していたが、精神科的ケアを受けていたのは全体の24%にとどまった。痛みがコントロールされていない症例が約25%にみられたが、緩和ケアチームの介入は13.6%にとどまり、かつそのうち半数は痛みのコントロールが不十分であった。最も頻度の高い予防策は「精神的苦痛への評価と対応」であり、次いで「医療チーム間および家族との情報共有」が提案された。既に精神科的ケアを受けていた患者には「精神的苦痛の評価・対応」が提案されにくく、代わりに「危険物への対処」が提案されやすかった。コミュニケーション改善の提案は、抑うつ症状があった患者に多く見られた。がん患者とそれ以外の身体疾患患者との間に、自殺の背景や予防策に大きな差はなかった。ただし、緩和ケアの提供はがん患者に多かった。

研究 2 ハイリスク集団への予防介入法の開発

研究2-1. 医療安全の視点に基づく病院内での自殺対策：全国実態調査

回答数 280 名、男性 110 名、女性 170 名、回答者の 9 割はがん診療を提供する医療機関に勤務しており、3/4 の回答者は医療安全管理部門のスタッフであった。患者の自殺経験あり 55%、患者の自殺未遂経験あり 53%、患者の自殺を心配した経験あり 63%、自殺対策に関連する研修会に参加したことがある回答者の割合：患者の自殺経験あり群 41%、患者の自殺経験なし群 20%であった。がん診療連携拠点病院の安全管理部門職員の回答によると、院内自殺対策マニュアルあり 81 施設、なし 27 施設であり、がん診療連携拠点病院要件が改正された 2022 年 8 月 1 日以降に新たに院内作成された施設が 18 施設あった。

研究2-2. 国内外論文や取り組みに関する資料収集およびレビュー

①航空業界における Pilot Peer Support Program についてヒアリングを実施した。このプログラムは精神的なウェルビーイングやストレスの問題を抱えるパイロット自身、家族、同僚が秘匿環境下で支援を受けることができる仕組みであった。プログラムの中心的な役割を担うのは同じパイロット仲間であるピア（同僚）であること、会社とは独立した組織としてサポートすること、構成メンバーによるサポート（サロン、メール、電話、ホームページ、アプリなど）と利用状況について情報共有し、意見交換を行った。また、Pilot Peer Support Program のリーダーによるセミナーを開催した。

②がん診療連携拠点病院 14 施設から収集し、内容の類似性が高い 1 施設を除き 13 施設（全 329 段落）が分析対象であった。各手法で各々20 トピックを抽出した。2 つの手法で抽出されたトピックに含まれる段落を比較したところ、同じ内容の記述を含む段落を 6 割以上含むトピックは 12 であった。すなわち、12 トピックは 2 分析手法間で同じ内容であると判断された。他方、全く同じ内容の段落を含まないトピックはなかった。以上から、2 分析手法間のトピックは類似しており、分析結果は妥当であると考えられた。次に抽出された 20 トピックの名称は、トピックモデルの結果が 15%以上の出現確率の段落（163 段落/重複 10 段落）の内容から 4 名で議論を重ね合意をもって決定した。20 トピックの名称は以下の通り：「がん患者の自殺リスクの現状」、「自殺対策の概要」、「ホットスポットの種類と対策の具体例」、「全人的痛みの説明」、「自殺リスク評価と対応」、「自殺リスク因子とアセスメントの方法」、「希死念慮がある患者への対応手順と連携体制」、「気持ちのつらさのスクリーニング方法」、「自殺関連行動への対応方法の具体例」、「患者・遺族の抱える問題への対応」、「患者・遺族・他患者との対話方法の具体例」、「悲嘆を含む心理反応と支援」、「危機介入と事後対応」、「自殺発見時の現場の対応手順」、「自殺発見時の連絡・報告手順」、「事後の遺族・スタッフへの心理的ケア手順」、「事後カンファレンスとスタッフケアの体制」、「院内多職種連携と院外機関連携」、「体制の整備」、「自殺対策に関わる相談窓口」。それぞれの内容から、概説、一次予防（通常時、危機介入前の対策）、二次予防（危機介入のための対策）、三次予防（事故発生後に実施すべき対策）、体制に分類した結果、概説 2 トピック、一次予防に関連する内容 9 トピック、二次予防に関連する内容 8 トピックが、三次予防に関連する内容 10 トピック、体制に関連する内容 3 トピックであった。

研究 2-3. 本研究班のこれまでの研究成果、がん患者の自殺リスクおよび予防介入法に関するレビュー、自殺対策に関する資料をもとに、「がん医療における自殺対策の手引き」を作成した。執筆には、分担研究者（リエゾン精神医学、心療内科学、医療安全管理学等の専門家）、研究協力者（精神医学、医療統計学、腫瘍内科学等の専門家）に加え、がん患者代表者など 15 名が参画した。執筆内容について、16 学会および患者・市民による外部評価を受けた。評価コメントを反映し、概要版と本編を作成した。本編には、がん患者の自殺対策の総論と各論（わが国のがん患者の自殺実態調査、がん診断直後の自殺対策、進行期の自殺対策、サバイバーの自殺対策、AYA 世代がん患者の自殺対策、遺族と医療者支援、がん診療における自殺の倫理的

側面）および院内自殺対策の実践が含まれた。本手引きの冊子を作成するとともにデジタルブック化し、令和 8 年 3 月末に公開した。

研究 3 医療従事者に対する教育研修プログラム開発

3-1. 研究 2 で開発したがん患者の自殺対策プログラム等の資料と専門家によるパネルディスカッションにより、医療従事者を対象とした教育研修プログラムを開発した。プログラムの目標、構成、内容は以下の通り。

【目標】(1) がん患者の「自殺リスク」の現状と背景を知る、(2) 自殺を「防ぐ」ために、私たちにできることを考える、(3) 自施設での「次の一歩」を描く

【構成】自殺予防介入法に関する資料による事前学習と院内自殺対策に関するグループワーク

【内容】

目標	スケジュール	実施事項
目標 (1)	事前学習と準備	課題 1 配布資料（手引き概要版、がん診療に携わる病院の自殺対策マニュアルおよびフローの推奨項目）を読む
目標 (2)		課題 2−1 配布資料（院内の自殺対策（一次予防、二次予防、三次予防）に関する動画）を視聴する
		課題 2−2 所属施設の自殺対策の確認
	研修当日グループワーク	課題 2−3 所属施設に適した自殺対策検討 課題 2-4 対策実施の促進要因の検討と共有
目標 (3)		課題 3 対策実施の阻害要因と克服法の検討

3-2. 2025 年 10 月～2026 年 1 月に研修プログラムを 5 回実施した。参加者総数は 132 名（看護師 63%、医師 24%、心理師 9%、医療ソーシャルワーカー 1%、薬剤師 1%、その他 2%）であった。自施設の自殺対策状況は、自殺対策マニュアルあり 39%、なし 33%、わからない 27%；自殺対策フローあり 41%、なし 25%、わからない 34%であった。参加者全員が研修プログラムを完遂し、完遂率は 100%であった。参加前調査回答数は 119 名であり、年齢平均 50.4 歳、医療従事年数平均 25.2 年、自殺対策研修経験あり 34%であった。参加後調査回答数は 114 名であり、研修全体の満足度評価が 8-10 であった参加者は 93 名（83%）であった。目標の達成度は、目標 1 ：80%以上 79 名（69%）、目標 2 : 80%以上 74%（65%）、目標 3 : 80%以上 66（59%）であった。参加前後の ASP-J の平均値（標準偏差）は前(有効回答数 104)32.9 (6.1)、後(有効回答数 114)30.1 (6.3)であり、t 検定の結果参加後のスコアが有意に低い(p=0.001)ことが示された。

D．考察

研究 1 自殺リスク因子を含む実態解明

研究 1-1. 頭頸部がんを有する患者の心理・社会・身体状態の推移と関連要因の検討

頭頸部外科初診・初療の成人患者における希死念慮 1 年有症率は 14/210(7.0%)であった。先行研究と一致し、精神疾患の既往、身体状態（何らかの身体活動制限あり）がリスク因子として示唆された。

研究 1-2. 医療安全情報収集事例データベースを用いたリスク因子分析

本研究の結果から、約半数のがん患者がうつ症状を示しており、精神的苦痛のスクリーニングと早期介入が重要であるにもかかわらず、専門的精神ケアの提供は限定的であることが示唆された。精神科的ケアを受けていた患者においても、その一部で自殺が発生しており、ケアの質や内容に関する検討が必要であることが示唆された。また、せん妄の可能性があった症例は 10%超にのぼり、高齢化社会においては重要なリスク因子と考えられた。がんの特徴としては、頭頸部がんの患者が本研究では相対的に多く、機能的・審美的な障害による苦痛が関連している可能性があることが示唆された。

研究 2 ハイリスク集団への予防介入法の開発

研究 2-1. 医療安全の視点に基づく病院内での自殺対策：全国実態調査

がん診療連携拠点病院では、回答者（医療者）の患者の自殺経験の有無により、院内での自殺対策への取り組みや自殺の課題に関する認識に差があることが明らかになり、また、院内自殺対策の現状調査となり、今後の院内自殺対策を進める上で基礎データとなった。

研究 2-2. 国内外論文や取り組みに関する資料収集およびレビュー

①ストレスの高い業種であるパイロットのピアサポートニーズと実績より、患者の自殺の経験などストレスを抱えた医療者への心理的なサポートとして、ピアサポート導入検討の可能性が示唆された。

②各施設で運用されている自殺対策マニュアル・自殺対策フローの記載内容について、各施設で共通している項目がある一方で、分量の多い施設を中心にその施設特有の項目があるという実態を得た。各施設で共通している項目には、一次予防（例：自殺リスク因子とアセスメントの方法）、二次予防（例：患者・遺族・他患者との対話方法の具体例）、三次予防（例：自殺発生時の現場の対応手順）の各内容が含まれており、マニュアルを作成する際には優先度の高い内容である。また、記載している施設は少ないが一施設当たりの段落数が多い項目（例：院内多職種連携と院外機関連携、気持ちのつらさのスクリーニングの方法）は、その施設の特徴的な項目であり、その施設が重要と考える内容と捉えることができる。マニュアル作成時の参考になると考えられる。

研究 2-3. 自殺予防マニュアルの開発

専門家とがん患者代表者の参画により、がん患者の自殺対策プログラムの基盤となる「がん医療における自殺対策の手引き」を作成し、公開した。また、成果普及のため、がん医療従事者向け公開シンポジウムを開催し、がん医療における自殺対策の手引きの利活用に向けたパネルディスカッションを行った。今後は成果の公開のみならずがん患者の自殺対策研修プログラムとして実装するなどして普及を図る。

研究 3 医療従事者に対する教育研修プログラム開発

本研究では、がん患者の自殺予防対策を推進するため、教育研修プログラムを開発し、その実施可能性を検討した。研修プログラム参加者 132 名全員が完遂したことから、開発したプログラムは実施可能と考えられる。また、研修の満足度および各目標の達成度も高いこと、自殺予防に対する医療従事者の態度に関する尺度（ASP-J）スコアが有意に低下したこと（自殺予防に対する否定的態度が好ましい方向に変化したこと）から、研修プログラムの有用性が示唆された。これらは、研修プログラムが医療従事者の認識や態度に働きかける効果を有することを支持する重要な知見である。

Ｅ．結論

研究１リスク因子を含む実態解明

研究 1-1. 頭頸部がん初療の患者における、面接評価による希死念慮 1 年有症率は 7.0%であった。リスク因子を含め、今回の結果を自殺予防プログラムの資料に反映させる。

研究 1-2. 本研究では、大規模言語モデルを用いて、入院中のがん患者の自殺に関する全国的な医療事故データを初めて系統的に分析した。精神的苦痛や情報共有不足、痛みのマネジメント不全などが自殺の背景にあることが明らかになったことから、これらに対する多角的な介入が今後の自殺予防策として求められる。

研究２ハイリスク集団への予防介入法の開発

研究 2-1.がん診療連携拠点病院では、2022 年 8 月の認定要件の改正により自殺対策フローの作成が進んだことや、回答者（医療者）の患者の自殺経験の有無により、院内での自殺対策への取り組みや自殺の課題に関する認識に差があることが明らかになった。

研究 2-2.①航空業界における Pilot Peer Support Program についてヒアリングを実施した。プログラムの中心的な役割を担うのは同じパイロット仲間であるピア（同僚）であること、会社とは独立した組織としてサポートすること、構成メンバーによるサポートと利用状況について情報共有し、意見交換を行った。

②がん診療連携拠点病院 14 施設から自殺対策マニュアル・フロー図を収集し解析した。本研究の結果は、マニュアル作成時の参考資料となった。

研究 2-3.「がん医療における自殺対策の手引き」およびパネルディスカッションの動画を含め、自殺対策プログラムとして公開し、プログラムの実装・普及に繋げたい。

研究 3 医療従事者に対する教育研修プログラム開発

本研究により、がん患者の自殺予防対策を目的とした医療従事者向け教育研修プログラムは、高い完遂率と満足度を示し、実施可能性および有用性が確認された。また、研修参加により自殺予防に対する否定的態度の有意な改善が認められた。自由記載等を含め、参加前後調査データの解析を進め、研修プログラムの課題を整理し、改良を予定している。2026 年度以降に、改良した研修プログラムの実装・普及を目指している。

Ｆ．研究発表

1. 論文発表

1) Kurisu K, Harashima S, Fujimori M, Akechi T, Yoshiuchi K, Uchitomi Y. Regional disparities in suicide among patients with cancer: A nationwide population-based study in Japan. Cancer Med. 2023;12(19):20052-20058. doi: 10.1002/cam4.6574.

2) Kurisu K, Fujimori M, Harashima S, Okamura M, Yoshiuchi K, Uchitomi Y. Exploratory Analysis of Nationwide Japanese Patient Safety Reports on Suicide and Suicide Attempts Among Inpatietnts With Cancer Using Large Language Models. Psychooncology. 2025;34(5):e70150. doi: 10.1002/pon.70150
3) Kurisu K, Fujimori M, Harashima S, Akechi T, Yoshiuchi K, Uchitomi Y. Suicide risk among individuals diagnosed cancer during versus before the COVID-19 pandemic: a nationwide population-based study. Jpn J Clin Oncol. 2025;55(10):1194-1197. doi: 10.1093/jjco/hyaf110
4) Eguchi K, Yoshimoto S, Fujimori M, Uchitomi Y. Nationwide retrospective survey on healthcare professionals' perceptions of suicide-related behaviors among people with head and neck cancer in Japan. Jpn J Clin Oncol. 2025;55(11):1259-1266. doi: 10.1093/jjco/hyaf125
5) Kumada F, Kurisu K, Okamura M, Akechi T, Matsumura Y, Uchitomi Y, Fujimori M. Suicide Prevention in Japanese Cancer Care Hospitals: A Topic Modeling Analysis of Manuals and Workflows. Front Psychiatry. 2026;17:1743690. doi: 10.3389/fpsyt.2026.1743690
6) 加藤 果林, 内富 庸介, 藤森 麻衣子, 杉田 尚子, 山本 崇, 松村 由美. 医療安全管理部門による自殺事故対策の取り組みについての全国アンケート調査. 医療の質･安全学会誌. 2025;20(4):399-405.

2. 学会発表

1) 松村由美,山本崇,加藤果林,杉田尚子,櫻田千早 (2023) 多職種で取り組む自殺対策システムの院内実装から院外組織との連携へ：10 年間の取り組み. 第 18 回医療の質・安全学会学術集会. 2023 年 11 月 25-26 日. 神戸.
2) Okamura M, Yoshimoto S, Uchitomi Y, Fujimori M. One-year prevalence and associated factors of suicidal ideation among patients with newly diagnosed head and neck cancer in Japan: a longitudinal study. 2025 Joint Meeting of the COSA ASM and IPOS Congress. 2025 年 11 月 11-14 日. Adelaide, Australia.

G．知的所有権の取得状況

1. 特許取得

特になし

2. 実用新案登録

特になし

3.その他

1) 公開シンポジウム「がん患者の自殺対策」2024 年 3 月 23 日オンライン開催
2) 公開シンポジウム「がん患者の自殺対策」2025 年 3 月 23 日オンライン開催
3) 公開シンポジウム「がん患者の自殺対策」2026 年 3 月 7 日オンライン開催

資料1

Received: 9 August 2023 | Revised: 6 September 2023 | Accepted: 12 September 2023

DOI: 10.1002/cam4.6574

BRIEF COMMUNICATION

Cancer Medicine Open Access WILEY

Regional disparities in suicide among patients with cancer: A nationwide population-based study in Japan

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Funding information
Health Labor Sciences Research Grant, Grant/Award Number: 21EA1008 and 23EA1028; Innovative Research Program on Suicide Countermeasures, Grant/Award Number: 2-3

Abstract

Background: This study aimed to explore prefecture-level differences in suicide risk among patients with cancer in Japan.

Methods: Data from the National Cancer Registry, which covers the entire Japanese population, were used. Patients diagnosed with cancer between 2016 and 2017 were included. The standardized mortality ratio (SMR) for suicide within 2 years after cancer diagnosis was quantified compared with the general population for each prefecture. Multivariate Poisson regression analysis was conducted to quantify the adjusted relative risk using Hokkaido as the reference.

Results: The analysis included 2,133,502 patients. The SMRs were high among patients with cancer residing in certain prefectures, such as the Hokuriku region (the middle and western parts of Japan's main island). These areas also exhibited a significant relative risk in the Poisson regression model.

Conclusion: The results demonstrated that patients with cancer in certain prefectures in Japan have a high suicide risk.

KEYWORDS

cancer, geographical inequality, prefecture, regional disparities, suicide

1 | INTRODUCTION

Patients with cancer are reportedly at an increased risk of committing suicide.[1–4] Inspired by these global reports, we previously conducted the first nationwide study in Japan to investigate the risk of suicide following cancer diagnosis compared with the general population using the National Cancer Registry (NCR).[5,6] These studies revealed that the suicide risk was higher in patients with cancer than in the general population,[5] and this result was also observed even 2 years after diagnosis,[6] with a particularly elevated risk among patients with advanced disease immediately after diagnosis.[6]

Japan, characterized by high suicide rates among developed nations,[7] has responded to this issue by enacting the Basic Act for Suicide Prevention.[8] In the general

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Japanese population, the variability in suicide rates across prefectures has received substantial attention, and widespread research has revealed many suicide-related factors.[9–17] In contrast, no nationwide research has examined such variations among patients with cancer in Japan. The Fourth Basic Plan to Promote Cancer Control Programs, proposed by the Ministry of Health, Labour and Welfare of Japan, necessitates tailored measures considering the unique circumstances of each local community.[18] Thus, investigating regional disparities is warranted to advance countermeasures for suicide prevention among patients with cancer.

Since our previous study,[6] more data have been accumulated in the NCR database, resulting in sufficient sample sizes to analyze regional variation. Therefore, this study aimed to investigate regional variations in the risk of suicide following cancer diagnosis using the NCR. We hypothesized that substantial differences in suicide risk would exist across prefectures among patients with cancer.

2 | MATERIALS AND METHODS

2.1 | Study participants and measurements

This study employed the NCR, which covers the entire Japanese population.[19] Records of patients diagnosed with cancer between January 1, 2016 and December 31, 2017 were extracted. Patients diagnosed through autopsy or death certificate, those whose addresses were outside Japan, and those with unknown age, sex, address or time of diagnosis were excluded.

The study outcome was suicide occurring during the 2 years following a cancer diagnosis, as categorized by the International Classification of Diseases, 10th Edition, codes X60–X84 and Y87.0. The NCR contains the patient addresses at the prefectural level, enabling us to quantify suicide rates within each prefecture.

2.2 | Prefecture-level measurements

To investigate the factors contributing to regional differences, items at the prefecture level were analyzed. We selected the factors potentially associated with suicide rates in patients with cancer that were obtainable, such as alcohol consumption sourced from the Comprehensive Survey of Living Conditions[20] and reimbursement points for palliative care from the NDB Open Data[21] (Table S1).

2.3 | Statistical analysis

We quantified the standardized mortality ratio (SMR) of suicide in patients with cancer compared with the general Japanese population. The SMR is the ratio of the observed suicide counts among patients with cancer to the expected count in the general population. The observed counts were obtained from the NCR. The expected count was calculated by multiplying the observation period for each patient by the suicide rate in the general Japanese population with the corresponding age, sex, observation year, and residential prefecture. The inclusion of residential prefectures enabled adjustment for regional differences in suicide rates among the general population. The suicide rates of the general population were derived from the Vital Statistics of Japan provided by the Ministry of Health, Labour and Welfare and Population Estimates. Patients registered with zero months of survival in the NCR were assigned a value of 0.5 months. Byar's method was used to estimate 95% confidence intervals (CIs) for the SMRs.

Multivariate Poisson regression analysis was performed to examine prefectural variations in suicide rates. To quantify the relative risks of the SMRs, we added an offset of the log of the expected number of deaths. We transformed the NCR dataset, which originally contained individual data with a binary outcome, into a clustered dataset, compiled according to the extent of tumors, primary tumor site, and prefecture. Each cluster included total suicide count as an outcome. The extent of tumors and certain primary tumor sites were reportedly significant predictors of suicide in patients with cancer.[6,22] Therefore, these variables were incorporated into the multivariate model.

The correlation coefficient was quantified between the SMR of suicide and prefecture-level variables.

All the analyses were conducted using R (version 4.3.1) with the package "epiR" (version 2.0.63) and "NipponMap" (version 0.2). Statistical significance was set at $p < 0.05$.

3 | RESULTS

3.1 | Patient characteristics

This study included 2,133,502 patients, comprising 1,074,738 and 1,058,764 patients diagnosed in 2016 and 2017, respectively. Table S2 presents the descriptive statistics. Within 2 years following diagnosis, 1307 suicides were observed, 658 of which were among patients diagnosed in 2016 and 649 among those diagnosed in 2017. The overall SMR was 1.86 (95% CI, 1.76–1.97), which was

nearly identical to that in our previous study that solely included patients diagnosed in 2016.[6]

3.2 | Prefectural profile of SMR

Figure 1A depicts the map of Japan indicating the SMR across each prefecture, while Table 1 (left) shows the values, along with the raw and expected suicide rates. These rates were calculated by dividing the observed and expected suicide counts by the number of patients with cancer in each prefecture (see Figure S1 for the distribution).

Prefectures with elevated SMRs were predominantly located in the Hokuriku region, consisting of Niigata, Toyama, Ishikawa, and Fukui prefectures. The SMR ranged from 1.15 (95% CI, 0.42–2.50) in Shimane prefecture to 2.73 (95% CI, 1.85–3.88) in Aomori prefecture.

3.3 | Prefectural profile of relative risks

Figure 1B and Table 1 (right) show the relative risks in the Poisson regression model, which was adjusted by the extent of tumors and primary tumor sites. Hokkaido was chosen as the reference merely because it is the first prefecture in the official numbering of prefectures by the Ministry of Health, Labour and Welfare; additionally, Hokkaido has a relatively large sample size both for suicide count and the entire population, making it a suitable reference.

The distribution was similar to that of the SMRs, ranging from 0.84 (95% CI, 0.36–1.96) in Shimane prefecture to 2.00 (95% CI, 1.27–3.16) in Aomori prefecture. Ten prefectures showed significantly elevated relative risks. The unadjusted relative risks were similar to the adjusted values (Table S3).

3.4 | Correlation between SMR and prefecture-level measurements

No items measured at the prefecture-level revealed a significant correlation with the suicide SMR. Further details are provided in Table S4.

4 | DISCUSSION

This is the first population-based study in Japan to reveal the prefectural profile of suicide risk among patients with cancer. Patients residing in certain prefectures had a significantly higher risk of suicide.

The Hokuriku region showed a high relative risk of suicide among patients with cancer. This geographical concentration may indicate the existence of social

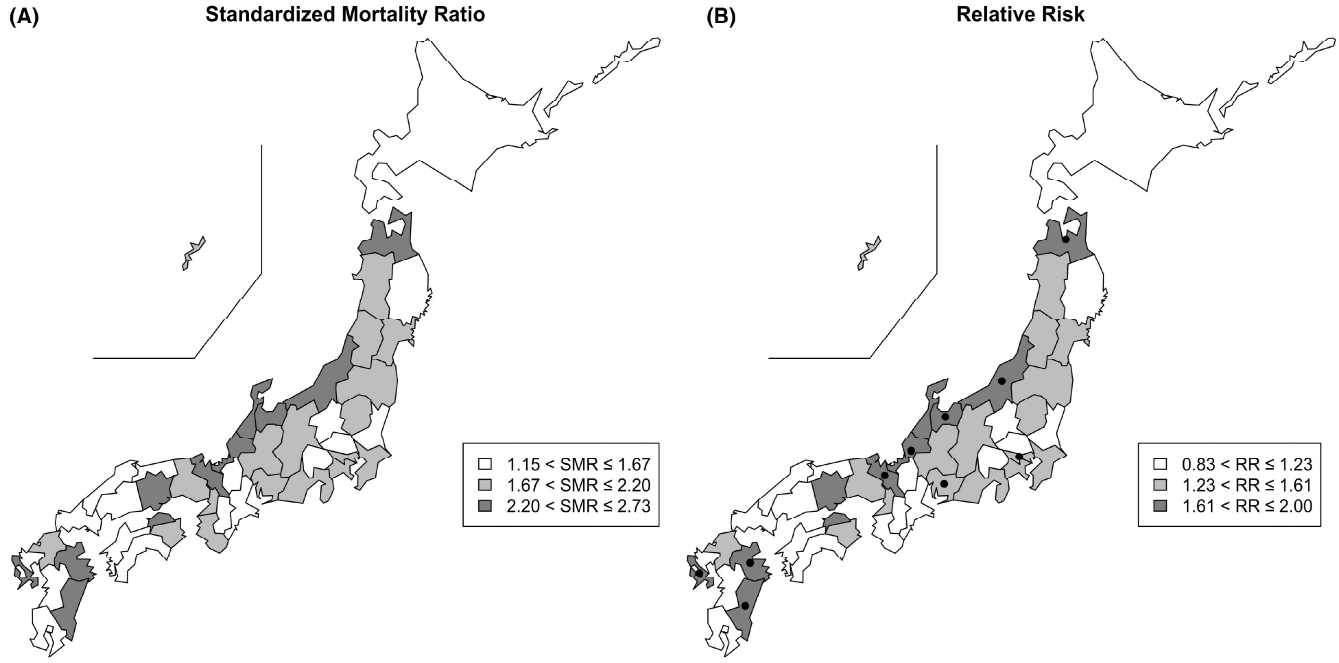


FIGURE 1 Maps of (A) standardized mortality ratio (SMR) for suicide and (B) relative risk (RR) in the Poisson regression model. The range from the maximum to the minimum value was divided into three intervals of approximately equal length, that is, 1.53 for (A) and 0.39 for (B), and prefectures within each numerical interval were color-coded for visualization. In map (B), dots indicate statistical significance when compared with Hokkaido as a reference.

TABLE 1 Standardized mortality ratio and adjusted relative risk of suicide within 2 years following cancer diagnosis.

Prefecture	SMR (95% CI) [Raw suicide rates/expected suicide rates]	Relative risk (95% CI)
Hokkaido	1.39 (1.02–1.86)* [4.40/3.16]	1.00 (Reference)
Aomori	2.73 (1.85–3.88)* [11.93/4.37]	2.00 (1.27–3.16)*
Iwate	1.29 (0.66–2.25) [5.36/4.17]	0.94 (0.50–1.78)
Miyagi	2.07 (1.33–3.08)* [6.16/2.97]	1.52 (0.93–2.50)
Akita	1.96 (1.19–3.02)* [9.12/4.66]	1.41 (0.84–2.39)
Yamagata	1.69 (0.92–2.83) [6.52/3.87]	1.26 (0.69–2.29)
Fukushima	1.89 (1.21–2.81)* [7.11/3.76]	1.41 (0.86–2.31)
Ibaraki	1.61 (1.04–2.38)* [5.28/3.28]	1.17 (0.72–1.91)
Tochigi	2.20 (1.39–3.30)* [7.40/3.37]	1.60 (0.97–2.64)
Gunma	1.40 (0.80–2.27) [4.96/3.55]	1.03 (0.58–1.81)
Saitama	1.64 (1.25–2.12)* [5.24/3.20]	1.20 (0.81–1.76)
Chiba	1.92 (1.47–2.46)* [6.15/3.20]	1.41 (0.96–2.06)
Tokyo	2.15 (1.80–2.56)* [6.58/3.06]	1.58 (1.13–2.21)*
Kanagawa	1.90 (1.51–2.37)* [5.65/2.97]	1.40 (0.98–2.01)
Niigata	2.37 (1.73–3.17)* [9.91/4.18]	1.73 (1.15–2.61)*
Toyama	2.59 (1.53–4.09)* [8.94/3.45]	1.90 (1.10–3.28)*
Ishikawa	2.39 (1.34–3.94)* [7.48/3.13]	1.76 (0.98–3.15)
Fukui	2.63 (1.31–4.70)* [8.04/3.06]	1.93 (1.00–3.73)*
Yamanashi	1.44 (0.58–2.97) [5.00/3.47]	1.06 (0.48–2.35)
Nagano	1.92 (1.17–2.97)* [5.44/2.83]	1.44 (0.85–2.44)
Gifu	1.92 (1.22–2.88)* [6.74/3.51]	1.40 (0.85–2.31)
Shizuoka	1.79 (1.23–2.51)* [5.49/3.07]	1.30 (0.83–2.03)
Aichi	2.06 (1.59–2.62)* [6.04/2.94]	1.49 (1.02–2.18)*
Mie	1.62 (0.93–2.63) [5.23/3.23]	1.18 (0.67–2.09)
Shiga	1.36 (0.62–2.59) [3.93/2.88]	0.99 (0.49–2.03)
Kyoto	2.39 (1.61–3.41)* [6.41/2.68]	1.76 (1.11–2.78)*
Osaka	1.77 (1.44–2.17)* [6.35/3.58]	1.29 (0.91–1.83)
Hyogo	1.71 (1.29–2.22)* [5.68/3.33]	1.24 (0.84–1.84)
Nara	1.60 (0.82–2.79) [4.86/3.05]	1.20 (0.63–2.26)
Wakayama	1.68 (0.87–2.93) [6.55/3.91]	1.21 (0.64–2.28)
Tottori	1.26 (0.34–3.22) [3.64/2.89]	0.92 (0.33–2.55)
Shimane	1.15 (0.42–2.50) [4.21/3.67]	0.84 (0.36–1.96)
Okayama	2.28 (1.41–3.48)* [6.37/2.79]	1.67 (1.00–2.80)
Hiroshima	1.59 (1.05–2.32)* [5.31/3.33]	1.18 (0.74–1.91)
Yamaguchi	1.36 (0.70–2.37) [4.53/3.34]	1.00 (0.53–1.88)
Tokushima	1.74 (0.70–3.58) [5.23/3.02]	1.26 (0.57–2.79)
Kagawa	2.40 (1.31–4.03)* [7.57/3.15]	1.79 (0.98–3.25)
Ehime	1.29 (0.67–2.26) [4.50/3.48]	0.95 (0.50–1.79)
Kochi	1.21 (0.44–2.63) [4.20/3.47]	0.88 (0.38–2.06)
Fukuoka	1.88 (1.42–2.46)* [6.14/3.26]	1.36 (0.92–2.02)
Saga	1.48 (0.59–3.05) [4.58/3.10]	1.07 (0.48–2.37)
Nagasaki	2.36 (1.46–3.61)* [7.42/3.14]	1.75 (1.04–2.93)*
Kumamoto	1.60 (0.91–2.59) [5.04/3.15]	1.15 (0.65–2.03)
Oita	2.61 (1.57–4.08)* [9.22/3.53]	1.91 (1.12–3.27)*

(Continues)

TABLE 1 (Continued)

Prefecture	SMR (95% CI) [Raw suicide rates/expected suicide rates]	Relative risk (95% CI)
Miyazaki	2.61 (1.57–4.08)* [10.19/3.90]	1.89 (1.11–3.23)*
Kagoshima	1.28 (0.70–2.15) [4.92/3.83]	0.94 (0.51–1.70)
Okinawa	2.10 (1.17–3.46)* [8.13/3.88]	1.54 (0.86–2.76)

Note: Raw and expected suicide rates are shown as incidences per 10,000 patients. Relative risk was quantified using the Poisson regression model, adjusting for the extent of tumors and primary tumor sites.

Abbreviations: CI, confidence interval; SMR, standardized mortality ratio.

*$p < 0.05$.

stigma toward cancer or cultural influences in these regions. Previous studies have investigated the stigma toward cancer[23] and validated a tool to quantify it.[24] Moreover, cultural influences on suicide are pertinent issues in Japan.[25] Additional investigations are needed to reveal the potential effects of stigma and cultural factors in these regions.

The SMR and relative risk warrant careful interpretation as they were based on both the suicide rates of patients with cancer and those of the general population. For instance, Aomori prefecture demonstrated high suicide rates among both patients with cancer and the general population. Okayama prefecture also showed a high SMR; however, its suicide rates were relatively low among both groups. In areas such as Aomori, suicide prevention strategies for both groups may be required. Conversely, Iwate prefecture, which showed a low SMR due to a high suicide rate in the general population, may require countermeasures primarily targeted at the general population.

A study using data from the United States identified several states with high suicide risk among patients with cancer, which may be attributed to certain ethnic communities with elevated suicide risk within these states.[26] In contrast, Japan is a relatively monoethnic nation, making such an explanation inapplicable. Another investigation involving 635 counties in the United States revealed significant associations between suicide risk among patients with cancer and county-level income and urban/rural status.[27] However, we were unable to detect an association between suicide and prefecture-level income or categorize the regions as urban or rural. Further detailed investigations may enable the detection of similar associations in Japan.

Although we evaluated numerous factors at the prefecture level, their correlations with the suicide SMRs were small and insignificant. This result appears counterintuitive given the existing evidence, such as the association between alcohol consumption and suicide[28] and the role of palliative care in mitigating psychological symptoms.[29] This result may be attributable to the relationship between the suicide SMRs and prefectural-level factors being too distant to detect potential associations. Nevertheless, cautious interpretation is required due to the potential of ecological fallacy, as the findings of this study may not represent individual-level relationships.

This study had several limitations. First, although we examined regional variations at the prefecture level, different trends could emerge between urban and rural areas within the same prefecture. Second, we were unable to explore regional risk variations stratified by several factors such as age and sex. Third, although we examined the association between suicide and prefecture-level factors, we were unable to obtain many potential predictors, such as lithium levels in tap water.[30] Finally, the number of suicides observed in each prefecture was small.

In conclusion, this nationwide population-based study found that patients with cancer living in certain prefectures, such as the Hokuriku region, had a higher risk of suicide than those living in other prefectures. This novel finding suggests that these areas should advance region-specific countermeasures for the mental health of patients with cancer to prevent suicide.

AUTHOR CONTRIBUTIONS

Ken Kurisu: Conceptualization (lead); data curation (lead); formal analysis (lead); investigation (lead); methodology (lead); software (lead); validation (lead); visualization (lead); writing – original draft (lead). **Saki Harashima:** Conceptualization (supporting); investigation (supporting); resources (lead); writing – review and editing (equal). **Maiko Fujimori:** Conceptualization (supporting); funding acquisition (lead); resources (supporting); supervision (lead); writing – review and editing (equal). **Tatsuo Akechi:** Conceptualization (supporting); writing – review and editing (equal). **Kazuhiro Yoshiuchi:** Conceptualization (supporting); writing – review and editing (equal). **Yosuke Uchitomi:** Conceptualization (supporting); writing – review and editing (equal).

ACKNOWLEDGMENTS

This study was funded by the Health Labor Sciences Research Grant (grant numbers 21EA1008 and 23EA1028) and the Innovative Research Program on Suicide Countermeasures (study number 2-3). We obtained data from the National Cancer Registry as per the Act on Promotion of Cancer Registries, independently analyzed the data, and presented the results in this article.

CONFLICT OF INTEREST STATEMENT

The authors declare no potential conflicts of interest.

DATA AVAILABILITY STATEMENT

The dataset analyzed in this study, obtained in 2022, was used with permission from the National Cancer Registry Information Desk of the National Cancer Center. This dataset cannot be shared; however, anyone can access it by sending an application to the National Cancer Registry Information Desk along with their study protocol.

ETHICS STATEMENT

The study was approved by the institutional review board of the National Cancer Center Japan (approval number: 2018-233). The requirement for informed consent was waived owing to the use of anonymous data.

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REFERENCES

1. Fang F, Fall K, Mittleman MA, et al. Suicide and cardiovascular death after a cancer diagnosis. *N Engl J Med*. 2012;366(14):1310-1318.
2. Henson KE, Brock R, Charnock J, Wickramasinghe B, Will O, Pitman A. Risk of suicide after cancer diagnosis in England. *JAMA Psychiatry*. 2019;76(1):51-60.
3. Zaorsky NG, Zhang Y, Tuanquin L, Bluethmann SM, Park HS, Chinchilli VM. Suicide among Cancer Patients. *Nat Commun*. 2019;10(1):207.
4. Saad AM, Gad MM, Al-Husseini MJ, et al. Suicidal death within a year of a cancer diagnosis: a population-based study. *Cancer*. 2019;125(6):972-979.
5. Harashima S, Fujimori M, Akechi T, et al. Death by suicide, other externally caused injuries and cardiovascular diseases within 6 months of cancer diagnosis (J-SUPPORT 1902). *Jpn J Clin Oncol*. 2021;51(5):744-752.
6. Kurisu K, Fujimori M, Harashima S, et al. Suicide, other externally caused injuries, and cardiovascular disease within 2 years after cancer diagnosis: a nationwide population-based study in Japan (J-SUPPORT 1902). *Cancer Med*. 2023;12(3):3442-3451.
7. World Health Organization. 2021. *Suicide worldwide in 2019: global health estimates*. World Health Organization. Accessed July 9, 2023. https://www.who.int/publications/i/item/9789240026643
8. Nakanishi M, Endo K, Ando S. The basic act for suicide prevention: effects on longitudinal trend in deliberate self-harm with reference to national suicide data for 1996–2014. *Int J Environ Res Public Health*. 2017;14(1):104.
9. Koda M, Kondo K, Takahashi S, et al. Spatial statistical analysis of regional disparities in suicide among policy units in Japan: using the Bayesian hierarchical model. *PLoS Glob Public Health*. 2022;2(8):e0000271.
10. Shiroyama T, Fukuyama K, Okada M. Effects of financial expenditure of prefectures/municipalities on regional suicide mortality in Japan. *Int J Environ Res Public Health*. 2021;18(16):8639.
11. Sim K, Kim Y, Hashizume M, et al. Nonlinear temperature-suicide association in Japan from 1972 to 2015: its heterogeneity and the role of climate, demographic, and socioeconomic factors. *Environ Int*. 2020;142:105829.
12. Suzuki E, Kashima S, Kawachi I, Subramanian SV. Prefecture-level economic conditions and risk of suicide in Japan: a repeated cross-sectional analysis 1975–2010. *Eur J Public Health*. 2014;24(6):949-954.
13. Takeuchi A, Sakano N, Miyatake N. Combined effects of working hours, income, and leisure time on suicide in all 47 prefectures of Japan. *Ind Health*. 2014;52(2):137-140.
14. Suzuki E, Kashima S, Kawachi I, Subramanian SV. Social and geographical inequalities in suicide in Japan from 1975 through 2005: a census-based longitudinal analysis. *PloS One*. 2013;8(5):e63443.
15. Matsubayashi T, Sawada Y, Ueda M. Natural disasters and suicide: evidence from Japan. *Soc Sci Med*. 2013;82:126-133.
16. Baller RD, Shin DJ, Richardson KK. An extension and test of Sutherland's concept of differential social organization: the geographic clustering of Japanese suicide and homicide rates. *Suicide Life Threat Behav*. 2005;35(3):343-355.
17. Otsu A, Araki S, Sakai R, Yokoyama K, Voorhees AS. Effects of urbanization, economic development, and migration of workers on suicide mortality in Japan. *Soc Sci Med*. 2004;58(6):1137-1146.
18. Ministry of Health, Labour and Welfare. The basic plan to promote cancer control programs. 2023 Accessed June 26, 2023. https://www.mhlw.go.jp/stf/seisakunitsuite/bunya/0000183313.html
19. Matsuda T, Sobue T. Recent trends in population-based cancer registries in Japan: the act on promotion of cancer registries and drastic changes in the historical registry. *Int J Clin Oncol*. 2015;20(1):11-20.
20. Ministry of Health, Labour and Welfare. Comprehensive Survey of Living Condition. Available from https://www.mhlw.go.jp/toukei/list/20-21.html
21. Ministry of Health, Labour and Welfare. NDB Open Data. 2023. Accessed June 8, 2023. https://www.mhlw.go.jp/stf/seisakunitsuite/bunya/0000177182.html
22. Heinrich M, Hofmann L, Baurecht H, et al. Suicide risk and mortality among patients with cancer. *Nat Med*. 2022;28(4):852-859.
23. Fujisawa D, Umezawa S, Fujimori M, Miyashita M. Prevalence and associated factors of perceived cancer-related stigma in Japanese cancer survivors. *Jpn J Clin Oncol*. 2020;50(11):1325-1329.
24. Takeuchi E, Fujisawa D, Miyawaki R, et al. Cross-cultural validation of the cancer stigma scale in the general Japanese population. *Palliat Support Care*. 2021;19(1):75-81.

25. Russell R, Metraux D, Tohen M. Cultural influences on suicide in Japan. *Psychiatry Clin Neurosci*. 2017;71(1):2-5.
26. Hu X, Ma J, Jemal A, et al. Suicide risk among individuals diagnosed with cancer in the US, 2000-2016. *JAMA Netw Open*. 2023;6(1):e2251863.
27. Suk R, Hong YR, Wasserman RM, et al. Analysis of suicide after cancer diagnosis by US county-level income and rural vs urban designation, 2000–2016. *JAMA Netw Open*. 2021;4(10):e2129913.
28. Akechi T, Iwasaki M, Uchitomi Y, Tsugane S. Alcohol consumption and suicide among middle-aged men in Japan. *Br J Psychiatry*. 2006;188:231-236.
29. Haun MW, Estel S, Rucker G, et al. Early palliative care for adults with advanced cancer. *Cochrane Database Syst Rev*. 2017;6(6):CD011129.
30. Kugimiya T, Ishii N, Kohno K, et al. Lithium in drinking water and suicide prevention: the largest nationwide epidemiological study from Japan. *Bipolar Disord*. 2021;23(1):33-40.

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

How to cite this article: Kurisu K, Harashima S, Fujimori M, Akechi T, Yoshiuchi K, Uchitomi Y. Regional disparities in suicide among patients with cancer: A nationwide population-based study in Japan. *Cancer Med*. 2023;12:20052-20058. doi:10.1002/cam4.6574

資料2

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ORIGINAL ARTICLE OPEN ACCESS

Exploratory Analysis of Nationwide Japanese Patient Safety Reports on Suicide and Suicide Attempts Among Inpatients With Cancer Using Large Language Models

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Received: 15 October 2024 | **Revised:** 8 March 2025 | **Accepted:** 4 April 2025

Funding: This study was funded by the Health Labor Sciences Research Grant (Grant No. 23EA1028) and the Innovative Research Program on Suicide Countermeasures (study number 2-3).

Keywords: BERTopic | cancer | GPT-4o | large language models | oncology | open AI | patient safety | psycho-oncology | suicide

ABSTRACT

Objective: Patients with cancer have a high risk of suicide. However, evidence-based preventive measures remain unclear. This study aimed to investigate suicide prevention strategies for hospitalized patients with cancer by analyzing nationwide patient safety reports using large language models.

Methods: Data were drawn from patient safety reports collected by the Japan Council for Quality Health Care from 620 hospitals. Reports involving suicides or attempts among patients with cancer were analyzed. BERTopic was used to identify topics in free-text reports, and conditions such as depressive symptoms were labeled using the OpenAI API. Logistic regression was conducted to analyze the relationship between pre-incident conditions and proposed countermeasures.

Results: Among 213 reports, key topics included mental and physical distress, symptom deterioration, nursing records, and post-incident documentation. Over 40% of patients exhibited depressive symptoms, and 30% expressed suicidal ideation. However, fewer received specialized mental care. Notably, over 10% appeared to experience delirium, potentially contributing to the incident. The most frequently suggested countermeasures were mental distress treatment, enhanced medical staff communication, and improved information sharing with families. Logistic regression revealed several associations between proposed countermeasures and pre-incident conditions, including mental health intervention for patients without prior treatment, physical interventions for those in severe pain, and improved staff communication for those with depressive symptoms.

Conclusions: This study, based on nationwide patient safety reports, highlights critical suicide prevention strategies for hospitalized patients with cancer, many of which align with previously proposed strategies. Additionally, the study provides new insights, such as the need for preventive measures to manage delirium.

1 | Background

Numerous studies have shown that patients with cancer are at a significantly higher risk of suicide compared to the general population [1]. This increased risk has also been documented in Japan through the National Cancer Registry, the country's only comprehensive national cancer database [2]. Furthermore, regional variations in suicide risk have been observed [3]. Data from the Tokyo Medical Examiner's Office, which covers more than 10% of Japan's population, indicate that 4.2% of suicides

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occur within hospitals [4, 5], where many cases could be preventable.

Designated Cancer Care Hospitals in Japan are required to implement suicide prevention strategies [6], and guidelines have been developed for this purpose [5]. However, effective interventions to prevent suicide among patients with cancer remain unclear [7]. Although inpatient suicides are relatively rare, they cause substantial psychological distress for both medical staff and the patient's families [8], highlighting the need for effective preventive measures.

A systematic review identified cancer as the predominant physical disease associated with suicides in medical settings [9]. A previous study in Japan found that patients with cancer accounted for approximately half of all suicides in medical settings, based on hospital questionnaires [10]. The study also revealed the prevalence of suicidal ideation and psychiatric comorbidities before the incidents [10]. Another study, which analyzed patient safety reports of suicide among patients with cancer, identified root causes such as inadequate psychosocial assessment and poor communication among healthcare teams [11]. However, these reports provided limited information regarding pre-incident conditions and preventive countermeasures.

The Japan Council for Quality Health Care publicly shares patient safety reports submitted by hospitals across Japan on its website [12]. These reports contain details of incidents and suggestions from medical staff on potential countermeasures in the form of unstructured free-text narratives, which complicate data analysis. However, the recent advancement of large language models, such as ChatGPT, has enabled efficient and accurate processing of unstructured texts. These models have demonstrated accuracy comparable to human performance in extracting medical information from radiology reports and pharmaceutical documents, as well as in diagnosing mental disorders [13–20].

This study aimed to investigate the circumstances surrounding suicides among hospitalized patients with cancer, as well as those with other physical illnesses, and to identify effective preventive countermeasures by analyzing nationwide Japanese patient safety reports using large language models.

2 | Methods

2.1 | Ethics Considerations

This study used anonymized data that is freely available online. Therefore, the research ethics guidelines are not applicable to this study, and informed consent was not required.

2.2 | Data Source

This study used medical incident reports made publicly available on the website of the Japan Council for Quality Health Care [12]. These reports included: (1) mandatory submissions as per the Regulations for Enforcement of the Medical Practitioners Act from university hospitals, the National Research and Development Agency, the National Hospital Organization, and advanced treatment hospitals across Japan (122 institutions as of December 31, 2023), and (2) voluntary submissions from other medical institutions (498 institutions as of December 31, 2023).

We extracted reports submitted between 2010 and 2023 that involved suicides or suicide attempts by patients with cancer. Reports categorized under "patient suicide" or "suicide attempt" were initially selected and subsequently filtered using relevant Japanese keywords such as "cancer," "tumor," "malignant," "leukemia," and "myelodysplastic syndrome." Irrelevant reports were excluded following a manual review by the authors.

For comparison, we also reviewed reports of suicides or suicide attempts by patients with physical illnesses other than cancer. We first extracted reports categorized under "patient suicide" or "suicide attempt." Reports originating from psychiatry or emergency departments were then excluded, as many incidents in emergency departments involved patients who had attempted suicide outside the hospital before admission. Finally, cancer-related reports were excluded from the remaining data.

2.3 | Topic Modeling

To provide an overview of the reports, we conducted topic modeling using BERTopic, a model designed for generating topics from text data, based on the Bidirectional Encoder Representations from Transformers (BERT), a transformer-based large language model [21]. BERTopic has been widely applied in recent medical studies, including those on suicide [22].

We analyzed specific columns from the CSV files containing accident details (translated from Japanese as "Purpose of medical treatment," "Incident details," and "Overview of contributing factors"). Free-text entries from these columns were split into sentences using punctuation as delimiters, and non-informative sentences (e.g., "none") were removed. BERTopic was then applied to the remaining sentences.

Similarly, we analyzed another column (translated from Japanese as "Improvement measures") that contained countermeasures suggested by the medical staff. Text from this column was also split into sentences and processed using BERTopic.

To increase interpretability, we adjusted the number of topics using K-means clustering. Two authors (K.K. and Y.U.) reviewed the sentences in each cluster, refined the number of clusters, and assigned topic names based on representative sentences and keywords.

These analyses were conducted using Python 3.11.5 and BERTopic 0.15.0, employing a pre-trained Japanese model (paraphrase-multilingual-MiniLM-L12-v2).

2.4 | OpenAI API Labeling

Research has demonstrated that large language models, such as ChatGPT, can accurately extract medical information from free-

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text data, often achieving human-level accuracy while reducing errors [13–20]. For this study, the GPT-4o model from the OpenAI API was used to label the content of the reports [23]. For instance, the following prompt was used to determine whether a patient exhibited signs of depressive symptoms before attempting or committing suicide:

> The following sentences describe an inpatient who committed or attempted suicide. Based on these sentences, please indicate whether this patient presented with depressive symptoms BEFORE committing or attempting suicide. Please answer only with "Yes" (when they presented with depressive symptoms in all likelihood) or "No" (when they did not present with it, presented with it only after committing or attempting suicide, or it cannot be determined). The sentences are [input from each report].

Text from relevant columns (i.e., "Purpose of medical treatment," "Incident details," and "Overview of contributing factors"), as well as the patient's primary diagnosis, were included in the prompt to determine the label for patients' pre-incident characteristics. In addition, text from the column "Improvement measures" was included in the prompt to determine the proposed action plans. We tested the prompts on several reports and adjusted them for accurate labeling. Table S1 provides the full list of prompts used. The labels were determined based on the generated topics (representative sentences and keywords), relevant literature [9–11], and a Japanese book summarizing inpatient suicide prevention strategies [24].

As a representative evaluation of the prompt labels, we randomly selected 20 cases, and a supervising psychiatrist (last author, Y.U.) assessed the presence or absence of depressive symptoms in these texts. We then calculated the crude agreement rate and the kappa coefficient for these assessments.

These labeling analyses were performed using Python 3.11.5 and OpenAI 1.2.4, with the "gpt-4o" model from the OpenAI API. The role was set to "user," and the temperature parameter was fixed at 0.0 to ensure the selection of the most probable response. Labeling was conducted between July 26 and September 10, 2024.

2.5 | Association Between Patients' Characteristics and Action Plans

To examine the relationship between patients' pre-incident characteristics and the proposed countermeasures, we conducted multivariate logistic regression analyses. Several characteristics before the incidents were selected as explanatory variables based on discussions among the authors. The outcome variables were the labels of the proposed countermeasures. Logistic regression models were developed for each outcome.

3 | Results

3.1 | Overview of the Reports

A total of 213 reports involving suicides ($N = 134$) and suicide attempts ($N = 79$) among patients with cancer were analyzed, encompassing 3306 sentences describing conditions both before and after the incidents. Table 1 outlines the identified topics, with the number of clusters fixed at 10. These topics include mental and physical distress, symptom deterioration, suicide ideation, nursing records, and post-incident documentation.

Table 2 presents topics generated from 568 sentences related to prevention countermeasures proposed by the involved medical staff, where the number of clusters was fixed at 4. The topics include information sharing with other professionals and families, measures regarding dangerous items and facilities, strategies for addressing mental distress, and efforts to reinforce suicide prevention awareness.

3.2 | Demographics and Labels of the Reports

Table 3 summarizes the demographic and medical information. Table 4 presents all the conditions before the incident and the preventive countermeasures proposed by the medical staff, which were labeled using the OpenAI API with the prompt listed in Table S1. A crude agreement rate of 0.85 and a kappa coefficient of 0.69 were observed between the large language model-generated labels and the supervising psychiatrist's assessments for depressive symptoms in 20 randomly selected cases, indicating "good" agreement [25]. For comparison, there were 214 reports containing patients with physical diseases other than cancer.

Notably, about 50% of patients in both the cancer and non-cancer groups exhibited depressive symptoms, and more than 30% had expressed suicidal ideation before the incident. In addition, approximately half of the patients exhibited anxiety, and around 7% expressed a desire for euthanasia in both groups. However, less than 30% of patients in both groups received specialized mental or psychological care. Additionally, more than 10% of patients in each group appeared to experience delirium before the incident. Among the patients with cancer, approximately one-fourth experienced uncontrolled pain. Only 13.6% of cases involved specialized palliative care teams, and among these, about half ($N = 15$) continued to experience uncontrolled pain.

The most frequently proposed preventive measure in both groups was the assessment and treatment of mental distress. This was followed by recommendations for improving communication among medical staff and information sharing with the patient's families.

Overall, there were no notable differences between the cancer and non-cancer groups, although the non-cancer group tended to include slightly younger patients. Specialized palliative care interventions were applied in 13.6% of cancer cases but in only

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TABLE 1 | Overview of the reports.

No.	No. of sentences	No. of reports (%)	Topic name	Representative sentence (translated from Japanese into English)
0	476	175 (82.2%)	Mental and physical distress	The patient, undergoing chemotherapy for ovarian cancer with peritoneal dissemination and bone metastasis and awaiting surgery, had expressed her feelings less frequently since her first visit to our hospital. She often said things like, "I'm sorry" or "I hope I'm not inconveniencing others by being hospitalized"
1	391	161 (75.6%)	Symptom deterioration and medication	7:20—The patient's cancer-related pain intensified, and medication was administered as prescribed
2	382	162 (76.1%)	Cancer treatment	The patient had undergone a right thoracotomy and laparotomy for a near-total esophagectomy, aiming for a curative outcome, as there was a possibility of metastasis from stage I esophageal cancer (T1, N0, M0)
3	361	133 (62.4%)	Various nursing records	21:00—The nurse visited the patient's room to turn off the lights
4	358	173 (81.2%)	Suicidal ideation	The previous day, the patient had said, "I want to die," prompting her second daughter to visit during the night
5	311	132 (62.0%)	Accident witnessing	10:05—The nurse visited the room and found the patient was cutting the abdomen with a fruit knife (blade length 9 cm)
6	308	139 (65.3%)	Appearance during hospitalization	14:40—The patient requested assistance in cleaning up after urinating, and the staff member attended to the request
7	277	120 (56.3%)	Resuscitation	Resuscitation efforts, including endotracheal intubation and adrenaline administration, were performed, but the patient's heartbeat did not resume
8	227	91 (42.7%)	Wound treatment	At 2:15 a.m., the physician arrived on the ward and performed suturing after sedation (four stitches). The cut was approximately 5 cm long, reaching the muscle layer partially, but most of the incision was superficial, about 1 mm deep, to the subcutaneous layer
9	215	103 (48.4%)	Post-accident communication with family and police	The physician and police explained the incident to the family
Total	3306	213		

0.9% (2 cases) of the non-cancer group. A multivariate logistic regression analysis classifying patients as cancer or non-cancer, using key pre-incident labels as variables, showed that palliative care intervention and uncontrolled pain were significantly associated with cancer (see Table S2 for details), while no other significant differences were found between the two groups.

Table S3 compares the findings of this study with data from the National Cancer Registry [2], which includes all Japanese patients with cancer who died by suicide, both inside and outside hospitals, within 2 years of diagnosis. Notably, this study had a 4.2-fold higher proportion of patients with head and neck cancer. Table S4 presents pre-incident conditions and proposed countermeasures for patients with head and neck cancer, showing no substantial differences from the overall results.

3.3 | Association Between Patients' Characteristics and Action Plans

Figure 1 presents odds ratios (ORs) with p-values of < 0.01 for each multivariate logistic regression model. Table S5 provides the ORs and their confidence intervals (CIs) for each model. Key findings include: (1) Assessing and treating mental distress was less likely to be proposed for patients already receiving mental care (OR, 0.41; 95% CI, 0.25–0.65; $p < 0.001$). Conversely, reports for patients without prior care were more likely to include such recommendations. (2) For patients who had received mental care before the incident, staff were more likely to propose measures addressing dangerous items (OR, 2.11; 95% CI, 1.19–3.70; $p = 0.009$). (3) In cases where patients experienced poorly controlled pain, staff were more likely to suggest evaluating and treating physical distress (OR, 7.89; 95% CI,

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TABLE 2 | Overview of the reports on prevention measures proposed by medical staff.

No.	No. of sentences	No. of reports (%)	Topic name	Representative sentence (translated from Japanese into English)
0	168	106 (49.8%)	Information sharing with other professionals and family	Doctors, nurses, the palliative care team, and the patient's family will work closely together to share information and prevent accidents
1	155	102 (47.9%)	Measures regarding dangerous items and facilities	Although patients with delirium were previously restricted from possessing dangerous items after family consultation, bringing in such items will now be strictly prohibited. At admission orientation, staff will check whether items like scissors have been brought in
2	131	100 (46.9%)	Measures for mental distress	To support the mental health of patients with cancer, ward nurses will actively consult with certified nurses, specialized nurses, and the palliative care team
3	114	86 (40.4%)	Reinforcement of suicide prevention awareness	To raise staff awareness about suicide prevention, the hospital will re-announce guidelines, including recommendations for prevention, post-event response, policies, and the suicide prevention manual
Total	568	213		

3.71–17.24; $p < 0.001$). (4) Incidents involving patients who presented with depressive symptoms were more likely to include suggestions for improving communication among medical staff (OR, 2.02; 95% CI, 1.28–3.20; $p = 0.003$). Notably, the variable indicating cancer or other physical diseases was not significantly associated with any proposed countermeasures.

4 | Discussion

This study comprehensively analyzed nationwide Japanese medical incident reports of suicides and suicide attempts among hospitalized patients with cancer, as well as those with other physical diseases, in major hospitals throughout Japan using large language models. This approach enabled a broader investigation of patients' mental and physical conditions, as well as incident-based countermeasures, which have only been partially examined in previous research. While exploratory, the analysis provided novel insights into the association between patients' pre-incident conditions and the proposed countermeasures, an area previously unexamined.

The data analyzed in the present study involved a 4.2-fold higher proportion of head and neck cancer compared to that in a previous study using the National Cancer Registry [2], which included all suicides among patients with cancer in Japan, with 70% of these occurring at home. Patients with head and neck cancer may face an elevated risk of in-hospital suicide, possibly related to distress from the side effects of treatment, including esthetic and functional impairments, difficulty swallowing, and ototoxicity [26]. This study found no substantial differences in conditions such as depressive symptoms or the expression of suicidal ideation between patients with head and neck cancer and those with other types of cancers. The discrepancy in cancer-type proportions may be related to differences in the observation periods between the current study and the study using the National Cancer Registry, which focused on suicides within 2 years of diagnosis [2]. Aside from the proportion of cancer type, no notable differences were observed between the present study and the National Cancer Registry-based research. However, the National Cancer Registry lacks sufficient data on factors potentially related to suicide, including medical treatment, hospital environment, and psychological support, making comparisons in these aspects difficult. Further research is needed to assess the generalizability of the present findings and the differences between suicide in inpatients and the general cancer population.

Approximately 50% of patients with cancer in this study exhibited depressive symptoms pre-incident. Although determining a diagnosis of depression was challenging in the present study, this proportion of depressive symptoms is much higher than the general prevalence of depression among patients with cancer [27]. This percentage may even be an underestimation due to the frequent underdiagnosis of depression in patients with cancer [28]. Additionally, over 30% of patients expressed suicidal ideation. Furthermore, findings suggesting psychological issues, such as anxiety and expression of desire for euthanasia, had been identified before the incident. However, only 24% received specialist mental care. This limited access to psychiatric consultation in medical settings is consistent with previous findings from Japan [10]. Logistic regression revealed that recommendations for assessing and treating mental distress were more frequently proposed for patients who had not previously received mental care. This suggests that the stigma surrounding psychiatric consultation may affect both patients and healthcare providers [29]. Further research should explore barriers to accessing psychiatry consultations in medical settings.

Notably, 20%–30% of patients who had received psychiatric care still experienced suicide-related incidents. Future studies should

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TABLE 3 | Descriptive statistics of reports.

	Cancer ($N = 213$)	Non-cancer ($N = 214$)
Age, *N* (%)		
10–19	0 (0.0)	5 (2.3)
20–29	1 (0.5)	12 (5.6)
30–39	5 (2.3)	18 (8.4)
40–49	17 (8.0)	18 (8.4)
50–59	31 (14.6)	22 (10.3)
60–69	53 (24.9)	33 (15.4)
70–79	79 (37.1)	55 (25.7)
80–89	26 (12.2)	46 (21.5)
90–99	1 (0.5)	5 (2.3)
Sex, *N* (%)		
Male	159 (74.6)	130 (60.7)
Female	54 (25.4)	84 (39.3)
Days of occurrence, *N* (%)		
Monday	33 (15.5)	21 (9.8)
Tuesday	24 (11.3)	27 (12.6)
Wednesday	29 (13.6)	25 (11.7)
Thursday	27 (12.7)	28 (13.1)
Friday	31 (14.6)	35 (16.4)
Saturday	29 (13.6)	42 (19.6)
Sunday	40 (18.8)	36 (16.8)
Time of occurrence, *N* (%)		
0:00–1:59	19 (8.9)	8 (3.7)
2:00–3:59	18 (8.5)	17 (7.9)
4:00–5:59	8 (3.8)	17 (7.9)
6:00–7:59	30 (14.1)	28 (13.1)
8:00–9:59	9 (4.2)	18 (8.4)
10:00–11:59	18 (8.5)	14 (6.5)
12:00–13:59	14 (6.6)	17 (7.9)
14:00–15:59	17 (8.0)	23 (10.7)
16:00–17:59	25 (11.7)	20 (9.3)
18:00–19:59	14 (6.6)	15 (7.0)
20:00–21:59	20 (9.4)	19 (8.9)
22:00–23:59	15 (7.0)	12 (5.6)
Unknown	6 (2.8)	6 (2.8)
Outcome, *N* (%)		
Death	134 (62.9)	105 (49.1)
Attempt or unknown	79 (37.1)	109 (50.9)
Accident location, *N* (%)		
Patient room	132 (62.0)	137 (64.0)
Toilet	14 (6.6)	19 (8.9)
Bathroom	5 (2.3)	0 (0.0)
Stairs	3 (1.4)	5 (2.3)

(Continues)

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TABLE 3 | (Continued)

	Cancer ($N = 213$)	Non-cancer ($N = 214$)
Outside the hospital	33 (15.5)	27 (12.6)
Other/Unknown	26 (12.2)	26 (12.2)
Involved personnel, *N* (%)		
Doctor	55 (25.8)	34 (15.9)
Nurse	147 (69.0)	172 (80.4)
Others	11 (5.2)	8 (3.7)
Years of experience of involved personnel, median (range)	8 (0–38)	9 (0–36)
Method of suicide, *N* (%)		
Hanging	103 (48.4)	114 (53.3)
Jumping	52 (24.4)	41 (19.2)
Stabbing/Cutting	37 (17.4)	24 (11.2)
Overdose	3 (1.4)	21 (9.8)
Other/Unknown	18 (8.5)	14 (6.5)
Tools for hanging, *N*		
Medical tubes	9	4
Medical equipment power/control cords	21	28
Personal power cords	16	21
Clothing	15	20
Non-clothing household items	22	12
Others or not specified	20	29
Cancer type, *N* (%)		
Nervous system	8 (3.8)	N.A.
Head and neck	31 (14.6)	
Breast	5 (2.3)	
Respiratory	43 (20.2)	
Esophagus	16 (7.5)	
Gastrointestinal	35 (16.4)	
Liver	5 (2.3)	
Biliary/Pancreatic	16 (7.5)	
Gynecological	17 (8.0)	
Urological	12 (5.6)	
Hematological	22 (10.3)	
Others	3 (1.4)	
Cancer stage, *N* (%)		
Diagnosis	4 (1.9)	N.A.
Treatment (curative)	72 (33.8)	
Treatment (palliative)	125 (58.7)	
Treatment (unknown)	11 (5.2)	
Follow-up	1 (0.5)	
Type of physical disease, *N* (%)		
Infectious disease	N.A.	6 (2.8)
Endocrine and metabolic		11 (5.1)
Nervous system		56 (26.2)

(Continues)

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TABLE 3 | (Continued)

	Cancer ($N = 213$)	Non-cancer ($N = 214$)
Respiratory system		32 (15.0)
Cardiovascular system		14 (6.5)
Gastrointestinal system		29 (13.6)
Genitourinary system		17 (7.9)
Skin and subcutaneous tissue		1 (0.5)
Musculoskeletal and connective tissue		31 (14.5)
Other/Unknown		17 (7.9)

investigate the quality and intensity of psychiatric interventions in these cases. Logistic regression analysis revealed that countermeasures addressing dangerous items were more likely to be proposed for patients under psychiatric care, suggesting that combining mental health support with environmental safety measures could be beneficial.

Delirium was another important finding, with over 10% of patients in both cancer and non-cancer groups likely experiencing this condition, indicative of confusion. The high prevalence of delirium may reflect Japan's status as one of the most aging societies globally [30]. Delirium has been observed as a potential contributor to fatal incidents [31], and it often coexists with suicidal ideation in patients with cancer [32]. Appropriate prevention and management of delirium, based on psycho-oncology guidelines [33], could serve as an important suicide prevention measure. Delirium may have been underestimated in this study due to factors such as hypoactive delirium being overlooked [34] and misdiagnosed as depression [35]; thus, the actual prevalence may have been even higher than that detected in this study, given the large proportion of palliative cases. This study highlights a new perspective on the potential involvement of delirium in hospital suicides, which has not been previously discussed in related studies [9–11].

Among patients with cancer, 25.8% experienced uncontrolled pain, and only 13.6% received specialized palliative care. Inadequate intervention for physical distress likely contributed to the incidents. Logistic regression analysis showed that reports involving uncontrolled pain were more likely to include physical interventions as countermeasures, possibly reflecting healthcare providers' regret. Previous research has underscored the importance of addressing physical distress in patients with cancer [11]. Additionally, physical assessments are also essential for managing delirium [36]. These findings highlight the potential effectiveness of physical care in suicide prevention.

Communication among medical staff was identified as an area for improvement, particularly in cases where patients presented with depressive symptoms before the incident. This implies that depressive symptoms, an evident risk factor, may not have been adequately communicated by the care team. Information recorded in patient charts may have been overlooked by other staff members. Enhancing communication through multidisciplinary conferences and active information sharing among staff may be essential. Assertive case management has been shown to reduce suicide attempts [37]. Additionally, implementing reminders linked to patients' medical charts could help staff monitor high-risk individuals more effectively.

The number of reports involving patients with cancer and non-cancer physical disease was nearly identical, consistent with a previous study in Japan [10]. The non-cancer group included younger patients and had less involvement from palliative care teams. In Japan, palliative care is primarily focused on patients with cancer [38], but extending these services to patients with other physical diseases may be beneficial. The logistic regression revealed no significant differences in countermeasures suggestions between the cancer and non-cancer groups, suggesting that similar action plans were considered effective. While suicide prevention guidelines for inpatients with cancer have been developed [5], extending similar guidelines to other physical diseases could also be valuable.

4.1 | Implications

To summarize these findings and considerations, several measures appear potentially useful for suicide prevention among hospitalized patients with cancer. These include thorough mental health assessments and appropriate consultation, particularly for patients with depressive symptoms, addressing the presence of dangerous items, proper management of delirium, sufficient pain control, and ensuring effective communication among medical staff when patients present with depressive symptoms. While these measures are still at the proposal stage from the involved staff, they may be valuable for clinicians.

4.2 | Study Limitations

This study has several limitations. First, the quantity and quality of information in each report varied, making it challenging to assess undocumented or vaguely documented details. Second, the extent of compliance in reporting attempted cases remains unclear, leading to potential reporting bias in these data. Notably, fewer suicide attempts ($N = 79$) were reported than suicides ($N = 134$) in this study, which may contradict reports from Japan suggesting that suicide attempts are more common than completed suicides [39]. Third, while labels such as mental health intervention were made, the specific details, such as the frequency or form of care, remain unexamined. Fourth, whereas

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TABLE 4 | Conditions before incident and proposed countermeasures for prevention.

	Cancer (N = 213)	Non-cancer (N = 214)
Mental conditions before the incident, N (%)		
Mental and psychological care by specialists	51 (23.9)	62 (29.0)
Use of psychotropic medication	64 (30.0)	70 (32.7)
Depressive symptoms	106 (49.8)	92 (43.0)
Anxiety	123 (57.7)	105 (49.1)
Insomnia	40 (18.8)	29 (13.6)
Delirium	27 (12.7)	26 (12.1)
Schizophrenia	4 (1.9)	7 (3.3)
Expression of suicidal ideation	74 (34.7)	73 (34.1)
Expression of desire for euthanasia	16 (7.5)	15 (7.0)
Physical conditions before the incident, N (%)		
Palliative care by specialists	29 (13.6)	2 (0.9)
Uncontrolled pain	55 (25.8)	25 (11.7)
Brain metastasis of cancer	9 (4.2)	N.A.
Pneumonia	14 (6.6)	14 (6.5)
Diabetes	8 (3.8)	19 (8.9)
Oral or pharyngeal symptoms	52 (24.4)	10 (4.7)
Loss of appetite	34 (16.0)	25 (11.7)
Dyspnea	27 (12.7)	27 (12.6)
Gastrostomy	4 (1.9)	1 (0.5)
Stoma	7 (3.3)	2 (0.9)
Opioid administration	29 (13.6)	1 (0.5)
Steroid administration	7 (3.3)	15 (7.0)
Antibiotic administration	18 (8.5)	18 (8.4)
Social and other conditions before the incident, N (%)		
Insufficient family support	53 (24.9)	69 (32.2)
Financial distress	3 (1.4)	11 (5.1)
Proposed countermeasures, N (%)		
Assessment and treatment of mental distress	114 (53.5)	132 (61.7)
Assessment and treatment of physical distress	28 (13.1)	11 (5.1)
Improvement in communication among medical staff	105 (49.3)	93 (43.5)
Information sharing with family	55 (25.8)	54 (25.2)
Preparation and use of internal manuals	27 (12.7)	33 (15.4)
Measures to prevent bringing in dangerous items	35 (16.4)	37 (17.3)
Measures against unauthorized leaving from the hospital	9 (4.2)	13 (6.1)
Measures for the building (e.g., windows, rooms)	41 (19.2)	41 (19.2)

we confirmed good agreement with experts for depressive symptoms regarding the labels generated using the OpenAI API, we were unable to verify all labels across the entire dataset. Fifth, no data were available from patients without suicide-related incidents, preventing an investigation into the impact of preceding factors on these events. Future studies should aim to include such control groups for comparison. Sixth, the countermeasures discussed are based on suggestions made by reporters, and their effectiveness remains largely unexplored. Seventh, appropriate preventive measures often depend on hospital resources, yet these background factors could not be evaluated in this study. Eighth, while relationships between pre-incident conditions and proposed countermeasures were analyzed, caution is required due to the multiple statistical tests conducted. Lastly, further refinement is needed to extract conceptual information, such as whether patients had received distressing news, commonly referred to as "bad news," before the incident.

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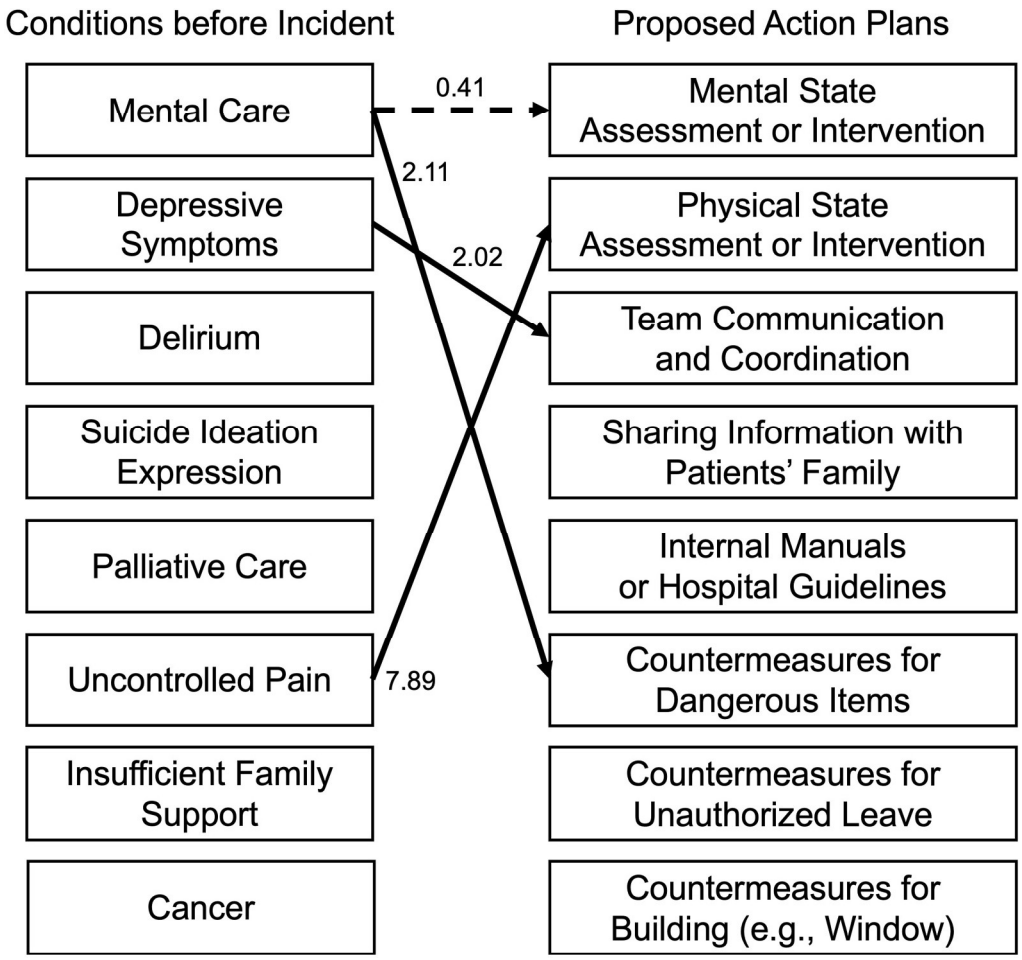


FIGURE 1 | Association between pre-incident conditions and proposed action plans. Only odds ratios with a p-value < 0.01 are shown. Solid arrows represent positive associations, while the dotted arrow indicates a negative association.

4.3 | Conclusion

This study examined suicides among inpatients with cancer by analyzing patient safety reports from major hospitals across Japan using large language models. The analysis offers insights into strategies for preventing suicides in hospitalized patients with cancer. These strategies include providing mental care for patients with depressive symptoms or suicidal ideation, addressing physical distress in those experiencing uncontrolled pain, managing delirium appropriately, and enhancing communication among medical staff when patients present with depressive symptoms. Many of these strategies are consistent with those proposed in previous reports. Additionally, this study identified the need for more attention to delirium, which has been unexplored in existing research. These strategies could also be valuable for patients with physical diseases other than cancer.

Author Contributions

Ken Kurisu: conceptualization, formal analysis, data curation, methodology, software, visualization, writing – original draft preparation, writing – review and editing. **Maiko Fujimori:** conceptualization, funding acquisition, project administration, supervision, writing – review and editing. **Saki Harashima:** writing – review and editing. **Masako Okamura:** project administration, writing – review and editing. **Kazuhiro Yoshiuchi:** writing – review and editing. **Yosuke Uchitomi:** supervision, writing – review and editing.

Acknowledgments

This study was funded by the Health Labor Sciences Research Grant (Grant No. 23EA1028) and the Innovative Research Program on Suicide Countermeasures (study number 2-3).

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The dataset used in this study is available on the Japan Council for Quality Health Care website.

References

1. M. Heinrich, L. Hofmann, H. Baurecht, et al., "Suicide Risk and Mortality Among Patients With Cancer," *Nature Medicine* 28, no. 4 (2022): 852–859, https://doi.org/10.1038/s41591-022-01745-y.

2. K. Kurisu, M. Fujimori, S. Harashima, et al., "Suicide, Other Externally Caused Injuries, and Cardiovascular Disease Within 2 Years After Cancer Diagnosis: A Nationwide Population-Based Study in Japan

10991611, 2025, 5, Downloaded from https://onlinelibrary.wiley.com/doi/10.1002/pon.70150 by Cochrane Japan, Wiley Online Library on [14/05/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

(J-SUPPORT 1902)," *Cancer Medicine* 12, no. 3 (2023): 3442–3451, https://doi.org/10.1002/cam4.5122.

3. K. Kurisu, S. Harashima, M. Fujimori, T. Akechi, K. Yoshiuchi, and Y. Uchitomi, "Regional Disparities in Suicide Among Patients With Cancer: A Nationwide Population-Based Study in Japan," *Cancer Medicine* 12, no. 19 (2023): 20052–20058, https://doi.org/10.1002/cam4.6574.

4. M. Fujimori, W. Hikiji, T. Tanifuji, et al., "Characteristics of Cancer Patients Who Died by Suicide in the Tokyo Metropolitan Area," *Japanese Journal of Clinical Oncology* 47, no. 5 (2017): 458–462, https://doi.org/10.1093/jjco/hyx003.

5. National Cancer Center Japan, ed. *Guide for Suicide Countermeasures in Oncology* [in Japanese], 1st ed. (2020), https://www.ncc.go.jp/jp/icc/survivorship/jisatsutaisaku_tebiki/ganiryou_jisatsutaisaku_tebiki.pdf.

6. "Development of Designated Cancer Care Hospitals and Related Facilities" [in Japanese], accessed September 1, 2024, https://www.mhlw.go.jp/content/000972176.pdf.

7. Y. Kawashima, N. Yonemoto, M. Inagaki, K. Inoue, C. Kawanishi, and M. Yamada, "Interventions to Prevent Suicidal Behavior and Ideation for Patients With Cancer: A Systematic Review," *General Hospital Psychiatry* 60 (2019): 98–110, https://doi.org/10.1016/j.genhosppsych.2019.07.003.

8. C. Takahashi, F. Chida, H. Nakamura, et al., "The Impact of Inpatient Suicide on Psychiatric Nurses and Their Need for Support," *BMC Psychiatry* 11, no. 1 (2011): 38, https://doi.org/10.1186/1471-244X-11-38.

9. E. D. Ballard, M. Pao, D. Henderson, L. M. Lee, J. M. Bostwick, and D. L. Rosenstein, "Suicide in the Medical Setting," *Joint Commission Journal on Quality and Patient Safety* 34, no. 8 (2008): 474–481, https://doi.org/10.1016/s1553-7250(08)34060-4.

10. K. Inoue, C. Kawanishi, K. Otsuka, et al., "A Large-Scale Survey of Inpatient Suicides: Comparison Between Medical and Psychiatric Settings," *Psychiatry Research* 250 (2017): 155–158, https://doi.org/10.1016/j.psychres.2017.01.076.

11. M. Aboumrad, B. Shiner, N. Riblet, P. D. Mills, and B. V. Watts, "Factors Contributing to Cancer-Related Suicide: A Study of Root-Cause Analysis Reports," *Psycho-Oncology* 27, no. 9 (2018): 2237–2244, https://doi.org/10.1002/pon.4815.

12. "Japan Council for Quality Health Care," accessed September 1, 2024, https://www.med-safe.jp.

13. L. Ying, Z. Liu, H. Fang, et al., "Text Summarization With ChatGPT for Drug Labeling Documents," *Drug Discovery Today* 29, no. 6 (2024): 104018, https://doi.org/10.1016/j.drudis.2024.104018.

14. W. Abu-Ashour, S. Emil, and D. Poenaru, "Using Artificial Intelligence to Label Free-Text Operative and Ultrasound Reports for Grading Pediatric Appendicitis," *Journal of Pediatric Surgery* 59, no. 5 (2024): 783–790, https://doi.org/10.1016/j.jpedsurg.2024.01.033.

15. M. A. Fink, A. Bischoff, C. A. Fink, et al., "Potential of ChatGPT and GPT-4 for Data Mining of Free-Text CT Reports on Lung Cancer," *Radiology* 308, no. 3 (2023): e231362, https://doi.org/10.1148/radiol.231362.

16. H. Jiang, S. Xia, Y. Yang, et al., "Transforming Free-Text Radiology Reports Into Structured Reports Using ChatGPT: A Study on Thyroid Ultrasonography," *European Journal of Radiology* 175 (2024): 111458, https://doi.org/10.1016/j.ejrad.2024.111458.

17. N. C. Lehnen, F. Dorn, I. C. Wiest, et al., "Data Extraction From Free-Text Reports on Mechanical Thrombectomy in Acute Ischemic Stroke Using ChatGPT: A Retrospective Analysis," *Radiology* 311, no. 1 (2024): e232741, https://doi.org/10.1148/radiol.232741.

18. A. Hanai, T. Ishikawa, S. Kawauchi, Y. Iida, and E. Kawakami, "Generative Artificial Intelligence and Non-Pharmacological Bias: An Experimental Study on Cancer Patient Sexual Health Communications," *BMJ Health & Care Informatics* 31, no. 1 (2024): e100924, https://doi.org/10.1136/bmjhci-2023-100924.

19. J. Ohse, B. Hadžić, P. Mohammed, et al., "GPT-4 Shows Potential for Identifying Social Anxiety From Clinical Interview Data," *Scientific Reports* 14, no. 1 (2024): 30498, https://doi.org/10.1038/s41598-024-82192-2.

20. I. Levkovich, "Evaluating Diagnostic Accuracy and Treatment Efficacy in Mental Health: A Comparative Analysis of Large Language Model Tools and Mental Health Professionals," *European Journal of Investigation in Health, Psychology and Education* 15, no. 1 (2025): 9, https://doi.org/10.3390/ejihpe15010009.

21. M. Grootendorst, "BERTopic: Neural Topic Modeling With a Class-Based TF-IDF Procedure," Preprint, arXiv (March 11, 2022), https://doi.org/10.48550/arXiv.2203.05794.

22. S. Salmi, S. Mérelle, R. Gilissen, R. van der Mei, and S. Bhulai, "Detecting Changes in Help Seeker Conversations on a Suicide Prevention Helpline During the COVID-19 Pandemic: In-Depth Analysis Using Encoder Representations From Transformers," *BMC Public Health* 22, no. 1 (2022): 530, https://doi.org/10.1186/s12889-022-12926-2.

23. Open AI, "API," accessed September 1, 2024, https://platform.openai.com/docs/overview.

24. *Approaches to Suicide Prevention in Hospitals*, rev ed. (Japan Council for Quality Health Care, January 2023), https://www.psp-jq.jcqhc.or.jp/post/journal_ext/9854.

25. H. L. Kundel and M. Polansky, "Measurement of Observer Agreement," *Radiology* 228, no. 2 (2003): 303–308, https://doi.org/10.1148/radiol.2282011860.

26. N. Osazuwa-Peters, M. C. Simpson, L. Zhao, et al., "Suicide Risk Among Cancer Survivors: Head and Neck Versus Other Cancers," *Cancer* 124, no. 20 (2018): 4072–4079, https://doi.org/10.1002/cncr.31675.

27. A. J. Mitchell, M. Chan, H. Bhatti, et al., "Prevalence of Depression, Anxiety, and Adjustment Disorder in Oncological, Haematological, and Palliative-Care Settings: A Meta-Analysis of 94 Interview-Based Studies," *Lancet Oncology* 12, no. 2 (2011): 160–174, https://doi.org/10.1016/S1470-2045(11)70002-X.

28. S. D. Passik, W. Dugan, M. V. McDonald, B. Rosenfeld, D. E. Theobald, and S. Edgerton, "Oncologists' Recognition of Depression in Their Patients With Cancer," *Journal of Clinical Oncology* 16, no. 4 (1998): 1594–1600, https://doi.org/10.1200/JCO.1998.16.4.1594.

29. K. E. Helingoe, S. Cullum, and L. Ng, "Stigma in Consultation Liaison Psychiatry: A Qualitative Study of Trainee Psychiatrists," *Australasian Psychiatry* 30, no. 5 (2022): 658–662, https://doi.org/10.1177/10398562211064221.

30. World Bank, "Population Ages 65 and Above (% of Total Population)," accessed September 1, 2024, https://data.worldbank.org/indicator/SP.POP.65UP.TO.ZS.

31. P. A. Brown, P. O. Magner, S. Hiremath, and E. G. Clark, "Death Due to Delirium: A Case of a Self-Cut Hemodialysis Dialysis Catheter – A Case Report," *BMC Nephrology* 20, no. 1 (2019): 390, https://doi.org/10.1186/s12882-019-1571-z.

32. T. Akechi, A. Kugaya, H. Okamura, et al., "Suicidal Thoughts in Cancer Patients: Clinical Experience in Psycho-Oncology," *Psychiatry and Clinical Neurosciences* 53, no. 5 (1999): 569–573, https://doi.org/10.1046/j.1440-1819.1999.00607.x.

33. Y. Matsuda, H. Tanimukai, S. Inoue, et al., "A Revision of JPOS/JASCC Clinical Guidelines for Delirium in Adult Cancer Patients: A Summary of Recommendation Statements," *Japanese Journal of Clinical Oncology* 53, no. 9 (2023): 808–822, https://doi.org/10.1093/jjco/hyad042.

34. S. K. Inouye, M. D. Foreman, L. C. Mion, K. H. Katz, and L. M. Cooney Jr., "Nurses' Recognition of Delirium and its Symptoms: Comparison of Nurse and Researcher Ratings," *Archives of Internal Medicine* 161, no. 20 (2001): 2467–2473, https://doi.org/10.1001/archinte.161.20.2467.

10991611, 2025, 5, Downloaded from https://onlinelibrary.wiley.com/doi/10.1002/pon.70150 by Cochrane Japan, Wiley Online Library on [14/05/2025]. See the Terms and Conditions (https://onlinelibrary.wiley.com/terms-and-conditions) on Wiley Online Library for rules of use; OA articles are governed by the applicable Creative Commons License

35. K. L. Marchington, L. Carrier, and P. G. Lawlor, "Delirium Masquerading as Depression," *Palliative & Supportive Care* 10, no. 1 (2012): 59–62, https://doi.org/10.1017/S1478951511000599.

36. K. Kurisu, S. Inada, I. Maeda, et al., "A Decision Tree Prediction Model for a Short-Term Outcome of Delirium in Patients With Advanced Cancer Receiving Pharmacological Interventions: A Secondary Analysis of a Multicenter and Prospective Observational Study (Phase-R)," *Palliative & Supportive Care* 20, no. 2 (2022): 153–158, https://doi.org/10.1017/S1478951521001565.

37. C. Kawanishi, T. Aruga, N. Ishizuka, et al., "Assertive Case Management Versus Enhanced Usual Care for People With Mental Health Problems Who Had Attempted Suicide and Were Admitted to Hospital Emergency Departments in Japan (ACTION-J): A Multicentre, Randomised Controlled Trial," *Lancet Psychiatry* 1, no. 3 (2014): 193–201, https://doi.org/10.1016/S2215-0366(14)70259-7.

38. S. Tsuneto, "Past, Present, and Future of Palliative Care in Japan," *Japanese Journal of Clinical Oncology* 43, no. 1 (2013): 17–21, https://doi.org/10.1093/jjco/hys188.

39. R. Takeshita, K. Muramatsu, and S. Matsuda, "The Current Status of Suicide and Medical Care System in Japan: An Analysis of 81,407 Patients Using the Diagnosis Procedure Combination Database," *Tohoku Journal of Experimental Medicine* 261, no. 4 (2023): 291–297, https://doi.org/10.1620/tjem.2023.J081.

Supporting Information

Additional supporting information can be found online in the Supporting Information section.

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資料3

Japanese Journal of Clinical Oncology, 2025, 55(10), 1194–1197
https://doi.org/10.1093/jjco/hyaf110
Advance access publication date 8 July 2025
Short Communication

JJCO Japanese Journal of Clinical Oncology
OXFORD

Suicide risk among individuals diagnosed with cancer during versus before the COVID-19 pandemic: a nationwide population-based study

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Abstract

This study aimed to assess suicide risk among individuals diagnosed with cancer shortly after the onset of the COVID-19 pandemic compared to those diagnosed earlier. Data were obtained from the National Cancer Registry in Japan, which included 4 711 540 individuals diagnosed between January 2016 and June 2020. Standardized mortality ratios (SMRs) for suicide within 6 months of diagnosis were quantified using the general population as a reference. Those diagnosed between April and June 2020 had an SMR of 3.93 (95% confidence interval: 3.10–4.91), higher than those diagnosed in earlier periods. Additionally, multivariate Poisson regression showed an adjusted relative risk of 1.30 (95% confidence interval: 1.03–1.63) for individuals diagnosed during the pandemic compared to earlier periods. These findings suggest that individuals diagnosed with cancer shortly after the onset of the COVID-19 pandemic had a higher suicide risk than those diagnosed earlier.

Keywords: cancer; COVID-19 pandemic; suicide; loneliness; social isolation

Introduction

People diagnosed with cancer show high rates of depression and suicide worldwide [1, 2]. In Japan, nationwide data from the National Cancer Registry also indicate elevated suicide risk in this population, along with regional disparities [3–5]. Efforts have been made to develop suicide prevention strategies targeting individuals with cancer [6, 7].

The COVID-19 pandemic has increased psychological distress [8], loneliness, and social isolation [9]. It has also caused changes in suicide rates [10, 11] and a rise in psychiatric conditions such as eating disorders in Japan [12].

Studies have reported that individuals with cancer experienced greater loneliness, psychological distress, depression, and anxiety during the pandemic [13–15]. Cross-sectional research has examined suicidal ideation and attempts during that period [16]. While these findings suggest worsened mental health among individuals with cancer during the pandemic, no studies have examined changes in suicide rates before and during the pandemic.

Recent data from Japan's National Cancer Registry, which includes all individuals diagnosed with cancer nationwide, allow for the analysis of people diagnosed in early 2020. This study aimed to assess suicide risk among people diagnosed with cancer shortly after the onset of the COVID-19 pandemic—a period characterized by heightened stress—and to compare their risk with those diagnosed before the pandemic.

Materials and methods

Ethical approval

The study was approved by the Institutional Review Board of the National Cancer Center Japan (approval number: 2018-233). The requirement for informed consent was waived owing to the use of anonymous data.

Study participants

This study used data from the National Cancer Registry, which covers all individuals diagnosed with cancer in Japan since January 2016 [3–5, 17]. The current dataset includes records of death through 31 December 2020. Therefore, those diagnosed between January 2016 and June 2020 were included, and the maximum observation period was set to 6 months.

In April 2020, the Japanese government declared a state of emergency due to an exponential increase in the number of COVID-19 infections, and this time point has been used as a cutoff in previous literature [12]. Therefore, those diagnosed between April and June 2020 were classified as the pandemic-diagnosis group, whereas those diagnosed before April 2020 were classified as the pre-pandemic-diagnosis group.

Following previous studies [3–5, 17], we excluded individuals diagnosed by autopsy or death certificate, those residing

Received 22 May 2025; **editorial decision** 17 June 2025; **accepted** 20 June 2025
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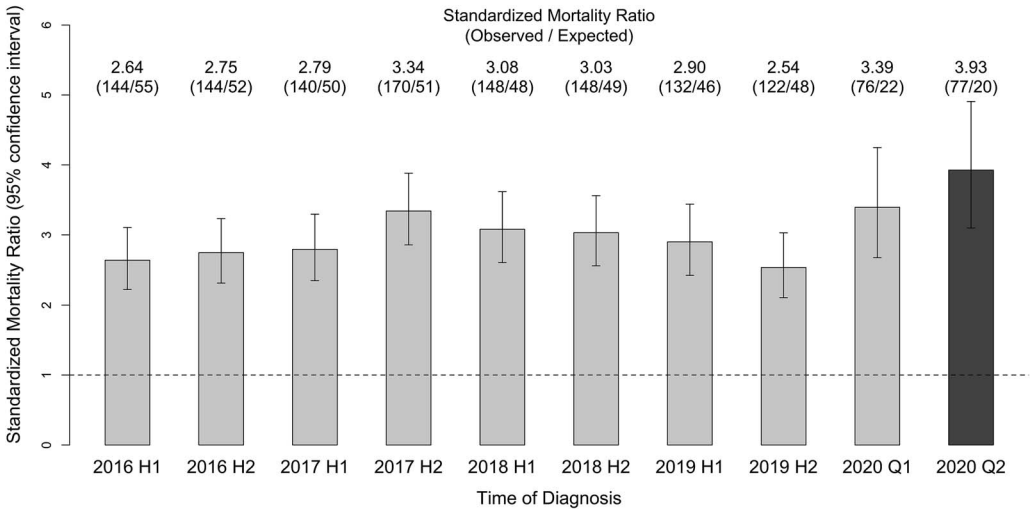


Figure 1. Standardized mortality ratio for suicide within 6 months after cancer diagnosis, by time of diagnosis. H1 and H2 represent January–June and July–December, respectively; Q1 and Q2 represent January–March and April–June, respectively.

outside Japan, and those with missing data on age, sex, address, or date of diagnosis.

The outcome was death by suicide, defined using the International Classification of Diseases, 10th Edition codes X60-X84 and Y87.0.

Statistical analyses

Standardized mortality ratios (SMRs) were calculated for each diagnostic period, following our previous studies and protocol [3–5, 17]. The observed number of suicides within 6 months after diagnosis was calculated using data from the National Cancer Registry. For each individual, the expected suicide rate during the corresponding survival period was estimated using data from the general population, matched by age, sex, and prefecture of residence, based on Vital Statistics and Population Estimates. Summing these rates yielded the expected number of suicides in the study population. Patients registered with zero months of survival in the dataset were assigned a value of 0.5 months. The SMR was defined as the ratio of observed to expected suicides. Confidence intervals (CIs) were calculated using Byar's method.

A multivariable Poisson regression model was developed to examine differences in SMRs between the pandemic- and pre-pandemic-diagnosis groups. Following previous research [3, 4], the individual-level dataset with binary mortality outcomes was aggregated into a cluster-level dataset with count outcomes. The log-transformed expected suicide counts for each cluster were included as an offset in the model. Accordingly, the relative risk from the model represented the ratio of SMRs between groups. Age, sex, presence of multiple primary cancers, primary tumor site, and cancer extension were included as covariates, consistent with previous studies [3, 4].

Additional Poisson regression models were developed for sensitivity analyses: (i) a model comparing individuals diagnosed between January and June 2020 with those diagnosed before 2020, (ii) a model including January–March 2020 as a separate category, and (iii) a model containing only individuals diagnosed between April and June of each year, comparing 2020 with previous years.

All analyses were conducted using R (version 4.4.2) with the 'epiR' package (version 2.0.77). Statistical significance was set at $P < 0.05$.

Results

The analysis included 4 711 540 individuals (see Supplementary Table 1 for descriptive statistics). Figure 1 summarizes the 6-month SMRs for each diagnosis period. Among those diagnosed between April and June 2020, the SMR was 3.93 (95% CI: 3.10–4.91), indicating a modest increase compared with earlier periods. Sex-specific SMRs during this period were 4.01 (95% CI: 3.04–5.19) for male individuals and 3.71 (95% CI: 2.26–5.73) for female individuals, with no substantial sex difference observed.

Table 1 summarizes the relative risk estimated from the Poisson regression model. In Model 1, the pandemic-diagnosis group had a relative risk of 1.30 (95% CI: 1.03–1.63), with the pre-pandemic-diagnosis group as a reference. Coefficients for other covariates are shown in Supplementary Table 2 and were similar to those reported in the previous study [3]. Sensitivity analyses using alternative groupings (Models 2 and 3) and a model including only individuals diagnosed between April and June of each year (Model 4) also showed significantly higher relative risks for the pandemic period.

Discussion

Using data from the National Cancer Registry, we assessed suicide risk among individuals diagnosed with cancer during the COVID-19 pandemic. The SMR was higher in individuals diagnosed during the pandemic than in those diagnosed earlier. This elevated risk persisted after adjusting for covariates and remained consistent across different categorizations of diagnostic periods. To the best of our knowledge, this is the first report to compare suicide risk between individuals diagnosed with cancer during the COVID-19 pandemic and those diagnosed earlier.

These findings indicate that suicide risk in individuals with cancer, which is consistently higher than in the general population, increased further during the pandemic and exceeded the fluctuations observed in the general population [10, 11]. Previous studies have reported increased psychological distress and loneliness among individuals with cancer during the pandemic [13–15]. SARS-CoV-2 infection itself may also have partially influenced mental health [18]. In addition, the psychological states of individuals with life-threatening

Table 1. Relative risk by time of cancer diagnosis from multivariate Poisson regression models.

Time of diagnosis	Total number of suicide (N)	Relative risk (95% confidence interval)	*P*-value
Model 1 (primary)			
January 2016–March 2020	1224	1.00 (reference)	
April–June 2020	77	1.30 (1.03 to 1.63)	**0.028**
Model 2			
January 2016–December 2019	1148	1.00 (reference)	
January–June 2020	153	1.24 (1.05 to 1.47)	**0.013**
Model 3			
January 2016–December 2019	1148	1.00 (reference)	
January–March 2020	76	1.18 (0.93 to 1.49)	0.17
April–June 2020	77	1.31 (1.04 to 1.65)	**0.023**
Model 4			
April–June in 2016–2019	274	1.00 (reference)	
April–June 2020	77	1.40 (1.09 to 1.80)	**0.009**

All models were adjusted for age, sex, presence of multiple primary cancers, primary tumor site, and cancer extension. Bold entries indicate statistically significant at $P < 0.05$.

illnesses and those living through the pandemic have been discussed within the framework of terror management theory [19, 20]. These perspectives may help inform future research aimed at understanding the mechanisms behind our findings.

In future pandemics or disasters, greater attention to the mental health of individuals newly diagnosed with cancer will be essential. As discussed above, potential mechanisms underlying the increase in suicide risk may include heightened loneliness and social isolation among people with cancer during the COVID-19 pandemic [13, 14]. The present findings imply that such loneliness or social isolation may have been more pronounced than in the general population, leading to an even greater increase in suicide risk among people with cancer. Various interventions for loneliness have been explored [21–23], and these approaches may inform strategies to support vulnerable populations during future crises.

This study has several limitations. First, the observation period was limited to 6 months following diagnosis and thus does not capture outcomes after societal adaptation to the pandemic, such as vaccine rollout and other mitigation efforts. Second, we were unable to assess the specific factors contributing to the increased suicide risk or determine why the magnitude of this increase exceeded that observed in the general population. Finally, the dataset did not include information on preexisting mental disorders, household composition, or socioeconomic status. These factors should be considered in future research.

In conclusion, individuals diagnosed with cancer shortly after the onset of the COVID-19 pandemic had an ∼1.3-fold higher suicide SMR than those diagnosed before the pandemic. These findings underscore the importance of addressing mental health in individuals newly diagnosed with cancer during future pandemics or disasters. Further research with extended follow-up is warranted to examine longer-term trends.

Supplementary data

Supplementary data are available at *Japanese Journal of Clinical Oncology* online.

Acknowledgements

We obtained data from the National Cancer Registry as per the Act on Promotion of Cancer Registries, independently analyzed the data, and present the results in this article.

Conflict of interest statement

The authors declare no potential conflicts of interest.

Funding

This study was funded by the Health Labor Sciences Research Grant (grant number: 23EA1028).

Data availability

The dataset analyzed in this study, obtained in 2024, was used with permission from the National Cancer Registry Information Desk of the National Cancer Center. This dataset cannot be shared; however, anyone can access it by sending an application along with their study protocol to the National Cancer Registry Information Desk.

References

1. Mitchell AJ, Chan M, Bhatti H. *et al.* Prevalence of depression, anxiety, and adjustment disorder in oncological, haematological, and palliative-care settings: A meta-analysis of 94 interview-based studies. *Lancet Oncol* 2011;**12**:160–74. https://doi.org/10.1016/S1470-2045(11)70002-X.
2. Heinrich M, Hofmann L, Baurecht H. *et al.* Suicide risk and mortality among patients with cancer. *Nat Med* 2022;**28**:852–9. https://doi.org/10.1038/s41591-022-01745-y.
3. Kurisu K, Fujimori M, Harashima S. *et al.* Suicide, other externally caused injuries, and cardiovascular disease within 2 years after cancer diagnosis: A nationwide population-based study in Japan (J-SUPPORT 1902). *Cancer Med* 2023;**12**:3442–51. https://doi.org/10.1002/cam4.5122.
4. Kurisu K, Harashima S, Fujimori M, Akechi T, Yoshiuchi K, Uchitomi Y. Regional disparities in suicide among patients with cancer: A nationwide population-based study in Japan. *Cancer Med* 2023;**12**:20052–8. https://doi.org/10.1002/cam4.6574.
5. Harashima S, Fujimori M, Akechi T. *et al.* Death by suicide, other externally caused injuries and cardiovascular diseases within 6 months of cancer diagnosis (J-SUPPORT 1902). *Jpn J Clin Oncol* 2021;**51**:744–52. https://doi.org/10.1093/jjco/hyab001.
6. Kawashima Y, Yonemoto N, Inagaki M, Inoue K, Kawanishi C, Yamada M. Interventions to prevent suicidal behavior and ideation for patients with cancer: A systematic review. *Gen Hosp Psychiatry* 2019;**60**:98–110. https://doi.org/10.1016/j.genhosppsych.2019.07.003.
7. Kurisu K, Fujimori M, Harashima S, Okamura M, Yoshiuchi K, Uchitomi Y. Exploratory analysis of nationwide Japanese

patient safety reports on suicide and suicide attempts among inpatients with cancer using large language models. *Psycho-Oncology.* 2025;**34**:e70150. https://doi.org/10.1002/pon.70150.
8. Kikuchi H, Machida M, Nakamura I. *et al.* Changes in psychological distress during the COVID-19 pandemic in Japan: A longitudinal study. *J Epidemiol* 2020;**30**:522–8. https://doi.org/10.2188/jea.JE20200271.
9. Yamamoto T, Uchiumi C, Suzuki N. *et al.* Mental health and social isolation under repeated mild lockdowns in Japan. *Sci Rep* 2022;**12**:8452. https://doi.org/10.1038/s41598-022-12420-0.
10. Tanaka T, Okamoto S. Increase in suicide following an initial decline during the COVID-19 pandemic in Japan. *Nat Hum Behav* 2021;**5**:229–38. https://doi.org/10.1038/s41562-020-01042-z.
11. Nakanishi M, Yamasaki S, Endo K. *et al.* Suicide rates during the COVID-19 pandemic in Japan from April 2020 to December 2021. *Psychiatry Res* 2022;**316**:114774. https://doi.org/10.1016/j.psychres.2022.114774.
12. Kurisu K, Matsuoka M, Sato K. *et al.* Increased prevalence of eating disorders in Japan since the start of the COVID-19 pandemic. *Eat Weight Disord* 2022;**27**:2251–5. https://doi.org/10.1007/s40519-021-01339-6.
13. Gallagher S, Bennett KM, Roper L. Loneliness and depression in patients with cancer during COVID-19. *J Psychosoc Oncol* 2021;**39**:445–51. https://doi.org/10.1080/07347332.2020.1853653.
14. Glidden C, Howden K, Romanescu RG. *et al.* Psychological distress and experiences of adolescents and young adults with cancer during the COVID-19 pandemic: A cross-sectional survey. *Psycho-Oncology.* 2022;**31**:631–40. https://doi.org/10.1002/pon.5849.
15. Kim I, Lee M, Begay CM, Lee J, Unger J. Trends in depression and anxiety prevalence by cancer status among US adults: Analyses of the 2019-2022 National Health Interview Survey. *BMJ Open* 2025;**15**:e090157. https://doi.org/10.1136/bmjopen-2024-090157.
16. Ma Z, Mao Y, Wang Y. *et al.* Suicidal ideation and attempted suicide among cancer patients during the COVID-19 pandemic. *J Med Virol* 2022;**94**:5827–35. https://doi.org/10.1002/jmv.28076.
17. Harashima S, Fujimori M, Akechi T. *et al.* Suicide, other externally caused injuries and cardiovascular death following a cancer diagnosis: Study protocol for a nationwide population-based study in Japan (J-SUPPORT 1902). *BMJ Open* 2019;**9**:e030681. https://doi.org/10.1136/bmjopen-2019-030681.
18. Taquet M, Geddes JR, Husain M, Luciano S, Harrison PJ. 6-month neurological and psychiatric outcomes in 236,379 survivors of COVID-19: A retrospective cohort study using electronic health records. *Lancet Psychiatry* 2021;**8**:416–27. https://doi.org/10.1016/S2215-0366(21)00084-5.
19. Svet M, Portalupi LB, Pyszczynski T, Matlock DD, Allen LA. Applying terror management theory to patients with life-threatening illness: A systematic review. *BMC Palliat Care* 2023;**22**:74. https://doi.org/10.1186/s12904-023-01193-6.
20. Pyszczynski T, Lockett M, Greenberg J, Solomon S. Terror management theory and the COVID-19 pandemic. *J Humanist Psychol* 2021;**61**:173–89. https://doi.org/10.1177/0022167820959488.
21. Erzen E, Çikrikci Ö. The effect of loneliness on depression: A meta-analysis. *Int J Soc Psychiatry* 2018;**64**:427–35. https://doi.org/10.1177/0020764018776349.
22. Cacioppo S, Grippo AJ, London S, Goossens L, Cacioppo JT. Loneliness: clinical import and interventions. *Perspect Psychol Sci* 2015;**10**:238–49. https://doi.org/10.1177/1745691615570616.
23. Veronese N, Galvano D, D'Antiga F. *et al.* Interventions for reducing loneliness: An umbrella review of intervention studies. *Health Soc Care Community* 2021;**29**:e89–96. https://doi.org/10.1111/hsc.13248.

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Japanese Journal of Clinical Oncology, 2025, 55(10), 1194–1197
https://doi.org/10.1093/jjco/hyaf110
Short Communication

資料4

Japanese Journal of Clinical Oncology, 2025, 55(11), 1259–1266
https://doi.org/10.1093/jjco/hyaf125
Advance access publication date 1 August 2025
Original Article

JJCO Japanese Journal of Clinical Oncology
OXFORD

Nationwide retrospective survey on healthcare professionals' perceptions of suicide-related behaviors among people with head and neck cancer in Japan

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Abstract

Objective: To investigate healthcare professionals' perceptions of suicide-related behaviors among people with head and neck cancers in Japan.

Methods: A two-phase, multicenter retrospective study was conducted. First, head and neck cancer specialists completed a survey on their experience with suicide-related behaviors and institutional prevention efforts. Second, a medical record review explored associations between suicide-related behaviors and treatment factors.

Results: There were 152 respondents, of whom 82 (53.9%) had encountered suicide-related behaviors, and 69 (45.4%) had experienced patient suicides. A total of 110 cases of suicide were reported. Only 4.6% of respondents had attended lectures on preventing suicide, although 37.5% had implemented preventive measures. Overall, 27 cases were analyzed, including 18 suicides, and nine attempts. The majority of these involved men who were either smokers or drinkers. Behaviors often occurred when people were post-treatment without any recurrence. Common preceding factors were eating difficulties, speech impairment, and psychological decline.

Conclusions: Suicide risk among people with head and neck cancer extends well beyond diagnosis and remains under-addressed. Increased awareness and education among healthcare professionals, and provision of multidisciplinary support, are essential for comprehensive prevention.

Keywords: suicide; retrospective studies; Japan; head and neck neoplasms

Introduction

The psychological toll of having cancer is profound, and a diagnosis is regarded as one of the most overwhelming experiences in life [1]. Kurisu *et al.* reported that the suicide rate among people with cancer is 41.9 per 100 000 person-years [2]. This is 1.76 times higher than the general suicide rate in Japan, which is 17.6 per 100 000 person-years [3]. While the reported rates vary, several studies have consistently indicated that people with cancer are at a higher risk of suicide than the general population [4–6].

Suicide rates differ by cancer type and site, with the highest risks reported for lung, head and neck, testicular, bladder cancers, and Hodgkin lymphoma (standardized mortality ratio [SMR] > 5–10) [7]. Notably, while head and neck cancers account for only 3% of all cancer cases, people with these cancers have the second highest suicide rates of all those with cancer in the United States, following that of lung cancer [8]. This underscores the need for further investigation and intervention.

Suicide research methodologies generally fall into two categories: database-driven studies and detailed investigations of individual cases, commonly known as psychological autopsies [9, 10]. Database studies provide large-scale statistical insights and have repeatedly shown elevated suicide risks among people with cancer. By contrast, psychological autopsies involve in-depth interviews with bereaved families to reconstruct the deceased's psychological background, offering nuanced individual-level understanding. However, conducting full psychological autopsies can be ethically and emotionally challenging. Alternative hybrid approaches may therefore be more feasible in the oncology setting, but implementing these hybrid approaches remains difficult for individual researchers and requires coordinated organizational efforts to ensure feasibility and ethical integrity.

In 2022, Japan established the 'The Fourth Term Comprehensive 10-Year Strategy for Cancer Control' [11] and the 'Comprehensive Suicide Prevention Policy—Realizing a Society Without Self-Inflicted Deaths' [12], emphasizing the necessity of suicide prevention among people with cancer. It is therefore necessary to understand the suicide-related behaviors among people with head and neck cancers in Japan, a high-risk group for suicide. However, to date, no nationwide study has specifically investigated suicide among this group. This study therefore aimed to explore suicide-related behaviors among people with head and neck cancers, to contribute to the establishment of preventive measures.

Methods

This study was part of the Ministry of Health, Labor and Welfare's Cancer Control Promotion Comprehensive Research Project, 'Research on the Development of a Suicide

Received 28 May 2025; **editorial decision** 5 July 2025; **accepted** 11 July 2025
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Prevention Program for Cancer Patients (21EA1008).' The study was conducted in two phases. The first was a survey targeting healthcare professionals and the second was a survey based on patient data.

Survey of healthcare professionals' experiences of suicide-related behaviors among their patients

After obtaining approval from the Ethics Committee of the Japan Society for Head and Neck Cancer, a questionnaire was mailed to head and neck cancer specialists in board-certified institutions and oral and maxillofacial surgery representatives of the Japan Society for Head and Neck Cancer.

Survey items included respondents' demographic information (age, years of medical experience), and also questions about their experience of:

- Suicide-related behaviors (attempted or completed) among patients under their care;
- Suicide-related behaviors among people with cancer in institutions;
- Attending suicide-related training or lectures;
- Mental healthcare provision for healthcare staff after a patient's suicide or related incident; and
- Implementation of suicide prevention measures.

To protect personal information and minimize psychological resistance, responses were collected anonymously.

Survey of medical information of people showing suicide-related behaviors

During the survey among healthcare professionals, institutions were invited to participate in the second phase of the study. Survey forms were mailed to institutions that agreed to do so. The survey items were modified from the Head and Neck Registry of Japan [13], supported by the Japan Society for Head and Neck Cancer, to investigate the relationship between suicide-related behaviors and cancer treatment. The Charlson Comorbidity Index [14] was used to assess comorbidities. There is little literature on suicide risk factors specific to people with head and neck cancer, but previous studies have reported an association between laryngectomy and suicide [8]. We therefore collected data on post-treatment complications that significantly affect quality of life (e.g. laryngectomy, facial nerve resection, and facial bone resection). The study office for the 'Research on the Development of a Suicide Prevention Program for Cancer Patients (21EA1008)' selected and examined items related to suicide-related behaviors. Items focused on the psychological factors associated with suicide and also the direct association between cancer treatment phases and psychological impact.

Given the emotional burden and ethical constraints associated with full psychological autopsy studies, we adopted a hybrid methodology that bridges database-driven research and psychological autopsy. In addition to structured clinical data, we collected free-text narratives from attending physicians, which provided insights into the psychological states and social contexts before suicide-related behaviors. This information is often difficult to obtain through structured data alone.

Each participating institution reviewed medical records for suicide-related cases and completed the survey forms. The collected data were then consolidated and analyzed. This study was approved by the Ethics Review Committee of the National Cancer Center Hospital, and details were published on participating institutions' websites to ensure that there were opportunities to opt out.

Analysis

Descriptive statistics were calculated for the data obtained. All statistical analyses used R (The R Foundation for Statistical Computing, Vienna, Austria). Content analysis was performed on participants' free-text responses. The responses were coded by two researchers (KE and SY, both board-certified head and neck surgeons), and the number of responses was tabulated using the codes created.

Results

Survey of healthcare professionals

Overall, 152 of the 181 targeted professionals responded (84.0%). A total of 82 (53.9%) had encountered patients showing suicide-related behaviors, and 69 (45.4%) had experienced completed suicides among their patients. The total number of completed suicides reported was 108 patients (39 respondents reported one patient, 25 two, three reported three, and two reported five). Only seven professionals (4.6%) had attended suicide prevention lectures, and 46 (30.2%) reported that mental health support had been provided for staff following a suicide event. Additionally, 57 (37.5%) had implemented routine suicide prevention measures (Table 1).

Survey of patient data

Of the 78 institutions that expressed interest, 12 provided completed survey forms covering 27 patients (18 completed suicides, and nine attempts) (Table 2). Suicide-related behaviors were more common among men (21/27), those with a history of smoking (17/27), drinking (17/27), living with others (21/27), and married (19/27). Most cases involved advanced-stage cancer (stage 3–4: 20/27). There were no significant trends based on the primary tumor site; however, possibly due to the nature of the survey being conducted at board-certified institutions, nasal and paranasal sinus malignancies appeared more frequent than expected considering their general prevalence (10/27). Laryngectomy (2/27) and facial bone resection (5/27) were not predominant, but uncontrolled or recurrent tumors were frequent (17/27).

The most common phase for suicide-related behaviors was post-treatment follow-up without recurrence (11/27), followed by the first month after diagnosis (4/27) (Fig. 1, Table 3). The longest interval from diagnosis to suicide-related behavior was 134 months (Fig. 2). Most incidents occurred outside medical facilities (17/27), with hanging being the most common method (10/27). Few people had any history of mental illness or psychiatric treatment (5/27). Consultations with psychiatry or palliative medicine departments immediately prior to suicide-related behavior were relatively infrequent (psychiatry: 9/27; palliative care: 3/27). Data regarding preventive measures for suicide-related behavior implemented by healthcare providers were largely unavailable (missing in 18 of 27 cases). Family members were the most frequent first discoverers (10/27), followed by nurses (4/27) (Fig. 3). Inability to eat (7/27), and speech difficulties (7/27, of which two had a laryngectomy, and five a tracheostomy) were common preceding factors. Psychiatric instability, strongly

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Table 1. Healthcare professionals' demographic information and experience of suicidal events among their patients.

1-a: Participants' age		1-c: Suicidal events among patients under their care			1-e: Attendance at lecture on suicide		
≤29 years old	0	1. Yes (in the past)		82	1. Attended		7
30–39 years old	9	Attempted	1 patient	17	2. Did not attend		145
40–49 years old	56		2 patients	6	No answer		0
50–59 years old	65	Completed	1 patient	39	1-f: Provision of post-incident mental healthcare for staff within hospital		
60–69 years old	22		2 patients	25	1. Yes[a]		46
70 years and over	0		3 patients	3		a. Only staff	21
No answer	0		4 patients	0		b. Department/ward-based	23
			5 patients	2		c. As an in-hospital activity	4
		2. No (none reported)		70		d. Others	2
		No answer		0	2. Did not attend		70
					3. There was no suicide		31
					No answer		5
1-b: Years of experience		1-d: Suicidal behaviors among people in affiliated institution			1-g: Suicide prevention measures		
≤ 9 years	1	1. Yes (in the past)		93	1. Yes[a]		57
10–19 years	36	Attempted	1 patient	21		a. Personal development/staff training	19
20–29 years	57		2 patients	3		b. Intervention for high-risk individuals	29
30–39 years	57		3 patients	4		c. Improvement of facilities	13
40 years or more	1	Completed	1 patient	34		d. Others	13
No answer	0		2 patients	24	2. No		95
			3 patients	16	No answer		0
			4 patients	3			
			5 patients	2			
			6 or more	1			
		2. No (none reported)		55			
		No answer		4			

[a]Multiple answers were allowed.

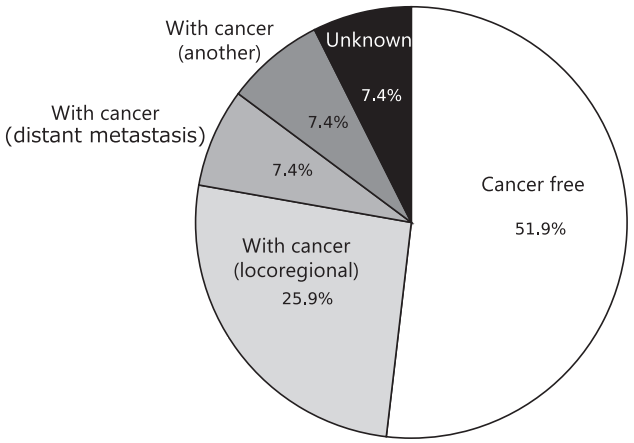


Figure 1. Oncological status at the time of the suicide-related behavior.

correlated with suicide, was noted in 13/27 cases (new onset: four, worsening: nine) (Table 4). Investigators' free-text information on suicide-related behavior is summarized in Table 5. Various backgrounds were identified that were associated with suicide-related behavior over a long period after cancer diagnosis.

Discussion

This study is the first nationwide survey of which we are aware on suicide-related behaviors among people with head and neck cancer in Japan, and it was also unique in drawing on information from both healthcare professionals and patient records. The study clarified head and neck cancer specialists' experience of suicide-related behaviors among their patients, revealing the complex realities surrounding these behaviors through specific clinical information and narrative insights.

People with head and neck cancers are a high-risk group for suicide [2, 7, 8], highlighting the need for a deeper understanding of this phenomenon among medical professionals involved in their care. The head and neck cancer registry of Japan currently does not include suicide-related data, making it difficult to ascertain the full extent of the issue. However, the high proportion of physicians in this study who had experienced suicide-related behaviors among their patients suggests that people with head and neck cancer in Japan are indeed a high-risk group. The suicide of a patient can also cause significant psychological distress among medical professionals [15, 16]. Raising awareness among healthcare professionals, and ensuring appropriate post-incident responses, is therefore crucial. This study showed that nearly half of head and neck cancer physicians had encountered suicide-related behavior in patients, but only 38% had implemented preventive strategies. This discrepancy underscores the need for increased awareness and further investigation of this issue.

Despite recognition of the importance of suicide prevention among cancer patients, countermeasures remain insufficient. One possible reason is the limited number of cases, which makes it difficult to fully understand the physiological and psychological mechanisms leading to suicide. Numerous database studies have confirmed that people with cancer are most likely to show suicide-related behaviors within the first

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Table 2. Characteristics of patients showing suicide-related behaviors.

	Category	Suicide-related behaviors (n = 27)
Age	Median (range)	66.0 (51–94)
Sex		
	Female	6 (22.2%)
	Male	21 (77.8%)
Smoking		
	Never	6 (22.2%)
	Previously	9 (33.3%)
	Current smoker	8 (29.6%)
	Unknown	4 (14.8%)
Drinking		
	Never	5 (18.5%)
	Previously	4 (14.8%)
	Occasionally	3 (11.1%)
	Daily	10 (37.0%)
	Unknown	5 (18.5%)
Comorbidity		
	Low	16 (59.3%)
	Medium	6 (22.2%)
	High	1 (3.7%)
	Very high	4 (14.8%)
History of psychiatric visits		
	None	20 (74.1%)
	Yes	5 (18.5%)
	Unknown	2 (7.4%)
Family history of suicide		
	None	9 (33.3%)
	Yes	0 (0%)
	Unknown	18 (66.7%)
Spouse		
	None	6 (22.2%)
	Yes	19 (70.4%)
	Unknown	2 (7.4%)
Cohabitant		
	None	4 (14.8%)
	Yes	21 (77.8%)
	Unknown	2 (7.4%)
Employment		
	Employed	4 (14.8%)
	Unemployed	13 (48.1%)
	Unknown	10 (37.0%)
ECOG PS[a]		
	0	19 (70.4%)
	1	8 (29.6%)
Primary site		
	Oral cavity	4 (14.8%)
	Hypopharynx	3 (11.1%)
	Oropharynx	6 (22.2%)
	Larynx	3 (11.1%)
	Nasal/paranasal sinus	10 (37.0%)
	Major salivary gland	1 (3.7%)
Clinical history		
	Initial treatment	22 (81.5%)
	Recurrence	5 (18.5%)
Stage		
	1, 2	7 (25.9%)
	3, 4	20 (74.1%)
Synchronous multiple cancers		
	None, unknown	23 (85.2%)
	Yes	4 (14.8%)
Pathology		
	Squamous cell carcinoma	23 (85.2%)
	Melanoma	1 (3.7%)
	Acinic cell carcinoma	1 (3.7%)
	Adenoid cystic carcinoma	1 (3.7%)
	Myoepithelial carcinoma	1 (3.7%)

(continued)

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Table 2. Continued.

	Category	Suicide-related behaviors (n = 27)
Laryngectomy		
	No	25 (92.6%)
	Yes	2 (7.4%)
Facial nerve paralysis		
	None	24 (88.9%)
	Yes	3 (11.1%)
Facial incision		
	No	21 (77.8%)
	Yes	6 (22.2%)
Facial bone resection		
	No	22 (81.5%)
	Yes	5 (18.5%)
Facial nerve resection		
	No/unknown	26 (96.3%)
	Yes	1 (3.7%)
Local relapse, uncontrolled		
	No	17 (63.0%)
	Yes	10 (37.0%)

[a]ECOG PS: The Eastern Cooperative Oncology Group Performance Status.

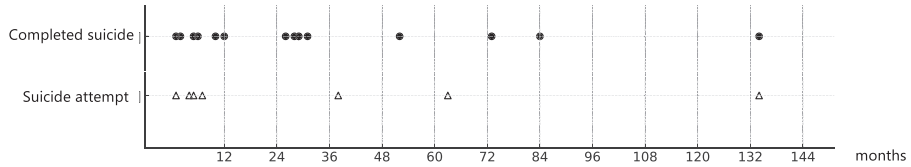


Figure 2. Interval between diagnosis and the onset of suicide-related behavior (completed suicide and suicide attempts).



Figure 3. Features of suicide-related behaviors (actual values).

Table 3. Cancer treatment status at the time of suicide-related behaviors.

Cancer treatment status	
After initial consultation, before diagnosis disclosure	0
After disease status disclosure, before treatment plan proposal	2
After treatment plan proposal, before treatment initiation	2
During initial curative treatment	2
After treatment completion, under recurrence-free follow-up	11
After recurrence explanation, before treatment resumption	3
Under curative treatment for recurrence	1
Under palliative treatment for recurrence (e.g. chemotherapy)	3
After explanation of transition to best supportive care	1
Terminal stage	1
Unknown	1

few weeks after diagnosis [17–23]. Our study confirmed that suicide-related behaviors were frequently observed during the early stages post-diagnosis, but also found that these behaviors occurred across various phases of cancer care. Notably, contrary to previous assumptions, suicide-related behaviors were actually most frequently reported among people in long-term follow-up without recurrence. This suggests that severe side effects or treatment-related sequelae unique to head and neck cancers, such as taste dysfunction and loss of voice, may contribute to suicide-related behaviors. Studies from the United States suggest that people who have had a laryngectomy are at high risk for suicide [8], but we found only two out of 27 cases involved laryngectomy. Our finding is based on a limited number of cases, but it implies that extrapolating results from one cultural context to another may be challenging. We found risk factors consistent with previous domestic studies, such as cohabitation and advanced stage cancer [24]. However, suicide-related behaviors in people with head and neck cancers were observed not only shortly after diagnosis but also over the long term, underscoring the unique risk profile of this group, and the need for a tailored assessment framework, along with further domestic data collection and analysis.

We found a diverse range of events leading up to suicide-related behaviors, making categorization challenging. In the field of psycho-oncology, efforts have been made to develop

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Table 4. Background factors immediately before suicide.

Events or warning signs just before suicide-related behaviors	
New psychiatric symptoms in patients without history	4
Worsening/unstable psychiatric symptoms	9
Worsening/unstable physical symptoms	3
Recent suicide attempt/self-harm	3
Expressed suicidal intent	1
Recently experienced a bad event: bereavement or separation/divorce from a close person.	1
Recently received a medical explanation, including bad news.	2
Gastrostomy was recently suggested.	1
Tracheostomy was recently suggested.	1
A recent death of a roommate.	0
Recent in-hospital suicide by another patient.	0
Recently quit a job or was unemployed.	1
Had been experiencing persistent insomnia.	0
Cancer treatment and physical status just before suicide-related behaviors	
No special notes.	8
Difficulty in oral intake (due to, e.g. dysphagia or passage obstruction).	3
Unable to take nutrition orally (dependent on gastrostomy or central venous nutrition).	7
Aphonia (after tracheostomy or laryngectomy).	7
Able to vocalize with a tracheal stoma (using, e.g. cannula or shunt speech).	0
Tumor exposure or necrosis.	3
Uncontrollable pain.	3
Facial changes (concern about, e.g. facial asymmetry).	3
Gait dysfunction.	0
Visual impairment, hearing impairment.	0
Bowel and bladder dysfunction.	0

structured screening approaches for suicide risk in oncology settings [25, 26]. However, there is no universally effective method to systematically identify cancer patients at high risk of suicide, and efforts are underway to develop theoretical and assessment frameworks for evaluating suicide risk in cancer patients. One such framework is the Interpersonal-Psychological Theory of Suicide (IPTS) proposed by Joiner and colleagues, based on three main factors: 'thwarted belongingness,' 'perceived burdensomeness,' and 'acquired capability for suicide' [27]. Social factors such as existential distress [28], suffering [29], and loneliness [30] have been reported to play crucial roles in suicide risk among people with cancer. Perceived burdensomeness was previously identified as a suicide risk factor in people with cancer [31–33]. The IPTS is therefore widely expected to be useful despite the current lack of evidence [34].

In our study, suicide-related behaviors occurring more than a year after diagnosis frequently included narratives such as 'multiple treatments caused severe taste dysfunction, making life unbearable' and 'patient committed suicide after transferring to a palliative care hospital because of recurrent nasal cavity and pharyngeal cancer with visible tumor exposure.' These findings suggest a strong link between long-term suffering and acquired capability for suicide. People with head and neck cancer often experience severe disease-related symptoms and treatment side effects that significantly affect their quality of life, meaning that they are likely to meet all three IPTS criteria, especially acquired capability for suicide. Future suicide prevention efforts should therefore not rely solely on single interventions (e.g. psychiatric consultation) but should instead involve multidisciplinary interventions that comprehensively address all three IPTS components in a bundled approach.

The strength of this study lies in its integration of surveys among medical professionals with a hybrid approach between database research and psychological autopsy. This allowed the rapid collection of both narrative data on suicide-related behaviors and structured tumor registry data within a single study. However, this methodology also had limitations. In particular, the number of cases analyzed was significantly smaller than in previous database studies, and the narrative data were less detailed than those obtained through full psychological autopsy. As is common in suicide research, it is difficult to directly study individuals who have exhibited suicidal behavior and our findings are based solely on information provided by physicians who agreed to participate. Recent discussions also suggest the need to re-evaluate the directional relationship between cancer and suicide. Until now, research has focused mainly on 'cancer patients who commit suicide,' but emerging evidence suggests there may be a bidirectional relationship, particularly in Arctic regions [34]. Other recent studies indicate potential genetic correlations between cancer and suicide [35], suggesting that future research on suicide prevention among people with cancer may require a fundamental paradigm shift.

In summary, our study found that approximately half of Japanese head and neck cancer specialists have encountered suicide-related behaviors among their patients. However, the establishment of preventive measures and post-incident responses remains inadequate [36] and thus it is imperative that healthcare professionals remain constantly vigilant to the possibility that any given patient may attempt suicide at any time. The risk of suicide-related behaviors among people with head and neck cancers persist over an extended period, influenced by diverse factors. Our findings suggest that healthcare providers involved in caring for people with head and neck cancers should focus on long-term comprehensive anti-suicide interventions that integrate physical, psychological, and social factors. The 'Research on the Development of a Suicide Prevention Program for Cancer Patients (21EA1008)' is still ongoing, and the findings of the

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Table 5. Investigators' free-text information on suicide-related behavior.

Interval[a]	Comments
1	History of depression, stable in recent years. Postoperative vagus nerve palsy caused swallowing difficulties. Event occurred on the night of the gastrostomy proposal.
1	Occurred on outpatient stairs after diagnosis.
1	The event occurred on postoperative day 14. The patient experienced delirium and stated, 'I had a dream that my son died, and it made me very sad.'
1	The patient attempted suicide twice after the initial diagnosis and early recurrence. He managed to escape on his own and sought help from his partner.
2	The event occurred during the initial treatment with no prior warning signs or triggers.
4	Business owner. Originally aggressive, verbally abusive to the primary doctor. Multiple arrests for speeding violations.
5	N/A*
5	Postoperative swallowing difficulties and loss of appetite. Reported suicide.
6	History of depression and stimulant abuse. An event occurred shortly after a change of primary physician.
7	Immediately after informed consent for the discontinuation of active treatment.
10	N/A*
12	Frequent throat obstruction since treatment. Insomnia.
26	Brachytherapy was performed owing to surgery refusal. Treated with S-1. Recurrence occurred after 21 months, followed by self-discontinuation. Prognostic follow-up revealed suicide.
28	N/A*
29	Under recurrence-free follow-up. Undergoing HBO[b] for mandibular osteomyelitis. The event occurred during pain management.
29	Multiple treatments caused severe taste dysfunction, making life unbearable. Expressed distress, stating, 'It is unbearably painful, I want to die.'
31	Alcohol-dependent
38	Depressed since diagnosis. History of suicide attempt. Experienced anorexia and violent behavior, leading to debilitation.
52	The patient committed suicide after transferring to a palliative care hospital because of recurrent nasal cavity and pharyngeal cancer with visible tumor exposure and nasal defect.
63	Fistula formation after TL[c] + PMMC[d] for recurrent lesions. Suicide attempt during the fistula management period.
73	Surgery performed. Underwent reoperation for mandibular necrosis postoperatively. One month later, died by jumping from a height. No prior warning signs.
84	After a long treatment history, transitioned to BSC[e]. An event occurred shortly after applying for PCU[f].
102	A very prolonged course. Stated, 'I don't want to burden my family any further.'
134	After CRT[g], a rejecting attitude due to peripheral neuropathy was observed.
134	Three days before suicide, a psychiatric consultation was conducted, and suicidal ideation was reported. After RT[h], the patient underwent tracheostomy due to glottic stenosis and was dependent on a gastrostomy tube.
N/A*	Found strangled in a staff restroom by a nurse. Lived alone and experienced recurrence, leading to despair about the future.
N/A*	Fell to death in despair after lung metastasis.

[a]Interval: time to suicide-related behavior (months). [b]HBO: hyperbaric oxygen therapy. [c]TL: total laryngectomy. [d]PMMC: pectoralis major myocutaneous flap. [e]BSC: best supportive care. [f]PCU: palliative care unit. [g]CRT: chemoradiotherapy. [h]RT: radiotherapy. *N/A: not available.

present study are expected to serve as important reference material for the future development of effective prevention strategies.

Acknowledgements

We extend our deepest appreciation to the physicians who generously contributed to this study. Given the sensitive nature of the research, and to safeguard the anonymity of the individuals involved, we have elected to express our acknowledgments in this manner. We also thank Melissa Leffler, MBA, from Edanz (https://jp.edanz.com/ac) for editing a draft of this manuscript.

Conflict of interest statement

The authors have no conflict of interest to disclose.

Funding

This work was supported by Health Labor Sciences Research Grant (Grant/Award Number: 21EA1008).

References

1. Lu D, Andersson TM, Fall K., *et al.* Clinical diagnosis of mental disorders immediately before and after cancer diagnosis: A nationwide matched cohort study in Sweden. *JAMA Oncol* 2016;**2**:1188–96. https://doi.org/10.1001/jamaoncol.2016.0483.
2. Kurisu K, Fujimori M, Harashima S., *et al.* Suicide, other externally caused injuries, and cardiovascular disease within 2 years after cancer diagnosis: A nationwide population-based study in Japan (J-SUPPORT 1902). *Cancer Med* 2023;**12**:3442–51. https://doi.org/10.1002/cam4.5122.
3. National Police Agency. *Suicide statistics in Japan*. Available at: https://www.npa.go.jp/publications/statistics/safetylife/jisatsu.html, DOI: https://doi.org/10.1111/psyg.70063.
4. Du L, Shi HY, Yu HR., *et al.* Incidence of suicide death in patients with cancer: A systematic review and meta-analysis. *J Affect Disord* 2020;**276**:711–9. https://doi.org/10.1016/j.jad.2020.07.082.
5. Ravaioli A, Crocetti E, Mancini S., *et al.* Suicide death among cancer patients: New data from northern Italy, systematic review of the last 22 years and meta-analysis. *Eur J Cancer* 2020;**125**:104–13. https://doi.org/10.1016/j.ejca.2019.08.019.
6. Spoletini I, Gianni W, Caltagirone C., *et al.* Suicide and cancer: Where do we go from here? *Crit Rev Oncol Hematol* 2011;**78**:206–19. https://doi.org/10.1016/j.critrevonc.2010.05.005.
7. Zaorsky NG, Zhang Y, Tuanquin L., *et al.* Suicide among cancer patients. *Nat Commun* 2019;**10**:207. https://doi.org/10.1038/s41467-018-08170-1.

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8. Kam D, Salib A, Gorgy G., *et al.* Incidence of suicide in patients with head and neck cancer. *JAMA Otolaryngol Head Neck Surg* 2015;**141**:1075–81. https://doi.org/10.1001/jamaoto.2015.2480.
9. Cho K, Tsugawa R, Lee I. Grief of bereaved families of suicide completers: A follow-up study of psychological autopsy informants. *Suicide Prev Crisis Interv* 2002;**23**:26–34.
10. Hirokawa S, Kawakami N, Matsumoto T., *et al.* Mental disorders and suicide in Japan: A nation-wide psychological autopsy case-control study. *J Affect Disord* 2012;**140**:168–75. https://doi.org/10.1016/j.jad.2012.02.001.
11. Ministry of Health, Labour and Welfare, Japan. *The 4th basic plan to promote cancer control programs*. Available at: https://www.mhlw.go.jp/content/10901000/001091843.pdf.
12. Ministry of Health, Labour and Welfare, Japan. *The general principles of suicide prevention policy*. Available at: https://www.mhlw.go.jp/file/06-Seisakujouhou-12200000-Shakaiengokyokushougaihokenfukushibu/0000172329.pdf, DOI: https://doi.org/10.1186/s12887-025-05677-7.
13. Kawakita D, Yoshimoto S, Nakamizo M., *et al.* Head and neck cancer registry of Japan. *Auris Nasus Larynx* 2025;**52**:122–6. https://doi.org/10.1016/j.anl.2025.01.007.
14. Charlson ME, Carrozzino D, Guidi J, Patierno C. Charlson comorbidity index: A critical review of clinimetric properties. *Psychother Psychosom* 2022;**91**:8–35. https://doi.org/10.1159/000521288.
15. Downey JI, Alfonso CA. The impact of patient suicide on clinicians. *Psychodyn Psychiatry* 2023;**51**:381–5. https://doi.org/10.1521/pdps.2023.51.4.381.
16. Rajagopalan A, Teck SCE, Sng ATT. Shared fragility: Contemplating the impact of patients' suicides on clinicians. *Psychodyn Psychiatry* 2023;**51**:409–33. https://doi.org/10.1521/pdps.2023.51.4.409.
17. Saad AM, Gad MM, Al-Husseini MJ., *et al.* Suicidal death within a year of cancer diagnosis: A population-based study. *Cancer* 2019;**125**:972–9. https://doi.org/10.1002/cncr.31876.
18. Fang F, Fall K, Mittleman MA., *et al.* Suicide and cardiovascular death after a cancer diagnosis. *N Engl J Med* 2012;**366**:1310–8. https://doi.org/10.1056/NEJMoa1110307.
19. Fang F, Keating NL, Mucci LA., *et al.* Immediate risk of suicide and cardiovascular death after a prostate cancer diagnosis: Cohort study in the United States. *J Natl Cancer Inst* 2010;**102**:307–14. https://doi.org/10.1093/jnci/djp537.
20. Fall K, Fang F, Mucci LA., *et al.* Immediate risk for cardiovascular events and suicide following a prostate cancer diagnosis: Prospective cohort study. *PLoS Med* 2009;**6**:e1000197. https://doi.org/10.1371/journal.pmed.1000197.
21. Harashima S, Fujimori M, Akechi T., *et al.* Death by suicide, other externally caused injuries and cardiovascular diseases within 6 months of cancer diagnosis (J-SUPPORT 1902). *Jpn J Clin Oncol* 2021;**51**:744–52. https://doi.org/10.1093/jjco/hyab001.
22. Yamauchi T, Inagaki M, Yonemoto N., *et al.* Death by suicide and other externally caused injuries following a cancer diagnosis: The Japan public health Center-based prospective study. *Psychooncology* 2014;**23**:1034–41. https://doi.org/10.1002/pon.3529.
23. Tanaka H, Tsukuma H, Masaoka T., *et al.* Suicide risk among cancer patients: Experience at one medical center in Japan, 1978–1994. *Jpn J Cancer Res* 1999;**90**:812–7. https://doi.org/10.1111/j.1349-7006.1999.tb00820.x.
24. Fujimori M, Hikiji W, Tanifuji T., *et al.* Characteristics of cancer patients who died by suicide in the Tokyo metropolitan area. *Jpn J Clin Oncol* 2017;**47**:458–62. https://doi.org/10.1093/jjco/hyx003.
25. Noel CW, Eskander A, Sutradhar R., *et al.* Incidence of and factors associated with nonfatal self-injury after a cancer diagnosis in Ontario, Canada. *JAMA Netw Open* 2021;**4**:e2126822. https://doi.org/10.1001/jamanetworkopen.2021.26822.
26. Leung YW, Li M, Devins G., *et al.* Routine screening for suicidal ideation in cancer patients. *Psychooncology* 2013;**22**:2537–45. https://doi.org/10.1002/pon.3319.
27. Van Orden KA, Witte TK, Cukrowicz KC., *et al.* The interpersonal theory of suicide. *Psychol Rev* 2010;**117**:575–600. https://doi.org/10.1037/a0018697.
28. Moadel A, Morgan C, Fatone A., *et al.* Seeking meaning and hope: Self-reported spiritual and existential needs among an ethnically diverse cancer patient population. *Psychooncology* 1999;**8**:378–85. https://doi.org/10.1002/(SICI)1099-1611(199909/10)8:5<378::AID-PON406>3.0.CO;2-A.
29. Jaremka LM, Andridge RR, Fagundes CP., *et al.* Pain, depression, and fatigue: Loneliness as a longitudinal risk factor. *Health Psychol* 2014;**33**:948–57. https://doi.org/10.1037/a0034012.
30. Deckx L, van den Akker M, Buntinx F. Risk factors for loneliness in patients with cancer: A systematic literature review and meta-analysis. *Eur J Oncol Nurs* 2014;**18**:466–77. https://doi.org/10.1016/j.ejon.2014.05.002.
31. Llorente MD, Burke M, Gregory GR., *et al.* Prostate cancer: A significant risk factor for late-life suicide. *Am J Geriatr Psychiatry* 2005;**13**:195–201. https://doi.org/10.1097/00019442-200503000-00004.
32. Noor-Mahomed SB, Schlebusch L, Bosch BA. Suicidal behavior in patients diagnosed with cancer of the cervix. *Crisis* 2003;**24**:168–72. https://doi.org/10.1027//0227-5910.24.4.168.
33. Robson A, Scrutton F, Wilkinson L, MacLeod F. The risk of suicide in cancer patients: A review of the literature. *Psychooncology.* 2010;**19**:1250–8. https://doi.org/10.1002/pon.1717.
34. Schomberg J, Teismann T, Bussmann S., *et al.* The significance of the interpersonal-psychological theory of suicide in an oncological context: A scoping review. *Eur J Cancer Care (Engl)* 2021;**30**:e13330. https://doi.org/10.1111/ecc.13330.
35. Voskarides K, Chatzittofis A. GWAS studies reveal a possible genetic link between cancer and suicide attempt. *Sci Rep* 2019;**9**:1829. https://doi.org/10.1038/s41598-019-54812-9.
36. Kawashima Y, Yonemoto N, Inagaki M, Inoue K, Kawanishi C, Yamada M. Interventions to prevent suicidal behavior and ideation for patients with cancer: A systematic review. *Gen Hosp Psychiatry* 2019;**60**:98–110. https://doi.org/10.1016/j.genhosppsych.2019.07.003.

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Japanese Journal of Clinical Oncology, 2025, 55(11), 1259–1266
https://doi.org/10.1093/jjco/hyaf125
Original Article

frontiers | Frontiers in Psychiatry

TYPE Original Research
PUBLISHED 21 January 2026
DOI 10.3389/fpsyt.2026.1743690

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RECEIVED 11 November 2025
REVISED 26 December 2025
ACCEPTED 02 January 2026
PUBLISHED 21 January 2026

CITATION
Kumada F, Kurisu K, Okamura M, Akechi T, Matsumura Y, Uchitomi Y and Fujimori M (2026) Suicide prevention in Japanese cancer care hospitals: a topic modeling analysis of manuals and workflows. *Front. Psychiatry* 17:1743690. doi: 10.3389/fpsyt.2026.1743690

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Suicide prevention in Japanese cancer care hospitals: a topic modeling analysis of manuals and workflows

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Introduction: People with cancer in Japan have an elevated risk of suicide, yet little information is available regarding in-hospital suicide prevention manuals and workflows. This study investigated the strategies and frameworks described in manuals and workflows developed by Designated Cancer Care Hospitals.
Methods: Using snowball sampling, suicide prevention manuals and workflows for patients with cancer were collected from 14 Designated Cancer Care Hospitals. The textual data were quantitatively analyzed using topic modeling, specifically latent Dirichlet allocation, a text-mining technique. Topics were extracted and labeled through discussions with suicide prevention experts. Based on these topics, we proposed a set of recommended components for suicide prevention manuals and workflows for people with cancer.
Results: In total, 329 paragraphs from the manuals and workflows of 13 hospitals were analyzed, yielding 20 topics. Among these, six topics were commonly addressed across hospitals, covering prevention (e.g., "Types of Suicide Hotspots and Examples of Countermeasures"), intervention (e.g., "Procedures and Collaboration System for Managing Patients with Suicidal Ideation"), and postvention (e.g., "On-Site Response Procedures Upon Discovering a Suicide"). In addition, six topics were described in greater length by certain hospitals, reflecting their unique institutional characteristics (e.g., "Overview of Suicide Prevention Measures").
Conclusions: Commonly shared topics should be prioritized in suicide prevention manuals and workflows for patients with cancer. Conversely, hospital-specific topics may serve as useful references tailored to the distinct characteristics of each hospital. Factors such as hospital size, geographic location, and clinical practice should be considered when determining the content of these manuals and workflows.

KEYWORDS

cancer, health services administration, hospitals, neoplasms, suicide prevention, topic modeling

1 Introduction

People with cancer have a substantially higher risk of suicide than the general population. A systematic review of 62 studies involving approximately 47 million individuals found a significantly elevated suicide risk among patients with cancer (1). In Japan, analyses based on the National Cancer Registry demonstrated that suicide risk is particularly high immediately after diagnosis, reaching approximately 4.4 times that of the general population within the first month (2, 3). Despite widespread knowledge of this risk, a systematic review of intervention studies examining suicide, suicide attempts, self-harm, and suicidal ideation as outcomes found no interventions that clearly demonstrated a preventive effect on suicide among individuals with cancer (4).

In response to this gap between risk recognition and effective prevention, suicide prevention has become an explicit policy priority in Japanese cancer care. The 2022 revision of the Guidelines for the Development of Designated Cancer Care Hospitals (DCCHs) requires hospitals to establish standardized in-hospital workflows to address suicide risk among people with cancer, including clearly defined response procedures and coordination with relevant organizations (5). This focus was reinforced in the Fourth Basic Plan to Promote Cancer Control Programs announced in 2023, which identified suicide among people with cancer as a critical issue (6). In addition, an analysis of patient safety reports from 620 hospitals underscored the need to strengthen awareness and implement suicide prevention measures within medical institutions (7). However, a recent nationwide survey revealed that approximately one quarter of DCCHs still lacked implemented suicide prevention manuals or workflows as of February 2023 (8).

Various organizations, including those in Japan, have published online resources, manuals, and guidelines on suicide prevention (9–14). Additionally, the National Cancer Center (NCC) has published a guidance document specifically addressing suicide prevention in cancer care (hereafter referred to as the "NCC Guidelines") (15). These materials outline the epidemiological characteristics of suicide among individuals with cancer and recommend key components for effective prevention. Based on these resources, DCCHs are expected to develop their own action-oriented manuals and workflows tailored to their specific contexts. However, no previous research has examined the actual content of the suicide prevention manuals currently used in medical hospitals, which may provide insights into how suicide prevention is operationalized internationally, the extent to which practices align with national and international guidelines, the presence of locally developed strategies, and the practical challenges involved in implementation. Furthermore, comparing manuals across multiple institutions may help identify best practices and inform future efforts toward standardization and quality improvement of suicide prevention manuals.

Therefore, we aimed to examine the approaches and organizational frameworks for suicide prevention strategies in DCCHs by collecting suicide prevention manuals and workflows and conducting quantitative content analysis using text mining techniques.

2 Materials and methods

2.1 Data sources

A researcher with expertise in suicide among people with cancer contacted DCCHs and used snowball sampling to collect internal documents—such as manuals and workflows—related to suicide prevention and postvention for people with cancer between April and May 2023. Documents were obtained through direct requests to the hospitals, with the understanding that institutional identities would remain confidential. The first hospital contacted was the institution affiliated with a member of the research project team (Y.M.), who has expertise in suicide prevention among people with cancer. This hospital served as the starting point for snowball sampling and was asked to recommend other DCCHs that had implemented relevant suicide prevention manuals or workflows. Recruitment continued until the authors considered that newly obtained documents did not yield substantively new content.

Ethical approval was not required for this study because no human participants were involved.

2.2 Analysis

To extract the key components described in the collected suicide prevention manuals and workflows, we employed topic modeling, a text mining technique for identifying latent thematic structures in documents. Specifically, we conducted unsupervised machine learning analysis using latent Dirichlet allocation (LDA) (16), which identifies latent topics by analyzing word co-occurrence patterns across a document corpus (17).

Topic extraction was conducted at the paragraph level rather than at the sentence level because a sentence-based analysis would yield overly fine-grained topics and complicated interpretations. Figures and tables in the documents were converted into complete sentences by using the original words and phrases and supplementing them with grammatical elements, such as conjunctions and auxiliary verbs, so that the content formed coherent statements. Each converted figure or table was then treated as a single paragraph in the analysis. Furthermore, of the eight major classes of independent words in Japanese (nouns, verbs, adjectives, adjectival verbs, adverbs, determiners, conjunctions, and interjections), only nouns and verbs were included in the analysis, as the remaining classes are primarily modifiers or connectors, rather than core semantic content. Accordingly, morphological analysis was used to extract only nouns and verbs for topic modeling. Topic analysis using LDA requires a predefined number of topics. We determined the optimal number of topics based on the perplexity, a metric that reflects the predictive performance (18).

The names of the topics extracted through LDA were determined via a three-round consensus process among four researchers with expertise in suicide prevention among people with cancer. First, paragraphs associated with each topic were classified into more detailed subgroups, and a provisional name was assigned to each subgroup. Subsequently, a name was proposed for each topic based on common themes identified across the subgroups. Each researcher suggested their own subgroups and topic names, and final decisions were made through discussion. Furthermore, based on the extracted topics and with reference to the nine recommended components of suicide prevention outlined in the general section of the NCC Guidelines (15), the researchers reached a consensus on a set of recommended components for suicide prevention manuals and workflows for people with cancer.

All analyses in this study were performed using KH Coder 3 (19).

3 Results

3.1 Document characteristics

We contacted 23 hospitals and collected suicide prevention manuals and workflows from 14 of them, including general (n = 5), university (n = 5), and cancer specialty (n = 4) hospitals (Table 1). The remaining hospitals (n = 9) declined to provide documents for reasons including ongoing material development or the absence of any relevant documentation in use. The manual from Hospital H was cited in the references of the manual from Hospital K (Table 1), and the two were similar regarding structural composition and textual phrasing. Therefore, the manual from Hospital K was excluded from the analysis, and the final analysis was conducted using the manuals and workflows from 13 hospitals.

The documents varied in length, ranging from a concise one-page suicide prevention workflow (approximately 500 Japanese characters, equivalent to 200 English words) to a comprehensive 28-page report comprising 85 paragraphs and over 20,000 Japanese characters (approximately 8,000 English words). On average, the documents were 8.8 pages in length, containing 26.4 paragraphs and approximately 5,400 characters. Some hospitals used the suicide prevention manual as a standalone document, whereas others incorporated it into a broader manual, such as a general medical safety manual. Among these, 10 hospitals (Table 1) explicitly used the word "cancer" and included detailed descriptions of topics, such as the current state of suicide risk among people with cancer, risk factors, and responses to patients with advanced-stage cancer.

Manuals from 13 hospitals were segmented into 329 paragraphs. Morphological analysis yielded 41,183 words, of which 3,180 were unique. Among these, 5,540 words (2,429 unique) were nouns or verbs used in the analysis.

TABLE 1 Summary of collected manuals and workflows from 14 hospitals.

Hospital ID.	Type of DCCH	Type of hospital	Format of manual		Pages	Paragraphs	Japanese characters
			Standalone	Partial			
A†	Prefectural	University	●		28	85	20,523
B	Prefectural	General	●		6	17	4,086
C†	Prefectural	Cancer		●	4	8	2,869
D	Prefectural	Cancer		●	3	8	1,888
E	Prefectural	Cancer		●	2	5	1,060
F	Prefectural	Cancer		●	2	3	885
G†	Regional	University		●	18	73	14,247
H†	Regional	University	●		16	52	9,242
I†	Regional	University	●		2	8	1,485
J†	Regional	University	●		1	1	489
K†	Regional	General	●		15	40	8,645
L†	Regional	General		●	10	28	5,273
M†	Regional	General	●		10	28	7,163
N†	Regional	General	●		6	13	1,353

DCCH stands for Designated Cancer Care Hospital.
Regarding the format of manuals, "standalone" refers to hospitals that operate with an independent document, whereas "partial" indicates those incorporating content as part of another manual (e.g., a general safety manual).
In the Type of hospital column, "University," "General," and "Cancer" refer to university hospitals, general hospitals, and cancer centers, respectively.
Cells marked with † denote hospitals whose manuals explicitly mention "cancer."
Character and paragraph counts included only the main text of the manuals, excluding the tables of contents and reference lists.

3.2 Topic modeling results

Based on perplexity, the number of topics was set to 20. The occurrence probabilities of these topics were calculated for each of the 329 paragraphs (the sum of these probabilities was equal to one for each paragraph). The relationship between topic-occurrence probabilities and the estimated number of paragraphs exceeding each probability threshold is presented in Supplementary Figure 1. Considering this trade-off between interpretability and coverage, a threshold of 0.15 was adopted, resulting in the selection of 153 paragraphs (47% of the total) for subsequent analyses. When this threshold was applied, 10 of the 153 paragraphs were assigned to more than one topic (Supplementary Figure 1).

To assess the impact of topic-occurrence probabilities in relation to manual lengths, we calculated the proportion of paragraphs exceeding the probability threshold relative to the total number of paragraphs (Supplementary Figure 2). The correlation coefficient between the total number of paragraphs and this proportion was −0.37, indicating a negative association. This suggests that manuals containing a larger number of paragraphs did not disproportionately influence topic identification, nor did manuals with fewer paragraphs systematically show weaker contributions to the topic modeling results.

3.3 Thematic content analysis

The subgroups within each topic were classified into one of three categories of suicide prevention: prevention (measures taken prior to crisis intervention during routine care), intervention (measures during crisis intervention), and postvention (measures implemented after a suicide-related incident). Two additional categories were added for topics that did not align with any of the three phases:

- Overview, which included epidemiological information on suicide among people with cancer and the broader public health and societal importance of suicide prevention.
- System, which included descriptions of interdepartmental and inter-organizational coordination structures, as well as routine communication systems.

The subgroup names and their classifications are presented in Table 2.

The term "cancer" appeared in 22 of the 153 paragraphs (14%), indicating that the content focused on people with cancer (Table 2). Within the Overview category, the content explained cancer-specific risk factors, as well as the epidemiology of suicide risk among people with cancer and the necessity of implementing suicide prevention measures in DCCHs. In the Prevention category, examples included the use of screening tools, such as a Questionnaire on Ease of Daily Living, and descriptions of suicide risk factors among people with cancer. In the Intervention category, the content addressed psychological responses such as grief experienced by people with terminal cancer. In the Systems category, descriptions focused on internal coordination systems, including the role of the cancer counselling and support center.

3.4 Topic types: common and hospital-specific

Figure 1 displays the number of paragraphs associated with each topic in relation to the number of hospitals whose manuals or workflows included that topic. Six topics (3, 6, 7, 11, 14, and 15) were identified in six or more hospitals, representing content commonly shared across institutions. These topics encompass suicide prevention measures spanning the full continuum of prevention, intervention, and postvention, and were categorized as "Common" in the "Type" column of Table 2.

In contrast, six topics (2, 8, 9, 12, 16, and 18) appeared in the manuals or workflows of only a small number of hospitals but were located above the regression line. This indicates that although these topics were not widely addressed across institutions, they were discussed in greater detail by the hospitals that included them. Accordingly, these topics were classified as "Hospital-specific" in the "Type" column of Table 2. Further details on these hospital-specific topics, including their distribution by hospital, are provided in Supplementary Figure 3.

As a supplementary analysis, the topics derived from the primary analysis were externally applied to the paragraphs from Hospital K, which had been excluded from model training due to concerns regarding institutional non-independence. Topic-occurrence probabilities were estimated for each paragraph and aggregated in the same manner as in the primary analysis. When Hospital K was included in the regression framework using these externally applied topic probabilities, the positive linear relationship between the number of hospitals including a topic and the total number of associated paragraphs was preserved, although the absolute paragraph counts and the relative positions of several topics with respect to the regression line changed slightly. The results of this supplementary analysis are presented in Supplementary Figure 4.

3.5 Recommended components of the suicide prevention manuals or workflows for people with cancer

The 12 topics extracted in this study, comprising six commonly observed topics and six hospital-specific characteristics, were compared with the nine components of suicide prevention outlined in the general section of the NCC Guidelines (15), using these components as the reference standard for comparison. A detailed comparison, including the rationales for inclusion and exclusion, is provided in Supplementary Table 1. Based on these findings, we determined the recommended components for inclusion in suicide prevention manuals and workflows for individuals with cancer (Table 3).

TABLE 2 List of 20 topics and subgroup names.

Topic No.	Topic title	Subgroup	Category					Type	
			Overview	Type of prevention			System	C	S
				Prevention	Intervention	Postvention			
1	Suicide Risk in People with Cancer	Epidemiology of Suicide Risk in People with Cancer (4)†	●						
		Suicide Risk Strategies in Designated Cancer Care Hospitals (1)†	●						
		Risk Factors for Suicide in People with Cancer (1)†	●						
2	Overview of Suicide Prevention Measures	Prevention, Intervention, and Postvention Strategies for Suicide (4)†	●						●
		Suicide Prevention as a Social Responsibility (2)	●						
		Practical Examples of Suicide Prevention: Counseling, Education, Support, and Systems (2)	●						
		Suicide Postvention (1)	●						
		References for Suicide Prevention Manuals (1)	●						
3	Types of Suicide Hotspots and Examples of Countermeasures	Examples of Hotspot Types and Preventive Measures (10)		●				●	
4	Explanation of Total Pain	Total (Holistic) Pain (1)		●					
5	Suicide Risk Assessment and Response	Warning Signs that Elevate Suicide Risk and Corresponding Responses (5)†		●	●				
		Documentation of Risk Assessment (1)		●	●				
6	Risk Factors for Suicide and Assessment Methods	Suicide Risk Assessment Checklist (Source: Journal of Patient Safety Promotion, Issue 17) (4)		●				●	
		Risk Factors for Suicide (7)†		●					
		Patient Checklist for Suicide Risk Assessment (1)		●					
		Factors Contributing to Inpatient Suicide (1)		●					
		Checklist for Patients with Suicidal Ideation (1)			●				
7	Procedures and Collaboration System for Managing Patients with Suicidal Ideation	Procedures and Coordination for Providing Care for Patients with Suicidal Ideation (7)†			●			●	
		Coordination and Procedures for Sharing Mental Health Information Between Outpatient and Inpatient Units (1)		●	●				
		Response and Coordination Procedures for Inpatients After Suicide Attempts (1)			●				
8	Screening Methods for Emotional Distress	Questionnaire on Ease of Daily Living (5)†		●					●

(Continued)

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TABLE 2 Continued

Topic No.	Topic title	Subgroup	Category					Type	
			Overview	Type of prevention			System	C	S
				Prevention	Intervention	Postvention			
		Screening Using the Integrated Palliative Care Outcome Scale (1)†		●					
		Post-Incident Staff Support (1)				●			
9	Examples of Responses to Suicide-Related Behaviors	Methods for Responding to Patients with Suicidal Ideation (4)		●	●				●
		Methods for Responding to Patients After Suicide Attempts (1)			●	●			
		Methods for Communicating with Other Patients After a Suicide (1)				●			
		Medical Provider-Related Factors in Suicide: Communication "Don'ts" (1)†		●	●				
10	Measures to Address Issues Faced by Patients and Bereaved Families	Responding to Patient Issues as Suicide Risk Factors (3)		●	●				
		Support for Problems Faced by Bereaved Families (3)				●			
11	Examples of Communication Methods with Patients, Bereaved Families, and Other Patients	Communication Methods During Crisis Intervention (12)			●			●	
		Communication with Patients Using the Questionnaire on Ease of Daily Living (1)†		●	●				
		Communication with Other Patients After a Suicide (2)				●			
		Communication with Bereaved Families After a Suicide (1)				●			
12	Psychological Reactions, Including Grief, and Related Support	Psychological Reactions Including Grief Among the Bereaved and Corresponding Support (8)				●			●
		Grief and Psychological Responses in People with Terminal Cancer (1)†			●				
13	Crisis Intervention and Post-Incident Response	Information Sharing on Suicide Attempt Cases in the Emergency Department (1)			●				
		Information Sharing in Emergency Meetings (1)				●			
		Information Sharing During Crisis Intervention (1)			●				
		Methods for Providing Information to Bereaved Families and the Community (1)				●			
14	On-Site Response Procedures Upon Discovering a Suicide	On-Site Response Procedures Upon Discovery of Suicide (15)				●		●	

(Continued)

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TABLE 2 Continued

Topic No.	Topic title	Subgroup	Category					Type	
			Overview	Type of prevention			System	C	S
				Prevention	Intervention	Postvention			
15	Communication and Reporting Procedures Upon Discovering a Suicide	Contact and Reporting Procedures Upon Discovery of Suicide (14)				●		●	
16	Post-Incident Procedures for Psychological Care for Bereaved Families and Staff	Psychological Support Procedures for Staff After an Incident (7)				●			●
		Psychological Support Procedures for Bereaved Families After an Incident (1)				●			
17	Post-Incident Debriefing and Staff Care System	Procedures for Conducting Emergency Meetings (3)				●			
		System for Providing Post-Incident Staff Support (2)				●			
18	Interdisciplinary Collaboration within the Hospital and with External Organizations	Multidisciplinary In-Hospital and External Organizational Collaboration (3)					●		●
		In-Hospital Counseling System (4)†					●		
		Importance of Suicide Prevention in Medical Institutions (1)					●		
		Post-Incident Support for Staff Across Disciplines (1)					●		
19	System Development (Management, Consultation, Support, Reporting, Education, etc.)	In-Hospital Systems for Suicide Prevention: Counseling, Education, and Support (1)					●		
		Post-Incident In-Hospital Management System (1)					●		
		Clarification of Departmental Responsibilities, Reporting Systems, and Education Structures (1)					●		
		System for Ongoing Post-Incident Support (1)					●		
20	Consultation Services for Suicide Prevention	Mental Health Consultation Services in Kyoto City (1)					●		
		Legal Support for Bereaved Families by the Suicide Survivor Support Center (1)					●		
		Legal and Administrative Consultation Services by Bar Associations (1)					●		

"Common" (C) refers to the six topics frequently described across hospitals, while "Hospital-Specific" (S) indicates the six topics reflecting the unique characteristics of suicide prevention efforts at specific hospitals; these are labelled as "C" and "S," respectively, in the Type column of the table for brevity.
† next to a subgroup item indicates that the item includes at least one paragraph containing the word "cancer."
The numbers in parentheses next to the subgroup items indicate the number of paragraphs included in each corresponding subgroup.

10.3389/fpsyt.2026.1743690

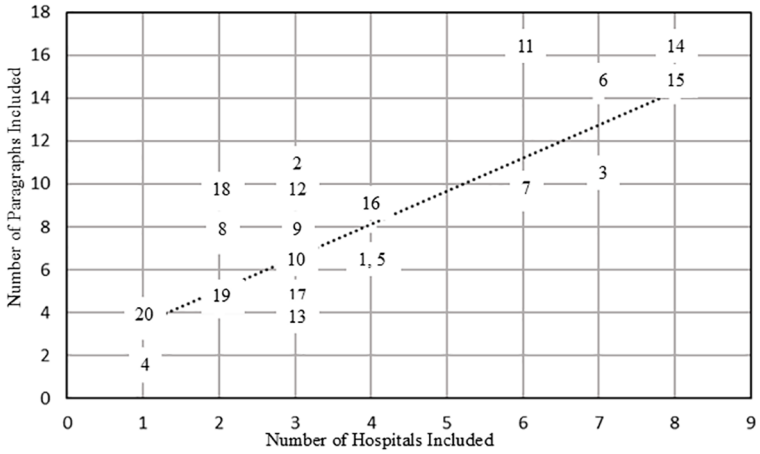


FIGURE 1
Number of paragraphs and hospitals per topic. The straight line in the figure represents the regression line derived from a simple linear regression analysis of the relationship between the number of hospitals whose manuals or workflows included each topic and the number of paragraphs in which the topic appeared ($p < 0.01$). The regression equation is as follows: Number of paragraphs = 1.980 + 1.543 × (Number of hospitals including the topic).

TABLE 3 Recommended components for suicide prevention manuals and workflows for people with cancer.

Topic category	Topic type	Item	Description
Overview	Specific	Overview of Suicide Prevention Measures	Prevention, intervention, and postvention strategies for suicide Practical examples of suicide prevention: counseling, education, support, and systems
Prevention	Common	Types of Suicide Hotspots and Examples of Countermeasures	Examples of hotspot types and preventive measures
	Common	Risk Factors for Suicide and Assessment Methods	Risk factors for suicide Suicide risk assessment checklist (Source: Journal of Patient Safety Promotion, Issue 17)
	Specific	Screening Methods for Emotional Distress	Regular screening implementation (e.g., the Questionnaire on Ease of Daily Living)
Intervention	Specific	Examples of Responses to Suicide-Related Behaviors	Methods for responding to patients with suicidal ideation
	Common	Procedures and Collaboration System for Managing Patients with Suicidal Ideation	Procedures and coordination for providing care for patients with suicidal ideation
	Common	Examples of Communication Methods for Patients with Suicidal Ideation	Communication methods during crisis intervention
Postvention	Common	On-Site Response Procedures Upon Discovering a Suicide	On-site response procedures upon discovery of suicide
	Common	Communication and Reporting Procedures Upon Discovering a Suicide	Contact and reporting procedures upon discovery of suicide
	Common	Examples of Communication Methods for Bereaved Families and Other Patients	Communication with other patients and bereaved families after a suicide
	Specific	Psychological Reactions, Including Grief, and Related Support	Psychological reactions among bereaved families and corresponding support
	Specific	Post-Incident Procedures for Psychological Care for Bereaved Families and Staff	Psychological support procedures for staff and bereaved families after an incident
System	Specific	Interdisciplinary Collaboration within the Hospital and with External Organizations	In-hospital counseling system Multidisciplinary in-hospital and external organizational collaboration

"Common" and "Specific" refer to topics frequently observed across hospitals and those that reflect the unique characteristics of suicide prevention efforts at specific hospitals, respectively. "Communication with Patients with Suicidal Ideation" and "Communication with Bereaved Families and Other Patients" are derived from the common topic "Communication Methods with Patients, Bereaved Families, and Other Patients" and are presented separately under intervention and postvention, respectively.

4 Discussion

This study applied LDA, a topic modeling method, to analyze the content of suicide prevention manuals and workflows for people with cancer from DCCHs. Twenty topics were extracted, encompassing commonly observed topics across multiple hospitals and hospital-specific topics described in greater detail by individual hospitals. Based on these findings, we identified recommended components for inclusion in suicide prevention manuals and workflows for individuals with cancer.

The common topics largely reflected the prevention–intervention–postvention framework, which has been emphasized in previous studies and major guidelines as essential components of suicide prevention (15, 20–22). Among the common topics, approximately 32% of the subgroups aligned with prevention, 29% with intervention, and 39% with postvention. Prevention-related subgroups were prominently represented by content such as "Examples of Hotspot Types and Preventive Measures", indicating that many hospitals place emphasis on identifying high-risk environments and implementing preventive strategies. This focus aligns with evidence that restricting access to lethal means is an effective suicide prevention strategy (23). Intervention-related subgroups accounted for 29% of the common topics and were most prominently represented by "Communication Methods During Crisis Intervention". This emphasis reflects the importance of multidisciplinary, team-based approaches, which have been shown to be more effective than usual care in improving depressive symptoms (24). Postvention-related subgroups constituted the largest proportion (39%) of the common topics and were particularly characterized by "On-Site Response Procedures Upon Discovery of Suicide". This finding suggests that many hospitals place substantial emphasis on clear procedural guidance following a suicide, reflecting the practical and organizational demands of postvention in clinical settings.Conversely, the defining characteristics of hospital-specific topics reflected the distinct priorities and resources of each institution, demonstrating that notable differences emerged across hospitals. For example, in hospitals emphasizing collaboration with external organizations, manuals included specific accounts of coordination with community-based services such as financial support or employment support facilities. While only one example is presented here for clarity, further examples of hospital-specific topics are available in the Supplementary Material.

Considering the commonalities and differences observed across hospitals, researchers with expertise in suicide among people with cancer identified a set of recommended components for suicide prevention manuals and workflows for people with cancer. Because circumstances vary depending on the geographic location and scale of each hospital, institutions should use these components as guidance and incorporate the topics most relevant to their own context. These recommended components should guide the development of manuals and workflows and be integrated into the broader framework of cancer care delivery. Integrating suicide prevention efforts into the continuum of cancer care—from diagnosis and treatment to palliative care and survivorship—may help reduce the stigma associated with mental health and foster more comprehensive patient-centered support.

Importantly, although the components proposed in this study were derived from analyses of suicide prevention manuals and workflows in Japanese hospitals, the overarching framework of prevention, intervention, and postvention corresponds to core elements that have been consistently identified as essential to suicide prevention in prior international and theoretical literature (20, 21). Previous sociological research has underscored that risk factors and preventive strategies for suicide vary substantially across institutional and cultural contexts (25, 26), and a recent global meta-analysis of suicide in people with cancer demonstrated considerable variation in prevalence and risk across countries (27). While the specific content and operationalization of suicide prevention measures are inevitably shaped by local institutional, cultural, and healthcare system factors, the underlying framework appears to be broadly shared. Therefore, conducting international comparative analyses of suicide prevention manuals and workflows may help elucidate how this common framework is adapted across settings and identify both universally relevant and context-specific elements of suicide prevention. Future research should expand the sample size to include a broader range of institutions and examine the cross-cultural applicability and practical application effects.

This study had some limitations. First, as LDA analyzes texts based solely on word occurrence frequency, paragraphs containing similar keywords tend to be categorized under the same topic. For example, those frequently containing the word "communication" included communication during a crisis intervention (intervention) and communication with bereaved families (postvention), which were sometimes grouped within the same topic. Therefore, a human review was required to confirm and appropriately classify the topics. Second, the length of the manuals and workflows varied substantially across hospitals, ranging from a single-page workflow to a 28-page document. Such variation may have influenced which topics emerged through topic modeling and whether they were identified as common or hospital-specific. Third, when Hospital K—previously excluded from the determination of the regression line used to classify topics as common or hospital-specific—was included, the relative positions of several topics with respect to the regression line changed slightly. Therefore, further refinement and validation of the method used to classify topics as common or hospital-specific are warranted in future studies. Fourth, this study focused solely on analyzing the content described in the manuals and workflows without considering their practical implementation. Manuals are typically developed for specific contexts, and their applications may differ across institutions. Thus, future studies should examine how the recommended components of suicide prevention manuals are applied in clinical settings.

In conclusion, commonly shared topics should be prioritized for inclusion in suicide prevention manuals and workflows for individuals with cancer. Conversely, hospital-specific topics may serve as useful references tailored to the distinct characteristics of each hospital. Factors such as hospital size, geographic location, and

clinical practice should be considered when determining the content of these manuals and workflows.

Data availability statement

The datasets presented in this article are not readily available because due to institutional confidentiality agreements with the participating Designated Cancer Care Hospitals. However, data may be available from the corresponding author on reasonable request and with permission from the hospitals. Requests to access the datasets should be directed to Maiko Fujimori, mfujimor@ncc.go.jp.

Author contributions

FK: Conceptualization, Methodology, Writing – original draft. KK: Conceptualization, Methodology, Writing – review & editing. MO: Conceptualization, Methodology, Writing – review & editing. TA: Conceptualization, Writing – review & editing. YM: Conceptualization, Writing – review & editing. YU: Conceptualization, Writing – review & editing. MF: Conceptualization, Funding acquisition, Methodology, Writing – review & editing.

Funding

The author(s) declared that financial support was received for this work and/or its publication. This study was supported by the Ministry of Health, Labour and Welfare of Japan, Cancer Control Promotion Comprehensive Research Project (grant number 23EA1028).

Acknowledgments

The authors would like to express their sincere gratitude to the participating hospitals for kindly providing their manuals and workflows, which made this study possible. We also thank the staff members involved in collecting and sharing these materials for their valuable support.

Conflict of interest

The author(s) declared that this work was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Generative AI statement

The author(s) declared that generative AI was not used in the creation of this manuscript.

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Supplementary material

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyt.2026.1743690/full#supplementary-material

References

1. Heinrich M, Hofmann L, Baurecht H, Kreuzer PM, Knüttel H, Leitzmann MF, et al. Suicide risk and mortality among patients with cancer. *Nat Med*. (2022) 28:852–9. doi: 10.1038/s41591-022-01745-y

2. Harashima S, Fujimori M, Akechi T, Matsuda T, Saiki K, Hasegawa T, et al. Death by suicide, other externally caused injuries and cardiovascular diseases within 6 months of cancer diagnosis (J-SUPPORT 1902). *Jpn J Clin Oncol*. (2021) 51:744–52. doi: 10.1093/jjco/hyab001

3. Kurisu K, Fujimori M, Harashima S, Akechi T, Matsuda T, Saika K, et al. Suicide, other externally caused injuries, and cardiovascular disease within 2 years after cancer diagnosis: A nationwide population-based study in Japan (J-SUPPORT 1902). *Cancer Med*. (2023) 12:3442–51. doi: 10.1002/cam4.5122

4. Kawashima Y, Yonemoto N, Inagaki M, Inoue K, Kawanishi C, Yamada M, et al. Interventions to prevent suicidal behavior and ideation for patients with cancer: A systematic review. *Gen Hosp Psychiatry*. (2019) 60:98–110. doi: 10.1016/j.genhosppsych.2019.07.003

5. Ministry of Health, Labor and Welfare. *2022 guidelines for development* (2022). Available online at: https://www.mhlw.go.jp/content/000972176.pdf (Accessed July 31, 2025).

6. Ministry of Health, Labor and Welfare. *The 4th basic plan to promote cancer control programs* (2023). Available online at: https://www.mhlw.go.jp/content/10901000/001077913.pdf (Accessed July 31, 2025).

7. Kurisu K, Fujimori M, Harashima S, Okamura M, Yoshiuchi K, Uchitomi Y. Exploratory analysis of nationwide Japanese patient safety reports on suicide and suicide attempts among inpatients with cancer using large language models. *Psychooncology*. (2025) 34:e70150. doi: 10.1002/pon.70150

8. Kato K, Matsumura Y. A nationwide survey on suicide prevention initiatives by hospital patient safety management departments. *J Jpn Soc Qual Saf Healthc*. (2025) 20:399–405.

9. World Health Organization. *Preventing suicide: A global imperative* (2014). Available online at: https://www.who.int/publications/i/item/9789241564779 (Accessed July 31, 2025).

10. American Hospital Association. *Suicide prevention: Evidence-informed interventions for the health care workforce*. Available online at: https://www.aha.org/suicideprevention/health-care-workforce/suicide-prevention-guide (Accessed July 31, 2025).

11. American Medical Association. *Suicide prevention guide to treat at-risk patients* (2024). Available online at: https://www.ama-assn.org/delivering-care/public-health/suicide-prevention-guide-treat-risk-patients (Accessed July 31, 2025).

12. Japan Medical Association. *Suicide prevention manual*. Tokyo: Akashi Shuppan (2014).

13. Kyoto University Hospital. *Suicide prevention in medical institutions* (2022). Available online at: https://safety.kuhp.kyoto-u.ac.jp/wp-content/uploads/2022/01/jisatsuyobou315.pdf (Accessed July 31, 2025).

14. Japanese Society of Psychiatry and Neurology. *Suicide prevention guidebook for clinical practice* (2013). Available online at: https://www.jspn.or.jp/uploads/uploads/files/journal/suicide_prevention_guide_booklet.pdf (Accessed July 31, 2025).

15. National Cancer Center. *Guidelines for suicide prevention in cancer care* (2019). Available online at: https://www.ncc.go.jp/jp/icc/survivorship/jisatsutaisaku_tebiki/ganiryou_jisatsutaisaku_tebiki.pdf (Accessed July 31, 2025).

16. Blei DM, Ng AY, Jordan MI. Latent dirichlet allocation. *J Mach Learn Res*. (2003) 3:993–1022. doi: 10.1162/jmlr.2003.3.4-5.993

17. Iwata T. *Topic Model*. Tokyo: Kodansha (2015).

18. Egger R, Yu J. A topic modeling comparison between LDA, NMF, Top2Vec, and BERTopic to demystify twitter posts. *Front Sociol*. (2022) 7:886498. doi: 10.3389/fsoc.2022.886498

19. Higuchi K. *KH Coder Official Book I*. Tokyo: Nakanishiya Shuppan (2020).

20. Caplan G. *Principles of preventive psychiatry*. New York: Basic Books (1964).

21. Neligh G. Secondary and tertiary prevention strategies applied to suicide among American Indians. *Am Indian Alsk Nativ Ment Health Res*. (1988) 1:4–18. doi: 10.5820/aian.0103.1988.4

22. Japanese Association for Emergency Psychiatry. *Guidelines for psychiatric emergency treatment, 2022 edition*. Tokyo: JAEP (2022).

23. Mann JJ, Apter A, Bertolote J, Beautrais A, Currier D, Haas A, et al. Suicide prevention strategies: a systematic review. *JAMA*. (2005) 294:2064–74. doi: 10.1001/jama.294.16.2064

24. Li M, Kennedy EB, Byrne N, Gérin-Lajoie C, Katz MR, Keshavarz H, et al. Systematic review and meta-analysis of collaborative care interventions for depression in patients with cancer. *Psychooncology*. (2017) 26:573–87. doi: 10.1002/pon.4286

25. Stack S. Suicide: A 15-year review of the sociological literature. Part I: Cultural and economic factors. *Suicide Life Threat Behav*. (2000) 30:145–62. doi: 10.1111/j.1943-278X.2000.tb01073.x

26. Stack S. Suicide: A 15-year review of the sociological literature. Part II: Modernization and social integration perspectives. *Suicide Life Threat Behav*. (2000) 30:163–76. doi: 10.1111/j.1943-278X.2000.tb01074.x

27. Rafiei S, Pashazadeh Kan F, Raoofi S, Rafiei S, Shafiee F, Bagheribayati F, et al. Global prevalence of suicide in patients with cancer: a systematic review and meta-analysis. *Arch Suicide Res*. (2024) 28:723–36. doi: 10.1080/13811118.2023.2240870

資料6

医療安全管理部門による自殺事故対策の取り組みについての全国アンケート調査

A National Survey on the Handling of Suicide Incidents by the Medical Safety Management Department

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要約

2022 年のがん診療連携拠点病院の要件改正で，自殺リスクへの対応が明確化された．医療安全管理部門による自殺事故対策についての全国アンケート調査を報告する．回答者 196 人のうち，看護師 53%，医師 30%，薬剤師 10%で，がん診療連携拠点病院の割合は 60%だった．自殺リスクへの対策は拠点病院でより整備されており，特に「施設整備」「手順書の整備」「リスク評価方法の確立」において有意差が確認された．事後対応では，メンタルケアや委員会での審議が行われるが，病院間で対応のばらつきが見られた．遺族支援や職員向け研修の実施状況も調査し，拠点病院とその他の病院の対策の違いを明らかにした．研修会の開催状況や医療安全管理部門の関与については，拠点病院か否かによる差は認められなかった．自殺対策の充実には病院の特性に応じた対応が求められる．

キーワード：自殺，医療安全管理者，がん診療連携拠点病院

Abstract

In 2022, there were revisions to the requirements for designated cancer center, clarifying their response to the suicide risk. We conducted nationwide survey on suicide management efforts by the Safety Management departments. Among the 196 respondents, 53% were nurses, 30% were physicians, and 10% were pharmacists, with 60% working at designated cancer care hospitals. Suicide prevention measures

受付日：2025 年 1 月 16 日　採択日：2025 年 8 月 4 日
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were more systematically implemented in these hospitals, particularly in facility modifications, procedural guidelines, and risk assessment methods. Regarding post-suicide response, mental health support for affected staff and committee reviews were commonly practiced, though hospital-specific variations were observed. The survey also examined bereavement support for families, hospital-led training programs, and participation in external suicide prevention workshops. No significant differences were found between cancer care hospitals and other facilities in terms of training opportunities and involvement of medical safety departments in suicide prevention strategies. The findings highlight discrepancies in suicide prevention efforts between hospital types, emphasizing the need for tailored interventions based on institutional characteristics. Strengthening hospital-wide awareness and standardized protocols could further enhance preventive measures and post-event management.

Key words: suicide, safety manager, Designated Cancer Care Hospitalp

Ⅰ．緒言

病院内での自殺対策は非常に重要である．病院は一般的に人々が身体的または精神的な苦痛や困難に直面している場所であり，自殺のリスクが高まる可能性がある．そのため，院内での患者死亡の一因である自殺に対しては，組織的な対策が求められる．国際連合と世界保健機関（WHO）は，自殺予防の国家戦略として，データ収集システムの構築，リスク要因の特定，予防プログラムの実施と評価を含む一連の方針を提示している[1]．一方で，日本では国家レベルでの統一的な院内自殺報告制度は十分に確立されておらず，日本医療機能評価機構など一部の機関が対応を進めているものの，医療現場全体への浸透には課題が残る．実態の把握や対策が十分とは言えない現状がある．

がん患者の自殺リスクは高く，がんと診断されてから1か月以内が最も自殺のリスクが高く，2年経過しても一般人口と比べて自殺のリスクが高いことが全国がん登録のデータで明らかになっている[2]．日本医療機能評価機構医療事故情報収集事業事例データベースに登録されている入院患者の自殺の約半数はがん患者である[3]．がんと診断される人口はますます増加傾向であることを踏まえると，医療機関における自殺対策は今後優先的に取り組まれることが望ましいと考えられる．自殺企図歴がある人々を含め，脆弱性の高い集団への予防的介入が自殺予防に役立つことが明らかになっている[4]．このような背景を受け，2022年にはがん診療連携拠点病院要件が改正され，院内での自殺リスク対応や関係機関との連携体制の構築が義務付けられた．しかし，精神科以外の医療機関，特にがん専門施設における医療安全管理部門の具体的な取り組みは十分に報告されていない[5,6]．

自殺対策には，データに基づいた現状把握と計画立案，戦略の実施が不可欠であり，地域や施設ごとの状況に即した指針作成が必要である．本調査では，医療安全管理の視点から，病院内での自殺対策や自殺未遂後の支援について全国アンケートを実施した．本稿では，調査結果のうち，医療安全管理部門職員を対象とした分析結果を報告する．本調査結果は，様々な医療機関内での自殺に関する報告とあわせて，これからの自殺対策を行う上で有効な情報となると考える．

Ⅱ．方法

調査対象は，医療の質・安全学会会員（3,321人；2022年12月1日現在）のうち病院に勤務する医療者とした．調査当時，医学・医療系の会員（病院勤務以外も含まれる）は2,885人であった．調査期間は2023年2月10日～2月28日とした．調査方法は会員一斉メールを配信し，Google Formsにより回答を得た．回答率を上げるために，期間中3回配信した．

本アンケートは以下の12問で構成された．

①勤務先の病院は以下のどちらでしょうか．
- ・がん診療連携拠点病院等（全国408箇所）
- ・上記以外のがん診療に関わる病院
- ・その他

②勤務先の病院は以下の第三者認証を受けていますか（複数回答可）
- ・病院機能評価
- ・ISO 9001

・JCI（Joint Commission International）
・受けていない

③勤務先の病院の医療安全マニュアルに自殺に関する何らかの対策や手順はありますか
・2022 年 7 月 31 日以前からある
・2022 年 8 月 1 日*以降に策定された（＊ 2022 年 8 月がん診療連携拠点病院要件が改正された）
・策定日は不明だがある
・ない

④勤務先の病院の自殺対策を教えてください（複数回答可）
・施設整備（飛び降り防止等）を行っている
・自殺に関する医療安全研修を行っている
・自殺対策の担当部署がある
・自殺リスク評価方法がある
・自殺リスクが高い場合の介入方法がある
・病院外の関係機関・組織と連携している
・自殺事例が生じたときの手順書がある
・ない，またはわからない

⑤勤務先の病院内での自殺の事後対応を教えてください（複数回答可）
・安全管理を審議する委員会で審議される
・病棟や部署で公式な振り返りが実施される
・対応したスタッフへのメンタルケアがある
・ない，またはわからない

⑥勤務先の病院内での自殺の事後対応として遺族に提供可能なものを教えてください（複数回答可）
・希望があれば精神科医師が診察する
・希望があれば心理士が面談する
・患者の担当チームが面談する
・外部の支援組織を紹介する
・ない，またはわからない

⑦勤務先の病院内での自殺対策についての研修会の開催について教えてください
・実施したが，5 年以上前である
・過去 5 年間以内に実施した
・実施していない，またはわからない

⑧勤務先の病院職員が，医療機能評価機構が開催する院内自殺予防研修会に参加したことがありますか
・ある
・ない
・わからない

⑨入院患者の自殺件数は把握していますか
・はい
・いいえ

⑩外来患者の自殺件数は把握していますか
・はい
・いいえ

⑪患者の自殺対策に医療安全管理部門が関わる仕組みがありますか
・はい
・いいえ

⑫院内に，自殺・ハイリスク事例を検討する何らかの会議がありますか
・はい
・いいえ

統計解析として，各項目の回答数およびその割合（100 %）を算出した．また，データ間の関連を検討するために，カイ二乗検定および Fisher's exact test を統計解析ソフト JMP®（JMP PRO 16.2）を用いて行った．

Ⅲ．結果

本アンケート全体の調査結果概要については別に報告を行っており，本稿では医療安全管理部門の職員のみを対象とした結果について報告することとする．

全回答者 280 人（回答率 8.4%）のうち，医療安全管理部門の職員からの回答は 196 人（全回答者の 70%）であった．回答者の属性を表 1 に示す．年齢の中央値は 55 歳で女性が 60%であった．また勤続年数の中央値は 30 年で，職種は看護師が 53%，医師が 30%，薬剤師 10 %と続いた．

「①勤務先の病院は以下のどちらでしょうか．」については，回答があった 196 人のうち，がん診療連携拠点病院が 118（60%），上記以外のがん診療に関わる病院が

表 1　アンケートに回答した医療従事者の属性

年　齢（歳，中央値，最小－最大）		55（36－70）
性　別（女性回答者数，%）		117（60%）
勤続年数（年，中央値，最小－最大）		30（6－50）
職　種（回答者数，%）	看護師	104（53%）
	医師	60（30%）
	薬剤師	20（10%）
	事務職	4（2.0%）
	診療放射線技師	3（1.5%）
	臨床検査技師	3（1.5%）
	理学療法士	1（0.5%）
	臨床工学技士	1（0.5%）

67（34%），その他が 11（5.6%）であった.

「②勤務先の病院が第三者認証を受けていますか（複数回答可)」という問いに対する 188 の回答のうち，がん診療連携拠点病院は病院機能評価をうけているものが 95（48%），ISO9001 と JCI（Joint Commission International）がそれぞれ 16（8.1%）ずつで，受けていないものが 3（1.6%）で，複数の第 3 者認証をうけているとの回答もあった（表 2).

「③勤務先の病院の医療安全マニュアルに自殺に関する何らかの対策や手順はありますか.」には 181 の回答があり，「2022 年 7 月 31 日以前からある」と答えたのが 93（47%），「2022 年 8 月 1 日*以降に策定された（＊ 2022 年 8 月がん診療連携拠点病院要件が改正された)」と答えたのが 15（7.7%），「ない」と答えたのが 65（33%）であった．がん診療連携拠点病院はそうでない病院に比べて有意に（p＝0.0028　Fisher's exact test）自殺に関する対策や手順を整備していた（表 3).

「④勤務先の病院の自殺対策を教えてください（複数回答可)」との問いに対しては，178 の回答があり，「施設整備（飛び降り防止等）を行っている」が 127（65%）と最も多く，ついで「自殺事例が生じた時の手順書がある」が 77（39%），「自殺リスクが高い場合の介入方法がある」が 59（30%），「自殺リスク評価方法がある」が 52 であった.「ない, わからない」の回答が 21（11%）であった（表 4).「自殺対策の部署がある」「自殺リスクが高い場合の介入方法がある」「自殺事例が生じたときの手順書がある」については，がん拠点病院の対策率が有意（p＝0.011 値）に高かった.

「⑤勤務先の病院内での自殺の事後対応を教えてください（複数回答可)」との問いに対しては，178 の回答があり，「安全管理を審議する委員会で審議される」が 91（46%),「対応したスタッフへのメンタルケアがある」が 99（51%），「病棟や部署で公式な振り返りが実施される」が 82（42%）だった（表 5）．がん診療連携拠点

表 2　質問②勤務先の病院が第三者認証を受けていますか（複数回答可）

病院種別	病院機能評価	ISO 9001	JCI	受審なし
がん診療連携拠点病院	95(48%)	16(8.1%)	16(8.1%)	3(1.5%)
上記以外のがん診療病院	49(25%)	2(1.0%)	3(1.5%)	13(6.6%)
がん診療を提供しない病院	2(1.0%)	1(0.5%)	2(1.0%)	0

ISO：国際標準化機構
（International Organization for Standardization）
JCI：国際的医療施設評価機関
（Joint Commission International）

表 3　質問③勤務先の病院の医療安全マニュアルに自殺に関する何らかの対策や手順はありますか

	あり			なし	p
	2022年7月31日以前	2022年8月1日以降	策定日は不明		
がん診療連携拠点病院	64（33%）	13（6.6%）	4（2.0%）	27（14%）	0.0028
がん診療連携拠点病院以外の病院	29（14.6%）	2（1.0%）	5（2.5%）	38（19.0%）	
がん診療連携拠点病院以外のがん診療病院	24（12%）	1（0.5%）	4（2.0%）	34（17%）	
がん診療連携拠点病院以外のがん診療をしない病院	5（2.6%）	1（0.5%）	1（0.5%）	4（2.0%）	

「③勤務先の病院の医療安全マニュアルに自殺に関する何らかの対策や手順はありますか」には 181 の回答があり，「2022 年 7 月 31 日以前からある」と答えたのが 93（47%），「2022 年 8 月 1 日*以降に策定された（＊ 2022 年 8 月がん診療連携拠点病院要件が改正された)」と答えたのが 15（7.7%），「ない」と答えたのが 65（33%）であった．がん診療連携拠点病院はがん診療連携拠点病院以外の病院に比べて有意に（p＝0.0028　Fisher's exact test）自殺に関する対策や手順を整備していた.

表 4　質問④勤務先の病院の自殺対策を教えてください（複数回答可）

対策	全体	がん拠点病院（118）	左記以外（78）	P 値
施設整備（飛び降り防止等）を行っている	127（65%）	74（38%）	53（27%）	0.54
自殺に関する医療安全研修を行っている	22（11%）	17（8.7%）	5（2.6%）	0.11
自殺対策の担当部署がある	18（9.2%）	15（7.7%）	3（1.5%）	0.04
自殺リスク評価方法がある	52（27%）	35（18%）	17（8.7%）	0.25
自殺リスクが高い場合の介入方法がある	59（30%）	43（22%）	16（8.2%）	0.018
病院外の関係機関・組織と連携している	15（7.7%）	11（5.6%）	4（2.0%）	0.41
自殺事例が生じたときの手順書がある	77（39%）	55（28%）	22（11%）	0.011
ない・わからない	21（11%）	10（5.1%）	11（5.6%）	0.24

表5　質問⑤勤務先の病院内での自殺の事後対応を教えてください（複数回答可）

事後対策	全体	がん拠点病院	左記以外	p 値
安全管理を審議する委員会で審議される	91（46%）	59（30%）	32（16%）	0.24
病棟や部署で公式な振り返りが実施される	82（42%）	50（26%）	32（16%）	0.88
対応したスタッフへのメンタルケアがある	99（51%）	61（31%）	38（19%）	0.77
ない，わからない	35（18%）	18（9.2%）	17（8.7%）	0.25

病院か否かで事後対応に有意差はなかった.

「⑥勤務先の病院内での自殺の事後対応として遺族に提供可能なものを教えてください（複数回答可）」という回答に関しては 179 の回答があり，「ない，わからない」が 80（41%），「希望があれば精神科医師が診察する」が 67（34%），「外部の支援組織を紹介する」が 37（19%）であった.「希望があれば心理士が面談する」が 46 で，がん拠点病院が 36（18%），がん拠点病院以外の病院が 10（5.1%）であり，がん拠点病院が有意（p＝0.0056）に心理士との面談できる環境を整えていた（表 6）.

「⑦勤務先の病院内での自殺対策についての研修会の開催について」は回答のあった 179 のうち，実施していない・不明」が 136（69%），「過去 5 年間以内に実施した」が 27（14%），「実施したが，5 年以上前である」が 16（8.9%）であった（表 7）. がん診療連携拠点病院かがん診療に関わっているか否かで研修会の開催状況に有意差はなかった.

「⑧勤務先の病院職員が，医療機能評価機構が開催する院内自殺予防研修会に参加したことがありますか」という問いに対する 179 の回答のうち，「不明」が 89（45%），「ない」が 56（29%），「ある」が 34（17%）だった（表 7）. がん診療連携拠点病院か否かで研修会の参加状況に有意差はなかった.

「⑨入院患者の自殺件数は把握していますか」に回答があった 178 のうち「はい」が 142（72%），「いいえ」が 36（18%）だった（表 7）. がん診療連携拠点病院か否かで入院患者の自殺件数の把握状況に有意差はなかった.

「⑩外来患者の自殺件数は把握していますか」に回答があった 179 のうち「はい」が 156（80%），「いいえ」が 23（12%）だった（表 7）. がん診療連携拠点病院か否かで外来患者の自殺件数の把握状況に有意差はなかった.

「⑪患者の自殺対策に医療安全管理部門が関わる仕組

表6　質問⑥勤務先の病院内での自殺の事後対応として遺族に提供可能なものを教えてください（複数回答可）

事後対策	全体	がん拠点病院	左記以外	p 値
希望があれば精神科医師が診察する	67（34%）	45（23%）	22（11%）	0.16
希望があれば心理士が面談する	46（23%）	36（18%）	10（5.1%）	0.0056
外部の支援組織を紹介する	37（19%）	18（9.2%）	19（9.7%）	0.13
患者の担当チームが面談する	27（14%）	16（8.2%）	11（5.6%）	1
ない・わからない	80（41%）	49（25%）	31（16%）	0.88

表7　質問⑦～質問⑫の結果

⑦勤務先の病院内での自殺対策についての研修会の開催について教えてください
⑧勤務先の病院職員が，医療機能評価機構が開催する院内自殺予防研修会に参加したことがありますか
⑨入院患者の自殺件数は把握していますか
⑩外来患者の自殺件数は把握していますか
⑪患者の自殺対策に医療安全管理部門が関わる仕組みがありますか
⑫院内に，自殺・ハイリスク事例を検討する何らかの会議がありますか

	質問⑦（p＝0.43）			質問⑧（p＝0.22）			質問⑨（p＝0.62）		質問⑩（p＝0.28）		質問⑪（p＝0.89）		質問⑫（p＝0.73）	
選択肢/病院	5年以内	5年以上前	していない	ある	ない	不明	はい	いいえ	はい	いいえ	はい	いいえ	はい	いいえ
A	20(10%)	9(4.6%)	78(40%)	21(11%)	29(15%)	57(29%)	85(43%)	22(11%)	14(7.1%)	93(47%)	61(31%)	45(23%)	39(20%)	66(34%)
B	6(3.0%)	5(2.6%)	50(26%)	13(6.6%)	21(11%)	27(14%)	47(24%)	13(6.6%)	6(3.0%)	55(28%)	37(19%)	24(12%)	20(10%)	41(21%)
C	1(0.5%)	2(1.0%)	8(41%)	0	6(3.0%)	5(2.6%)	10(5.1%)	1(0.5%)	3(1.5%)	8(4.0%)	6(3.0%)	5(2.6%)	3(1.5%)	8(4.0%)
計	27(14%)	16(8.9%)	136(69%)	34(17%)	56(29%)	89(45%)	142(72%)	36(18%)	23(12%)	156(80%)	104(53%)	74(38%)	62(32%)	115(59%)

A：がん診療連携拠点病院等，B：上記以外のがん診療に関わる病院，C：その他

みがありますか」に対する 178 の回答のうち，「はい」が 104（53%），「いいえ」が 74（38%）だった（表 7）．がん診療連携拠点病院か否かで自殺対策に医療安全管理部門が関わる仕組みの有無に有意差はなかった．

「⑫院内に，自殺・ハイリスク事例を検討する何らかの会議がありますか」に対する 177 の回答のうち，「はい」が 62（32%），「いいえ」が 115（59%）だった（表 7）．がん診療連携拠点病院か否かで自殺事例の検討会議の有無に有意差はなかった

Ⅳ．考按

今回の医療安全管理者を対象とした全国アンケート調査結果は，病院における自殺対策の現状を明らかにした．調査結果から，自殺対策や手順を整備している病院は半数以上に上るものの，約 3 割の病院では依然として整備が不十分であることが示された．この結果は，自殺対策が全ての医療機関に一律に行き届いていない現状を反映している．一方で，2022 年 8 月以降に新たな対策を策定した病院もあり，対策が徐々に進展している兆しも見られた．

１．施設間の差異と課題

がん診療連携拠点病院は，他の病院に比べて自殺対策に関する整備が進んでいることが明らかになった．しかし，事後対応や研修会の実施状況は，拠点病院と非拠点病院で大きな差は見られず，どの施設でも対応が不十分な状況が浮き彫りになった．また，調査対象の病院の多くは第三者認証を取得し，質改善に取り組んでいる施設であったが，それでも 3 割以上の病院で自殺対策が整備されていない現状は重要な課題である．

２．自殺対策の具体的な状況

多くの病院で施設整備が進んでいる一方，自殺リスクの高い患者への個別ケアや専門スタッフによる支援は一般化しておらず，リスク評価と介入の実践[5]について，まだ改善の余地があることを示唆している．自殺リスクの評価については，医療スタッフに対して，自殺予防に関するトレーニングを提供し，適切なリスク評価に基づいた介入が望ましいと考える．スタッフが患者の不安や焦燥感に気づいた場合には，包括的支援に結び付くようなシステムの構築が必要だと考えられる[7]．さらに，自殺の事後対応として，スタッフのメンタルケアや遺族への支援が十分ではないことが示された．特に遺族支援については，専門職や外部支援組織への紹介体制が整備されていない病院が多い状況である[8]．

３．研修や教育の不足

自殺対策に関する研修の実施率は低く，参加者が内容を正確に把握していない場合もあることから，医療従事者全体への教育や啓発活動の強化が求められる．自殺事例が発生してから研修を受けるのでは遅く，自殺対策への理解や研修の必要性を発信し，医療関係者全体により広く浸透させるための取り組みが求められるといえる．一般病院で働く看護師を対象とした自殺予防の教育プログラムは自殺リスクの管理において有用であり[9]，研修の必要性を理解するための継続的な教育が必要だと考える．外部支援を活用し，専門的な知識とスキルを医療従事者に提供する仕組みの整備が急務である．

４．情報共有とリスク評価

約 8 割の病院で患者の自殺件数を把握している一方，データを効果的に活用する仕組みは十分に整っていない．オランダの自殺予防アクションネットワークのような統一的なデータ収集とプロトコル整備を参考に，日本でも透明性とアクセス可能性の向上が必要である[10]．

５．限界と展望

本調査はサンプルサイズやデータ収集期間に制約があり，すべての医療機関を網羅した結果ではない．また，2022 年 8 月以降の対策導入の長期的な影響を十分に評価できていない点も課題である．さらに，本研究では，同一病院から複数の医療管理部門の職員が回答している可能性がある．しかし，多くの病院では医療安全部門の職員は 1 職種につき 1 名程度であるため，同一病院からの複数回答による影響は限定的であり，結果の偏りが生じる可能性は低いと考えられる．

Ⅴ．結論

本調査は，病院における自殺対策の実態と課題を明らかにした．物理的な施設整備が進む一方で，個別ケア，遺族支援，教育研修といった実践面での不足が確認された．がん診療連携拠点病院は対策が進んでいるものの，すべての医療機関で標準的な自殺対策を実施するには，体制整備と教育研修の拡充が不可欠である．特に，医療安全管理部門が中心となり，リスク評価や対応の標準化を進めることが求められる．

謝辞

本研究は厚生労働科学研究費補助金がん対策推進総合研究事業 JPMH23EA1028 の交付を受けて実施した.

利益相反

利益相反なし.

文献表

1）高橋／祥友.［自殺予防と精神保健医療の役割］世界の自殺と日本の自殺予防対策. 精神神経学雑誌. 2011；113(1)：74-80.

2）Kurisu K. Suicide, other externally caused injuries, and cardiovascular disease within 2â ‰ years after cancer diagnosis: A nationwide population-based study in Japan (J-SUPPORT 1902). Cancer medicine (Malden, MA). 2023;12(3):3442-51.

3）Inoue KA-O, Kawanishi CA-O, Narita K, Cho Y, Otsuka K. Suicide prevention and postvention in hospitals in Japan: Current status and perspectives. (1440-1819 (Electronic)).

4）Kawanishi C. Assertive case management versus enhanced usual care for people with mental health problems who had attempted suicide and were admitted to hospital emergency departments in Japan (ACTION-J): a multicentre, randomised controlled trial. The Lancet Psychiatry. 2014;1(3):193-201.

5）岩田／和彦.［精神科医療における自殺予防］精神科医療機関における自殺予防　多職種協働・関係機関連携の視点から. 精神神経学雑誌. 2012;114(12):1432-7.

6）松村／由美. 医療安全の視点からの患者の自殺予防. 自殺総合政策研究. 2021；3(2)：1-10.

7）Hofstra E, van Nieuwenhuizen C, Bakker M, Özgül D, Elfeddali I, de Jong SJ, et al. Effectiveness of suicide prevention interventions: A systematic review and meta-analysis. (1873-7714 (Electronic)).

8）Petersen SH, Kalseth J, Kaspersen SL. What is known about the health service use and follow-up of immediate family members bereaved by suicide? Scoping review protocol. BMJ open. 2020;10(12):e041978-e.

9）Chan SW-c, Chien W-t, Tso S. Evaluating nurses' knowledge, attitude and competency after an education programme on suicide prevention. Nurse education today. 2009;29(7):763-9.

10）Setkowski K, Mokkenstorm J, van Balkom AJLM, Franx G, Verbeek- van Noord I, Dongelmans DA, et al. Feasibility and impact of data-driven learning within the suicide prevention action network of thirteen specialist mental healthcare institutions (SUPRANET Care) in the Netherlands: a study protocol. BMJ open. 2018;8(8):e024398-e.

資料7

がん医療における自殺対策の手引き

2025年度版

概要版

1. がん患者の自殺の疫学、リスク因子

■ がん患者では、がん診断直後の時期が最も自殺のリスクが高く、わが国でも**がん診断1か月以内**の自殺リスクが最も高い（一般人口の4.4倍）。

■ がん診断1週間以内の自殺リスクが著明に高く、がんの診断・告知に伴う精神的苦痛ががん診断直後の自殺に影響している可能性がある。

■ **遠隔転移**を有することや**食道がん、膵がん**など予後不良のがん原発部位が自殺のリスク因子として報告されている。

■ がん患者の自殺は**自宅敷地内**での発生が多い一方で、入院中の自殺事例の**約半数はがん患者**である。

■ 自殺者の9割以上は自殺前にうつ病を中心とした精神医学的診断がつく状態であると報告されている。

■ 一般人口とがん患者では**うつ状態（適応反応症（適応障害）や軽症のうつ病を含む）、希死・自殺念慮、過去の自殺企図**など共通の自殺のリスク因子も存在する一方、アルコールの問題やソーシャルサポートの不足など、他の一般的な自殺のリスク因子がないがん患者でも自殺に至っている。

■ 入院中の自殺・自殺企図において、**うつ状態**や**せん妄の疑い、希死・自殺念慮の表出**、不十分な**疼痛コントロール**がみられた事例も報告されているが、精神保健専門家や専門的緩和ケアの介入がされていなかった事例も多い。

■ がん患者では、「**①がん診断直後（がん診断後概ね6か月以内）**」、「**②進行がんの積極的治療中～中止前後の時期・終末期**」、③「**がんが治癒するか安定しているサバイバーの時期**」の**3つの時期で自殺のリスクやそのリスク因子が異なる**ことが報告されている（図1）（図2）。

図1. がん診断後の3つの時期

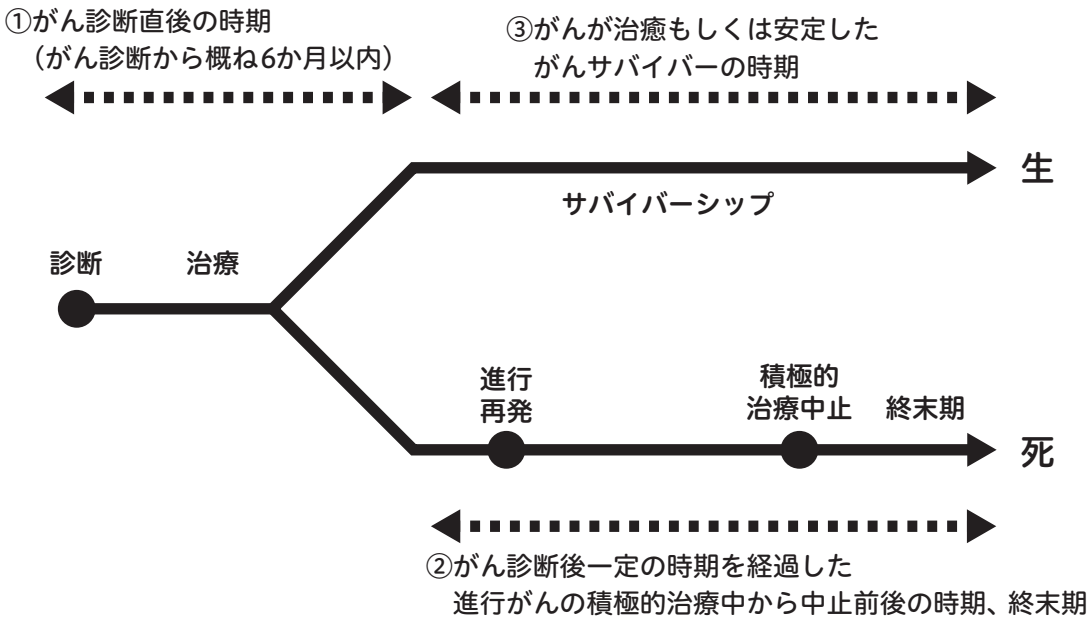


図2. がん診断後の時期ごとの自殺、希死・自殺念慮のリスク因子

すべての時期に共通

うつ状態（うつ病・適応反応症（適応障害））、希死・自殺念慮、自殺企図歴

せん妄、痛み、乏しいサポート
予後不良のがん原発部位（食道がん、膵がんなど）、進行がん
患者の大きな変化のタイミングに精神面の評価がされていない
スクリーニング評価を回答しなかった患者
患者の精神心理的苦痛について専門家に相談がされていない

がん診断直後（6か月以内）

- がん診断から期間が短い（特にがん診断1か月以内）
- 診断時点で遠隔転移あり
- 予後不良のがん原発部位（食道がん、膵がんなど）

進行がんの積極的治療中～中止前後・終末期

- 身体機能低下
- 身体症状（痛み、倦怠感）
- 絶望感、他者への負担感
- 自立性・自律性の喪失
- 実存的苦痛、尊厳の喪失
- 専門的緩和ケアの受療なし

がんが治癒するか安定したサバイバーの時期

- 精神疾患の既往
- 若年でのがん診断
- 転移・再発
- 男性
- 未婚
- 低所得地域

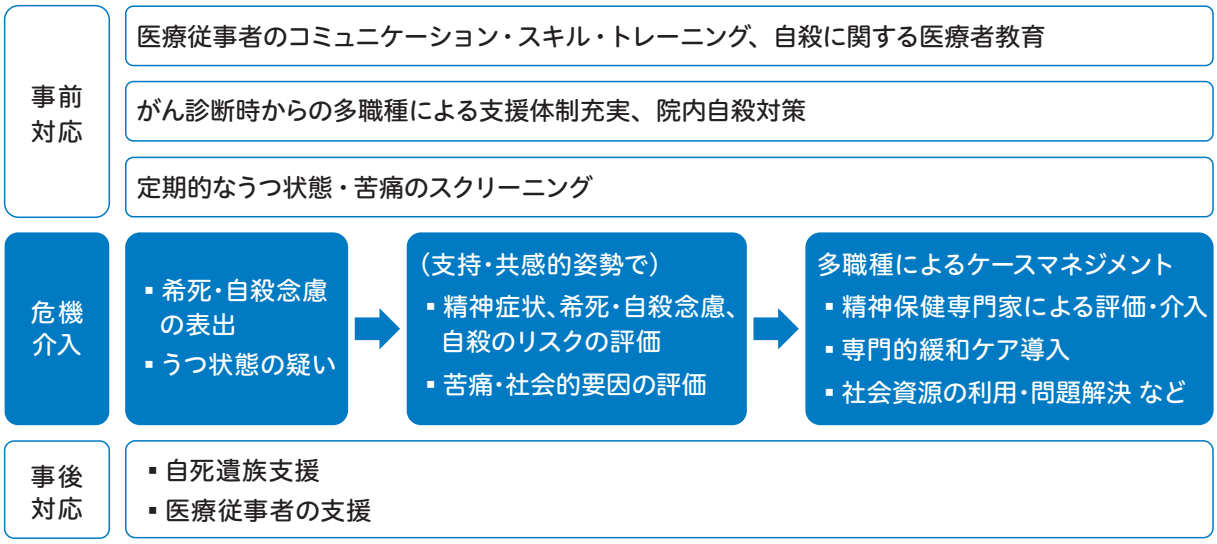
2. がん患者の自殺対策

■ がん患者の自殺予防のための有効な介入のエビデンスは存在しないが、一般人口における自殺対策をそのまま応用するのみでは不十分であり、**がん患者特有**の自殺のリスク因子を軽減し保護因子を増やすための介入を行う。

■ **うつ状態の治療**はがん患者の自殺対策としても重要であり、精神症状の評価・介入のみならず、身体症状や身体機能低下による苦痛、社会的・実存的苦痛の評価・介入など、個々の患者のうつ状態の背景にある**多領域に渡る苦痛**へのアプローチが必要になると考えられる。

■ がん患者全体を対象とした基本的な自殺対策に加え、①がん診断直後、②進行がんの積極的治療中～中止前後の時期・終末期、③がんが治癒するか安定しているサバイバーの時期の**3つの時期それぞれのリスク因子に応じた特異的な自殺対策**が必要になると考えられる。

図3. がん医療における自殺対策の概要



がん患者全体への自殺の一次予防（事前対応）

一次予防 （事前対応）	精神保健専門家のみではなく、**すべての医療者が支持的なコミュニケーション**を行い、気持ちのつらさの可能性に気づく
	自殺予防やコミュニケーション・スキルについて、関連するガイドライン[*1]や研修会[*2]などを通じた医療者の**教育体制を強化**する
	すべてのがん患者を対象に、ニーズ応じた支援についての**情報提供**・周知を行う［がん相談支援センター、がん看護相談、緩和ケアチーム、精神科（精神科リエゾンチーム）・心療内科・心理職など］
	各医療機関の実情に応じた**院内自殺対策**を行う（ホットスポットへの対策、自殺高リスク者への対応・連携方法をあらかじめ構築しておく、自殺予防マニュアル／指針の策定と周知、研修の提供、患者・家族向けの啓発活動など）
	すべてのがん患者に対して**気持ちのつらさや苦痛のスクリーニング**、評価を定期的に行う（特にがん告知直後、がんの進行、再発、身体面などの苦痛の出現時、緩和的治療への移行時などのタイミング）。スクリーニングが陽性となった場合の対応をあらかじめ決めておく。スクリーニングに回答しなかった患者も普段の関わりの中で精神心理的苦痛やニーズについて直接確認を行う
	高リスク群（遠隔転移あり、食道がんなど予後不良のがん原発部位、悪い知らせの直後など）はより重点的な対策を行う
	せん妄の予防やマネジメントを適切に行う
	国民全体へ自殺予防の啓発、知識普及を行い、ゲートキーパーを増やす

＊1『患者安全推進ジャーナル別冊 病院内の自殺対策のすすめ方 改訂版』、『日常臨床における自殺予防の手引き』、『がん患者における気持ちのつらさガイドライン 2024年版』、『がん医療における患者 - 医療者間のコミュニケーションガイドライン 2022年版』など

＊2 院内自殺の予防と事後対応のための研修会、日本緩和医療学会 PEACE プロジェクト、日本サイコオンコロジー学会主催がん診療に携わる医師に対するコミュニケーション技術研修会（SHARE-CST）など

がん診断後の時期ごとや特定の集団への一次予防（事前対応）

がん診断直後の時期

- がん診断前後の時期からの多職種による相談支援体制を構築する（がん患者指導管理料算定対象の医師、看護師、公認心理師が同席しての面談も含む）。すべてのがん患者に対して、がん診断の時期から精神症状や苦痛のスクリーニング、利用可能な支援に関する情報提供を行う。
- 「悪い知らせ」の伝え方などのコミュニケーション・スキル・トレーニングやがん診断前後の時期に関わる医療者に対する自殺予防教育を行う。

進行がんの積極的治療中～中止前後の時期・終末期

- がんがもたらすあらゆる領域の苦痛、いわゆる全人的苦痛の緩和が特に必要であり、背景にある苦痛や満たされていないニーズをすくい上げるようなコミュニケーションを行う。
- うつ状態の治療に加え、さらにその状態に合併することの多い実存的苦痛への対応も行う。
- 苦痛となる身体症状に対して専門的緩和ケアを導入する。

がんが治癒するか安定したサバイバーの時期

- がん治療後の長期的フォローアップを通じて、精神・身体症状への介入に加え、就労など社会的要因に対する支援を行う。

AYA 世代

- AYA 世代のがん患者は疾患と発達段階が重なり合うことで複雑かつ脆弱な状態にあり、がん治療と晩期障害による教育や就労への影響もあることから、AYA 世代に特化した相談支援機能を強化し、全国の AYA 支援チームやがん相談支援センターと連携した支援体制の拡充を行う。

がん患者全体への自殺の二次予防（危機介入）

二次予防 （危機介入）	気持ちのつらさのスクリーニング陽性の場合やうつ状態を疑う場合、精神症状、**希死・自殺念慮を評価**するとともに、**背景にある苦痛や社会的要因**を評価する
	希死・自殺念慮の有無は、自記式評価尺度のみによる評価ではなく医療者が**直接**評価する
	希死・自殺念慮の表出があった場合には、**受容と共感、傾聴の態度、TALKの原則**を基本としながら、背景にある苦痛、満たされていないニーズをすくい上げる
	自殺の切迫性（具体的な計画）や過去の自殺企図歴を評価する
	精神保健専門家による精神症状の専門的評価、介入（精神療法、薬物療法）に加え、患者の苦痛に応じた**多職種によるケースマネジメント**（患者・家族への心理教育、専門的緩和ケアの導入や利用可能なその他のケアの提供、ソーシャルワークの手法を用いた社会資源の利用促進）を行う

自殺リスクが高い者に対する基本的な態度

受容と共感	患者を一度しっかり受容する。そして「批判的にならない、叱責しない、教条的な説諭をしない」を心掛ける
傾聴	患者の語る話に無批判に耳を傾け、その内容を真剣にとらえる
ねぎらい	患者の苦労を受け止め、相談したことや自殺について打ち明けたことをねぎらう
支援の表明	力になりたいという医療者側の気持ちを伝える。曖昧な態度をとらない
明確な説明と提案	患者の個別性に配慮し、提案は具体的に行う。安易な励ましや安請け合いをしない

TALKの原則

T：誠実な態度で話しかける、言葉に出して心配していることを伝える（Tell）
A：希死・自殺念慮について率直に尋ねる（Ask）
L：相手の訴えを傾聴する（Listen）
K：安全を確保する（Keep safe）

自殺の切迫性の評価

1）自殺を具体的に計画しているか
2）手段を確保しているか
3）いつ頃から自殺について考えているか
4）どの程度自殺への思いが持続しているか
5）どの程度自殺への思いが強いか
6）客観的に焦燥感があったり、遺書を準備したりしているか

三次予防（事後対応）

三次予防 （事後対応）	自死遺族に対して、心理社会的・実務的問題に関する**相談窓口に関しての情報提供**、専門的支援を要する精神症状を呈している場合に心理カウンセリングや精神科へ受療するルートの確立などを行う
	自殺に遭遇した医療者に生じる影響について普及啓発を行い、各施設で事後対応として**心理教育を含めたカンファレンス**の機会を持つ体制を整える
	専門職による支援を要する医療者に対して、精神保健専門家による面談などの柔軟な個別対応を行うための体制の構築・周知を行う
	医療安全管理部門と連携し、自殺事故に関する**情報の収集**、**今後の改善策**の検討を行う

がん医療における自殺対策の手引き（2025年度版）概要版
2026年3月発行

発行・編集
厚生労働科学研究費補助金がん対策推進総合研究事業
「がん患者の自殺予防プログラム開発とその実装に向けた教育研修に関する研究」
（23EA1028）

One-year prevalence and associated factors of suicidal ideation among patients with newly diagnosed head and neck cancer in Japan: a longitudinal study

資料8

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Background

Patients with head and neck cancer have over twice the risk of suicide compared with patients with other malignancies. This increased risk is multifactorial. Although the risk of suicide is considered to be high after cancer diagnosis, studies examining suicidal ideation within the first year following diagnosis are limited.

Aim

1) To assess suicidal ideation through structured clinical interviews
2) To examine demographic, clinical, psychological, and social factors associated with suicidal ideation, and provide foundational evidence for developing suicide prevention interventions

Methods

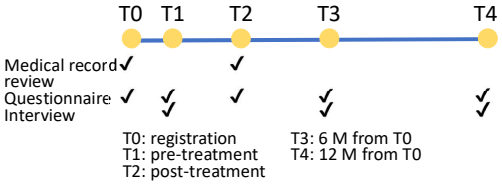
■ **Study design** a prospective, longitudinal study

■ **Subjects** Newly diagnosed primary HNC patients (≥20 yo) in National Cancer Center Hospital, Tokyo

■ **Measures** (Table 1, 2)

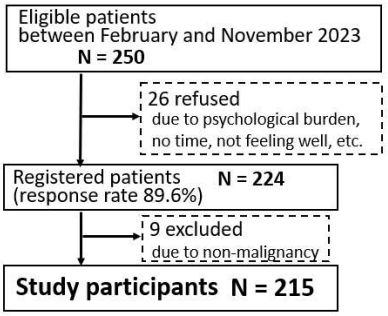
- **Suicidal ideation (SI)**
  Interview: Columbia Suicide Severity Rating Scale (CSSRS)
  Questionnaire: Suicide Behaviors Questionnaire-Revised (SBQR score 7 or higher = suicidal)
- Other measures
- Sociodemographic & clinical variables

■ **Schedule**



■ **Statistical analysis**

- One-year prevalence of SI
- t-test, chi-square test, Mann-Whitney U test
- Binary logistic regression



- The 1-year prevalence of suicidal ideation evaluated by structured interviews was 7% in newly diagnosed primary Head & Neck Cancer.
- Associated factors included younger age, ECOG PS ≥1, and psychiatric history.

Results

Table 1. Sociodemographic and clinical factors of patients classified by SI

	Total N=215	Suicidal N=35	Nonsuicidal N=175	p value
Age, years, mean ± SD	64.1 ± 13.1	57.5 ± 15.7	65.5 ± 12.2	.035
Gender, no. (%)				.940
Male	166 (77.2)	27 (77.1)	134 (76.6)	
Female	49 (22.8)	8 (22.9)	41 (23.4)	
Education, no. (%)				.821
High school or lower	66 (30.7)	11 (32.4)	55 (34.4)	
Some college or higher	128 (59.5)	23 (67.6)	105 (65.6)	
Marital status, no. (%)				.237
Married	153 (71.2)	21 (60.0)	129 (73.7)	
Single	36 (16.7)	9 (25.7)	25 (14.3)	
Divorced	16 (7.4)	4 (11.4)	12 (6.9)	
Widowed	10 (4.7)	1 (2.9)	9 (5.1)	
Household size, no. (%)				.194
Living alone	44 (20.5)	10 (28.6)	33 (18.9)	
Two or more	171 (79.5)	25 (71.4)	142 (81.1)	
Had children, no. (%)				.204
None	56 (26.0)	12 (34.3)	42 (24.0)	
Yes	159 (74.0)	23 (65.7)	133 (76.0)	
Occupational status, no. (%)				.188
Full-time	89 (41.4)	17 (48.6)	72 (43.6)	
Part-time	16 (7.4)	2 (5.7)	14 (8.5)	
Absence from work	16 (7.4)	6 (17.1)	10 (6.1)	
Housemaker	16 (7.4)	2 (5.7)	14 (8.5)	
Unemployed	63 (29.3)	8 (22.9)	55 (33.3)	
Income status, no. (%)				.287
<5 million yen	110 (46.5)	15 (42.8)	85 (51.5)	
5-10 million yen	49 (22.8)	7 (20.0)	42 (25.5)	
≥ 10 million yen	37 (17.2)	9 (25.7)	28 (17.0)	
Caring for family, no. (%)				.717
No	186 (86.5)	31 (88.6)	151 (86.3)	
Yes	29 (13.5)	4 (11.4)	24 (13.7)	
Change in work (T2), no. (%)				.006
No	158 (73.5)	22 (64.7)	136 (85.0)	
Yes (absence from work/retirement)	36 (16.7)	12 (35.3)	24 (15.0)	
Change in income status (T2), no. (%)				.058
No change	159 (74.0)	24 (70.6)	135 (84.4)	
Decreased	35 (16.3)	10 (29.4)	25 (15.6)	
Performance status[1], no. (%)				.013
0	168 (78.1)	22 (62.9)	143 (81.7)	
≥1	47 (21.9)	13 (37.1)	32 (18.3)	
Cancer sites, no. (%)				.732
Hypopharyngeal	54 (25.1)	5 (14.3)	47 (26.9)	
Oral	31 (14.4)	4 (11.4)	26 (14.9)	
Tongue	28 (13.0)	5 (14.3)	23 (13.1)	
Laryngeal	23 (10.7)	6 (17.1)	17 (9.7)	
Mid-pharyngeal	21 (9.8)	4 (11.4)	16 (9.1)	
Thyroid	16 (7.4)	4 (11.4)	11 (6.3)	
Others	42 (22.5)	7 (20.0)	35 (20.1)	
Cancer stage, no. (%)				.318
0	26 (12.1)	2 (5.9)	23 (13.4)	
I	45 (20.9)	6 (17.6)	39 (22.7)	
II	37 (17.2)	4 (11.8)	32 (18.6)	
III	30 (14.0)	6 (17.6)	24 (14.0)	
IV	73 (34.0)	16 (47.1)	54 (31.4)	
First treatment, no. (%)				
Operation (yes)	141 (65.6)	25 (71.4)	116 (69.5)	.818
Chemotherapy (yes)	38 (17.7)	8 (22.9)	30 (18.0)	.501
Radiation (yes)	35 (16.3)	5 (14.3)	30 (18.0)	.601
Perception of the chance of cure (T1), no. (%)				.047
High (≥ 50 %)	170 (79.1)	25 (71.4)	145 (87.9)	
Slightly high (25-49 %)	19 (8.8)	5 (14.3)	14 (8.5)	
None-Low (0-24 %)	11 (5.1)	5 (14.3)	6 (3.6)	
Acceptance of illness (T1), no. (%)				.538
No	17 (7.9)	2 (5.7)	15 (8.9)	
Yes	187 (87.0)	33 (94.3)	154 (91.1)	
Psychiatric history, no. (%)				<.001
Yes	22 (10.2)	11 (31.4)	10 (5.7)	
Past history of Major depressive disorder, no. (%)				<.001
Yes	17 (7.9)	8 (23.5)	9 (5.4)	
Major depressive disorder (T1), no. (%)				<.001
Yes	5 (2.3)	4 (11.8)	1 (0.6)	
Alcohol dependence (T1), no. (%)				.473
Yes	11 (5.1)	1 (2.9)	10 (6.0)	
Nicotine dependence, no. (%)				.313
FTND ≥ 6	8 (3.7)	2 (5.7)	5 (2.9)	

[1]defined by the Eastern Cooperative Oncology Group
FTND: Fagerstrom Test for Nicotine Dependence

Table 2. Longitudinal data

		T1	T2	T3	T4
Suicidal ideation (CSSRS), no. (%)	Past history				
No	183 (91.5)	192 (96.0)	-	144 (94.1)	135 (97.8)
Yes	17 (8.5)	8 (4.0)	-	9 (5.9)	3 (2.2)
MDD (MINI), no. (%)	Past history				
Yes	17 (8.5)	5 (2.5)	-	3 (1.4)	5 (2.4)
Alcohol dependence (MINI), no. (%)					
Yes	-	11 (5.5)	-	4 (2.9)	1 (0.7)
Alcohol abuse (MINI), no. (%)					
Yes	-	7 (3.5)	-	0 (0)	0 (0)
PHQ-9		(T0, N=214)	(T1, N=205)	(T2, N=194)	(T3, N=181)	(T4, N=176)
Total mean ± SD		5.33 ± 5.21	4.39 ± 4.65	4.96 ± 4.59	4.31 ± 4.83	3.36 ± 3.88
5-9, no. (%)		51 (23.7)	45 (21.4)	50 (23.8)	34 (16.2)	42 (20.0)
≥10, no. (%)		44 (20.5)	30 (14.3)	31 (14.8)	24 (11.5)	11 (5.3)
Suicidal ideation (SBQR total)			(T1, N=205)	(T2, N=194)	(T3, N=182)	(T4, N=175)
Mean ± SD	-		3.77 ± 1.65	3.74 ± 1.64	3.86 ± 1.76	3.78 ± 1.55
Shame and Stigma Scale total			(T1, N=205)	(T2, N=194)	(T3, N=176)	(T4, N=171)
Mean ± SD	-		19.90 ± 9.19	19.58 ± 8.45	19.79 ± 9.52	19.18 ± 9.23
EQ 5D-5L			(T1, N=204)	(T2, N=194)	(T3, N=181)	(T4, N=178)
Mean ± SD	-		0.82 ± 0.15	0.76 ± 0.14	0.81 ± 0.15	0.82 ± 0.15
Physical symptoms (CTCAE grade 1 or above) no. (%)			(T1, N=202)	(T2, N=194)	(T3, N=181)	(T4, N=176)
Dry mouth			79 (39.1)	111 (57.2)	100 (55.2)	90 (51.1)
Difficulty swallowing			78 (38.6)	134 (69.1)	91 (50.3)	75 (42.6)
Mouth/throat sores			94 (46.5)	127 (65.5)	82 (45.3)	61 (34.7)
General pain			105 (52.0)	125 (64.4)	87 (48.1)	89 (50.6)
Insomnia			108 (53.5)	112 (57.7)	101 (55.8)	85 (48.3)
Fatigue			102 (50.5)	121 (62.4)	87 (48.1)	87 (49.4)

MDD: Major Depressive Disorder; PHQ-9: Patient Health Questionnaire-9; CTCAE: Common Terminology Criteria for Adverse Events

Table 3. Logistic regression model

	Standard Error	Odds Ratio	95% confidence interval	p-value
Age	0.02	0.95	0.92-0.98	0.003
Performance status (0: 0, 1: 1 or above)	0.51	3.80	1.41-10.22	0.008
Past history of mental illness (0: no, 1: yes)	0.57	5.25	1.74-15.90	0.003
Major depression in T1 (0: no, 1: yes)	1.32	13.10	0.99-172.71	0.051

Clinical implications

Routine screening for depressive symptoms and suicidal ideation should be integrated into the clinical management of head and neck cancer patients, particularly during the post-treatment period when risk appears to increase. Active symptom management and psychosocial interventions may mitigate both physical and psychological suffering and help reduce suicide risk.

別添４

研究成果の刊行に関する一覧

雑誌

発表者氏名	論文タイトル名	発表誌名	巻号	ページ	出版年
Kurisu K, Harashima S,Fujimori M, Akechi T,Yoshiuchi K, Uchitomi Y	Regional disparities in suicide among patients with cancer: A nationwide population-based study in Japan.	Cancer Med	12(19)	20052-20058	2023
Kurisu K, Fujimori M, Harashima S, Okamura M, Yoshiuchi K, Uchitomi Y	Exploratory analysis of nationwide Japanese patient safety reports on suicide and suicide attempts among inpatients with cancer using large language models.	Psychooncology	34(5)	e70150	2025
Kurisu K, Fujimori M, Harashima S, Akechi T, Yoshiuchi K, Uchitomi Y	Suicide risk among individuals diagnosed cancer during versus before the COVID-19 pandemic: a nationwide population-based study.	Jpn J Clin Oncol	55(10)	1194-1197	2025
Eguchi K, Yoshimoto S, Fujimori M, Uchitomi Y	Nationwide retrospective survey on healthcare professionals' perceptions of suicide-related behaviors among people with head and neck cancer in Japan.	Jpn J Clin Oncol	55(11)	1259-1266	2025
Kumada F, Kurisu K, Okamura M, Akechi T, Matsumura Y, Uchitomi Y, Fujimori M	Suicide Prevention in Japanese Cancer Care Hospitals: A Topic Modeling Analysis of Manuals and Workflows.	Front Psychiatry	17	1743690	2026
加藤 果林, 内富 庸介, 藤森 麻衣子, 杉田 尚子, 山本 崇, 松村 由美	医療安全管理部門による自殺事故対策の取り組みについての全国アンケート調査	医療の質・安全学会誌	20(4)	399-405	2025