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REPORT



Loneliness and depression in patients with cancer during COVID-19

Stephen Gallagher, PhD^{a,b} , Kate Mary Bennett, PhD^c , and Louise Roper, PhD^c 

^aDepartment of Psychology, Centre for Social Issues Research, Study of Anxiety, Stress and Health Laboratory, University of Limerick, Limerick, Ireland; ^bHealth Research Institute, University of Limerick, Castletroy, Limerick, Ireland; ^cDepartment of Psychology, University of Liverpool, Liverpool, UK

ABSTRACT

Purpose: Feelings of loneliness are likely to exacerbate risk of depression in people living with cancer during COVID-19.

Design and Methods: Five hundred and eighteen people with cancer with data extracted from two waves (2017–19 and April 2020) of the Understanding Society UK dataset participated.

Findings: An increased risk of depression was observed for cancer of the breast, prostate, blood, but not other cancers (e.g., lung, melanoma). After controlling for prior depression and other factors, it was loneliness during COVID-19, and not previous loneliness, that was predictive. Those currently lonely had a 4.5-fold increased risk of depression. These findings demonstrate that people living with cancer are at increased risk of developing depression during COVID-19, and that feelings of isolation help explain this risk.

Implications: These particular findings have implications for health promotion and intervention work and how best to support people who may feel lonely in this vulnerable group.

KEYWORDS

cancer; COVID-19; depression; isolation; loneliness

Introduction

Depression is common in patients with cancer and estimates range between 13% and 20%,¹ which are much higher than the 4.4% found for major depression in the general population.² While prevalence rates can vary with age and gender of the patient, diagnosis, treatment, and stage of cancer,¹ there are other biopsychosocial and behavioral causes such as feeling isolated from others and excessive alcohol and low physical activity.³ Isolation, and loneliness in particular, is linked to poor coping skills, lower immunity, greater risk of mortality, and its effects on health is comparable to that of smoking.^{4–6} In patients with cancer, loneliness is associated with negative thoughts of their social situations and lack of social support.⁵

CONTACT Stephen Gallagher, PhD  stephen.gallagher@ul.ie  Department of Psychology, University of Limerick, Castletroy, Limerick, Republic of Ireland

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Moreover, with COVID-19 restrictions of movement in place alongside changes to delivery or curtailment of medical services this is likely to exacerbated with implications for increased risk of depression.^{7,8} This is the focus of the present study. Thus, based on the above, it is hypothesized that (1) rates of depression in people living with cancer would be higher during COVID-19, and (2) the unintended consequences of COVID-19 restrictions, i.e., treatment canceled, changes to health behaviors and feelings of loneliness would be predictive of depression risk in those living with cancer.

Methods

Study design and participants

A longitudinal design was employed with data extracted from Wave 9 (2017–19)⁹ and the COVID-19 wave (April 2020)¹⁰ of the *Understanding Society* UK population study. Ethics were obtained by the University of Essex, UK (REC A (08/H0604/124)). As the main study was conducted at the national level weights are provided for sub-group analysis. For our study analysis, participants had to respond ‘yes’ from a list of long-term conditions, in COVID-19 survey, to having cancer/malignancy and if yes, a follow-up question ascertained cancer types (e.g. breast, lung, prostate, skin/melanoma, bowel, bloods/leukemia, liver, or other). Further, participants also had to have participated in Wave 9, and answer the same questions. From a sample of $N=11,836,518$ persons, (4.4%) were eligible for analysis. Relationship, ethnicity, and job status were dichotomized (e.g., married/partnered vs single/divorced/widowed; White vs Black; minority vs nonminority; employed vs unemployed/retired). As an indicator of objective social isolation, i.e. living alone, living arrangements were ascertained by asking if they lived with a partner (yes/no), and if there were other people they shared the home with across different age brackets: ages 0–4, 5–15, 16–18, 19–67, and 70+. A simple numerical figure was given and these were totaled, and then recoded into, 0 = living alone, and 1 = living with others (see [Table 1](#) for group characteristics).

Depression

Depression was captured by the 12-item General Health Questionnaire.¹¹ Items (e.g., unhappy or depressed) are scored as 1 = not at all; 2 = no more than usual; 3 = rather more than usual; and 4 = much more than usual. As we were interested in probable depression rather than symptomology, responses of 1 or 2 are scored as 0, and responses of 3 or 4 are scored as 1. A total score ≥ 6 is specific and sensitive at identifying those

Table 1. Sociodemographics, health and outcome variables across cancer types.

Variable	Breast (N = 136)	Prostate (N = 77)	Bloods (N = 117)	Others (N = 187)	Test of difference
Age mean (SD)	63.7 (11.49)	68.4 (8.21)	59.2 (14.54)	64.6 (11.87)	F (3515) = 10.86, p < .001
Married/partnered (%)	68.1	85.9	70.9	75.4	χ^2 (3) = 8.91, p = .03
Sex (female) (%)	97.1	0.0	53.0	46.5	χ^2 (3) = 196.36, p < .001
Ethnicity (%) (white)	98.5	93.5	94.1	97.3	χ^2 (3) = 5.79, p = .12
Income (monthly £)	1795.4 (477.12)	1168.7 (1518.95)	2220.4 (5744.44)	1893.5 (1543.13)	F (3515) = 0.39, p = .79
Employed (%) (no)	61.2	66.2	55.1	59.4	χ^2 (3) = 2.56, p = .46
Living alone (%) (yes)	19.9	12.8	16.1	18.7	χ^2 (1) = 2.05, p = .56
Alcohol almost daily (%) (yes)	37.2	45.8	43.1	46.8	χ^2 (3) = 2.12, p = .54
Days walking mean (SD)	5.6 (1.89)	5.4 (1.96)	4.95 (2.34)	5.4 (2.12)	F (3431) = 1.81, p = .14
Pre-COVID-lonely (often)	5.2	3.9	5.2	9.7	χ^2 (6) = 8.51, p = .20
COVID-lonely (often)	5.2	1.3	9.4	6.5	χ^2 (6) = 13.76, p = .03
NHS canceled treatment % (yes)	51.9	58.3	51.9	53.4	χ^2 (9) = 7.32, p = .60
Pre-COVID-depression % (yes)	14.7	5.2	18.1	13.9	χ^2 (3) = 6.71, p = .08
COVID-depression % (yes)	19.7	9.1	28.1	13.5	χ^2 (3) = 14.74, p = .002

with or without a depressive disorder.¹² In the present, internal consistency was high, with $\alpha = .91$ for pre-COVID-19 and during COVID-19 $\alpha = .90$.

Access to treatment during COVID-19

Access to treatment was assessed by asking: “Has your treatment plan(s) been changed in any way?, 1 = Yes, consultations/treatments canceled or postponed by NHS, 2 = Yes, alternative treatment provided, 3 = Yes, I canceled or postponed treatment, and 4 = No, treatment continuing as planned.

Loneliness

Loneliness at both time-points was assessed by a single item: “In the last 4 weeks, how often do you feel lonely?” with three responses, 1 = Hardly ever or never; 2 = Sometimes; 3 = Often.

Table 2. Hierarchical logistic regression predicting depression in cancer patients.

Variables	<i>B</i>	OR	<i>p</i>	95% CI lower	95% CI upper
Step 1					
Age	-.02	0.98	.001	0.97	0.98
Partnered	.29	1.34	.001	1.20	1.50
Gender	.67	1.96	.001	1.77	2.17
Step 2					
Age	-.01	0.98	.001	0.97	.98
Partnered	.15	1.16	.009	1.04	1.30
Gender	.58	1.86	.001	1.67	2.07
Pre-COVID depression	.13	1.13	.001	1.12	1.14
Step 3					
Age	-.01	.98	.19	0.98	1.07
Partnered	.50	1.65	.07	0.95	2.86
Gender	.43	1.53	.15	0.85	2.75
Pre-COVID depression	.12	1.13	.001	1.09	1.18
Cancer groups	.15	1.16	.27	0.89	1.50
Step 4					
Age	-.01	.99	.56	0.99	1.01
Partnered	-.07	.94	.83	0.50	1.75
Gender	.29	1.33	.36	0.72	2.48
Pre-COVID depression	.11	1.12	.001	1.07	1.17
Cancer group	.21	1.23	.14	0.94	1.61
COVID-19 loneliness	1.51	4.54	.001	2.97	6.94

Note: The bold indicates statistical significance.

Health behaviors

Alcohol intake was assessed with “Thinking about the last 4 weeks, how often did you have a drink containing alcohol? 1 = Never, 2 = Once, 3 = 2–3 times in total, 4 = 3–4 times per week, 5 = 4–6 times per week, and 6 = Daily. Those reported once and 2–3 times were recoded as 2, and, 4–6 times a week and daily as 3. Thus, giving us three categories: 1 = never, 2 = once a week, and 3 = almost daily. Walking was ascertained from “During the last 7 days, on how many days did you walk for at least 10 minutes at a time?” and had an open response [Numeric] days per week.

Statistical analysis

The sample was weighted to provide a representative national sample, taking into account survey design and non-response. IBM SPSS Statistics for Windows, version 24 (IBM Corp., Armonk, NY, USA)¹³ was used for analysis. No outliers were observed and data were normally distributed. Tests of differences were used to examine group differences on sociodemographic, health and outcome variables. Variations in degrees of freedom reflect missing data (e.g. walking). A step-wise hierarchical logistic regression examined the predictors of depression across those living with cancer. In this analysis, confounding variables (i.e., sociodemographics, preexisting depression and cancer groups) were entered in Step 1, Step 2, and Step 3, respectively, with loneliness experienced during COVID-19 entered in Step 4 of the model. Odds ratio (OR) is the effect size (Table 2).

Results

In line with common cancer types in the UK, 26.3% had breast cancer, 14.9% had prostate, and 22.7% had blood cancers. As there were lower numbers of bowel, liver, lung, skin, and other types these were pooled into the 'other' category (36.1%) for analysis. As evidenced in [Table 1](#), those with blood cancers were the youngest, while those with prostate were older men, and also more likely to be married. For breast cancer, 97% were women. There were no differences on any other sociodemographic, health behaviors or access to NHS treatment. However, those with blood cancers were more likely to be lonely 'more often' than other groups. Further, rates of depression increased over time for those with cancers of the breast, prostate, and bloods but not 'other'. Those with cancers of the blood were the most affected, i.e. an additional 10% now categorized as depressed.

In stepwise logistic regression, controlling for confounding factors (See [Table 1](#) for group differences) in Step 1, and prior depression at Step 2, and cancer group at Step 3, the between groups differences on current depression evident in [Table 2](#) was abolished; OR = 1.18 (95% confidence interval (95% CI), 0.92–1.52), $p = .19$. However, loneliness experienced during COVID-19 in Step 4 was a significant predictor of depression in cancer patients. Those who reported higher levels of loneliness during the current crisis had an almost 4.5 times greater risk of depression, OR = 4.54. As can be seen in [Figure 1](#), over 40% of those who were depressed reported being lonely 'sometimes', whereas this was only evident in 19% of those not depressed. Also, over 20% of those with depression vs 2.1% of not depressed reported being 'lonely' ($\chi^2 (2) = 77.82, p < .001$).

Discussion

Our findings demonstrate that people living with the most common cancers (breast, prostate and blood) appear to be at an increased risk of depression during COVID-19, and that feelings of isolation help explain this risk. While loneliness can be experienced by anyone, it is the enforced isolation, due COVID-19 restrictions that was the strongest predictor. Pre-COVID depression explained 12% while those experiencing loneliness during the pandemic were 4.5 times at a higher risk of current depression symptoms. This is in accord with recent research suggesting that loneliness, as an unintended consequence of COVID-19 restrictions, will be damaging for those with existing depression.⁷ In fact, social and physical activities, particularly ones face to face with family and/or in groups were among the first areas of interaction that were prohibited under guidance from the UK government during this period, thus one can see how those affected by cancer would become more isolated. Further, this would also be

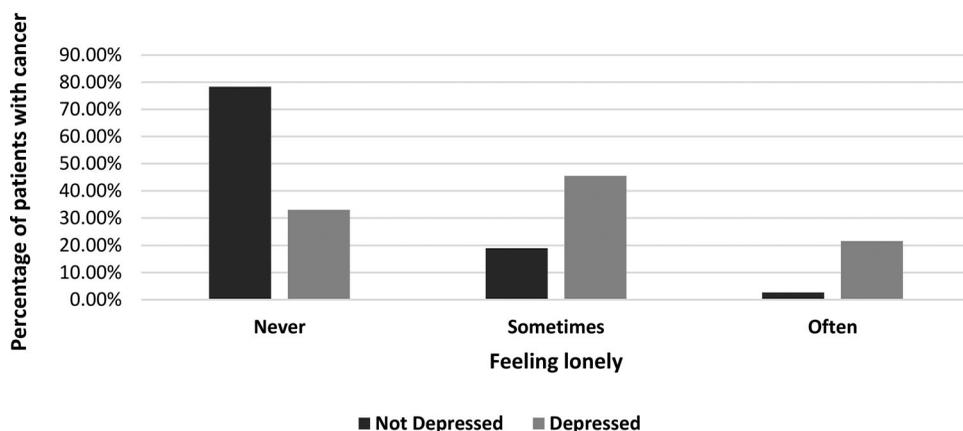


Figure 1. Depression and feelings of loneliness during COVID-19 in patients with cancer.

compounded against the backdrop of the reduction of health and social care services that may typically support people in need. This is likely to have had the most impact on people living with cancer who seek social support from these groups.

Though there are strengths to our paper, longitudinal design, population level data, there are also limitations. First, there were no data on stage of cancer, treatment type, or duration of illness, factors which are also known to be associated with risk of depression.

Our findings have important implications, as it is likely that some restrictions will be in place for some time until effective COVID-19 treatments are found. Therefore, the levels of loneliness may persist over time to become chronic which may worsen the risk of depression in cancer patients. Further, as health professionals we need to think about how to mitigate this risk. Interventions should focus on reducing loneliness and increasing social interaction within the scope of the ‘new world’ of reduced face to face support and increased online support. These interventions may include building online communities of peer support where virtual interactions can take place, and where possible providing tele-health services for health and social care consultations.

Disclosure statement

No potential conflict of interest was reported by the authors.

ORCID

Stephen Gallagher  <http://orcid.org/0000-0002-5471-7774>

Kate Mary Bennett  <http://orcid.org/0000-0002-2918-7628>

Louise Roper  <http://orcid.org/0000-0003-3164-6894>

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