THIS IS A PRE-PRINT VERSION OF AN ARTICLE PUBLISHED IN FINAL FORM IN

*EUROPEAN JOURNAL OF CANCER CARE*, 2017: 26(5)

<https://onlinelibrary.wiley.com/doi/pdf/10.1111/ecc.12744>

**Reduced employment and financial hardship among middle-aged individuals with colorectal cancer**

Louisa G Gordon1,2, Vanessa L Beesley1,3, Gabor Mihala4, Bogda Koczwara5, Brigid M Lynch6-8

1 Population Health Department, QIMR Berghofer Medical Research Institute, Brisbane, Australia

2 School of Nursing, Queensland University of Technology, Brisbane, Australia

3 School of Public Health and Social Work, Queensland University of Technology, Brisbane, Australia

4 Centre for Applied Health Economics, School of Medicine, Menzies Health Institute Queensland, Griffith University, Brisbane, Australia

5 Department of Medical Oncology, Flinders Medical Centre, Flinders Centre for Innovation in Cancer, Flinders University, Flinders Drive, Bedford Park, Adelaide, Australia

6 Cancer Epidemiology Centre, Cancer Council Victoria, Melbourne, Australia

**7** Melbourne School of Population and Global Health, Faculty of Medicine, Dentistry and Health Sciences, The University of Melbourne, Australia

**8 Physical Activity Laboratory, Baker IDI Heart and Diabetes Institute, Melbourne, Australia**

Corresponding Author: Louisa Gordon, QIMR Berghofer Medical Research Institute, Population Health Department, Locked Bag 2000, Royal Brisbane Hospital, QLD 4029, Australia. Email: louisa.gordon@qimrberghofer.edu.au

Funding sources: This study was funded by an Australian Research Council Discovery Project Grant #DP1095723. Lynch is supported by a National Breast Cancer Foundation Early Career Fellowship.

Keywords: cancer; oncology; colorectal cancer; financial toxicity; financial hardship; return to work.

**Abstract**

Financial hardship may affect up to 30% of cancer survivors, however little research has addressed the effect of employment change on financial hardship. This study compared the self-reported financial hardship of colorectal cancer survivors (n=187) at 6 and 12 months following diagnosis with that of a matched general population group (n=355). Colorectal cancer survivors were recruited through the Queensland Cancer Registry, Australia; data from the Household Income and Labour Dynamics in Australia Survey were used for the general population group. After matching on seven socio-demographic variables, self-reported financial hardship among middle-aged (45-64 years) workers with colorectal cancer was poorer at six months but had improved by and was comparable to a general population comparison group at 12 months after diagnosis. Fifteen percent of cancer survivors experienced a shortage of money to pay for living essentials, but this eased by 12 months (7%). Middle-aged working cancer survivors who ceased or reduced work were more likely to perceive themselves as not being financially comfortable, compared with those who had continued work (Odds Ratio 2.17, 95%CI: 1.01, 4.67) at 12 months. Health professionals, employers and government services should address the impact of impaired employment on financial hardship among persons with cancer.

**Introduction**

Being diagnosed with cancer presents many challenges to a person’s work life. Treatments can be disruptive to the daily routine and ongoing side-effects are often difficult to manage in the work place. A recent review of 30 studies highlighted that although a high proportion of persons with cancer return to work, there were ongoing issues relating to fatigue, physical difficulties, treatment-induced menopausal symptoms, cognitive problems, depression and anxiety which may impact on quality as well as quantity of employment ([Duijts et al., 2014](#_ENREF_6)).

Between 64-82% of cancer survivors return to employment within 18 months, depending on the type of cancer and treatment sequelae ([Mehnert, 2011](#_ENREF_18)). Our previous analyses on employed, middle-aged (45-64 years) men and women with colorectal cancer showed 27% were not working 12 months after their diagnosis versus 8% of general population controls (matched by age group and gender) ([Gordon et al., 2014](#_ENREF_8)). A further 19% of colorectal cancer survivors in our study decreased their hours and had consequently faced reduced income ([Gordon et al., 2014](#_ENREF_8)). Fifty percent of those who had stopped working during the acute treatment phase did so for 3 months, while 75% had up to 6 months off work ([Gordon et al., 2014](#_ENREF_8)). Poorer socio-economic status, chemotherapy treatment, longer hospital stay and excessive sleeping hours were linked to delayed return to work and/or stopping work at 12 months ([Gordon et al., 2014](#_ENREF_8); [Lynch, Mihala, Beesley, Wiseman, & Gordon, 2016](#_ENREF_16)). We have also shown that health-related quality of life was significantly worse for cancer survivors stopping or reducing work than similar general population controls ([Beesley, Vallance, Mihala, Lynch, & Gordon, 2016](#_ENREF_3)). Specific cancer types may pose additional challenges, for example individuals with colorectal cancer may have concerns around stomas and changes in bowel movements, which could preclude employment participation for some.

Stopping or reducing work may be a source of financial stress for cancer sufferers ([Fenn et al., 2014](#_ENREF_7); [McGrath et al., 2016](#_ENREF_17); [Sharp & Timmons, 2016](#_ENREF_19)) in a setting where financial demands are already excessive due to the high cost of new therapies and, paradoxically, longer survival and related longer utilisation of health care services and interventions. Patient out-of-pocket expenses can be high following a cancer diagnosis and the consequences can mean delays in treatment ([Kent et al., 2013](#_ENREF_14)), poorer medication adherence ([Kaisaeng, Harpe, & Carroll, 2014](#_ENREF_13)) and financial hardship ([Bestvina et al., 2014](#_ENREF_4)). Despite the large literature on financial hardship among cancer survivors ([Azzani, Roslani, & Su, 2015](#_ENREF_1); [Gordon, Merollini, Lowe, & Chan, 2016](#_ENREF_11)), studies focus on out-of-pocket expenses ([Baili et al., 2016](#_ENREF_2); [Davidoff et al., 2013](#_ENREF_5); [Kaisaeng et al., 2014](#_ENREF_13); [Lauzier et al., 2013](#_ENREF_15)), material hardships ([Yabroff et al., 2016](#_ENREF_20)) or psychological burdens ([Fenn et al., 2014](#_ENREF_7); [Yabroff et al., 2016](#_ENREF_20)) and mostly ignore the concurrent issue of stopping work and reduced household income. Furthermore, most studies are cross-sectional and cannot determine if financial hardship from cancer is a temporary or long-term problem ([Gordon et al., 2016](#_ENREF_11)). An exception is a Canadian study by Lauzier *et al.* (2013) who found wage loss to be the most important determinant of financial decline among breast cancer survivors at 12 months from diagnosis ([Lauzier et al., 2013](#_ENREF_15)).

The aim of this study was to gain an understanding of how changes to employment status are associated with financial hardship among middle-aged persons who were in the workforce at the time of their colorectal cancer diagnosis. Specifically, we aim to address the following questions:

1. What is the self-reported financial wellbeing of this population at 6 and 12 months post-diagnosis, compared with a socio-demographic matched general population group?
2. Is the financial wellbeing of colorectal cancer survivors adversely affected amongst those who had ceased or reduced work 6 and 12 months post-diagnosis?

**Methods**

***Study participants and recruitment***

Data from a prospective, population-based study enrolling 45-64 year old men and women with colorectal cancer were used. Middle-aged persons were targeted to keep the group homogenous in life stage and prior to typical retirement age. Full details on the study methods have previously been reported ([Gordon et al., 2014](#_ENREF_8); [Gordon et al., 2011](#_ENREF_10)). In brief, participants were in the workforce at the time of their diagnosis, and were recruited through the Queensland Cancer Registry between January 2010 and September 2011. Ethics approval was obtained from the Human Ethics Research Committee of QIMR Berghofer Medical Research Institute, Griffith University and Queensland Health Research Ethics and Governance Unit. We obtained de-identified general population comparison group data from the Household Income and Labour Dynamics in Australia (HILDA) Survey ([*The Household Income and Labour Dynamics in Australia (HILDA) Survey: Wave 1 Survey Methodology*, 2002](#_ENREF_12)). HILDA data were collected via face-to-face interviews during 2010 and 2011 i.e. two waves, 12 months apart. We matched participants with cancer to HILDA responders on a one-to-two ratio by: 5-year age group (45-49, 50-54, 55-59, 60-64), gender (male, female), marital status (married/partnered, no partner), education (≤high school, tertiary), income (<AU$38,000, AU$38,001-$78,000, AU$78,001-$104,000, AU$104,001+), occupational group (professional, trades, clerical), and rurality (major city, regional/remote).

***Data collection***

Clinical data were collected from pathology forms submitted to the Queensland Cancer Registry. Participants with cancer completed a telephone interview and postal survey at 6 months and 12 months post-colorectal cancer diagnosis. The interviews collected socio-demographic information on age group, gender, marital status, employment situation, income, employment type and details about their treatment for cancer including the living proximity to treatment centre, distance travelled, accommodation required and requests for financial assistance. During the telephone interviews at 6 months post-diagnosis, participants were additionally asked to recall their employment situation at the time of diagnosis (baseline), in order to understand changes in work participation over the 6 and 12 month period. The postal surveys collected additional sensitive information (e.g., household finances).

***Outcome measures***

Financial hardship was defined by three main questions on financial status:

* Perceived prosperity assessed via the question ‘Given your current needs and financial responsibilities, would you say that you and your family are; prosperous, very comfortable, reasonably comfortable, just getting along, poor or very poor.’ We dichotomised this question into ‘not financially comfortable’ (true/false) where ‘true’ was defined as ‘just getting along’, ‘poor’ or ‘very poor’.
* Financial strain defined by the question ‘Since your cancer diagnosis, did any of the following happen to you because of a shortage of money? 1) could not pay utilities on time, 2) could not pay mortgage or rent on time, 3) pawned or sold something, 4) went without meals, 5) was unable to heat home, 6) asked for financial help from friends/family, 7) asked for help from other organisations. We dichotomised this question generating ‘financial strain’ (yes/no) with ‘yes’ defined as a shortage of money causing at least two affirmative responses above.
* Ability to raise money from the question ‘Suppose you had to raise $2000 for an emergency – how hard would that be?’ with responses ‘I could easily raise the money’, ‘I could raise the money but it would involve some sacrifices’, ‘I would have to do something drastic to raise the money’, ‘I don’t think I could raise the money’. We dichotomised this question into ‘Unable/difficult to raise money’ (yes/no) with ‘yes’ defined as the three last responses above. The follow-up question was ‘How would you obtain that money (with seven possible responses and more than one response was allowed). The follow up question excluded respondents who answered they could not raise the money.

We created a ‘change in employment’ variable from baseline/diagnosis to 12 months based on how many hours were worked and collapsed these into two groups: 1) ceased or reduced work and 2) maintained or increased work. ‘Increased work’ and ‘reduced work’ were defined as greater than 4 hours difference per week from baseline.

The financial status questions and the method of generating the ‘change in employment’ variable were identical for the cancer and general population groups. However, the financial strain questions detailing impacts from a shortage of money were not available for any HILDA responders in 2010 because of problems during data collection.

***Analysis***

Statistical analyses were conducted using Stata Version 13. We included all participants that completed the first postal survey (6 months) and answered the first financial question on perceived prosperity. Case-control matching of cancer and HILDA participants was achieved through the ‘radmatch’ Stata procedure. Descriptive analyses were undertaken presenting frequencies and percentages, and cross-tabulations using chi-squared tests assessed differences between the cancer and comparison groups or between 6 and 12 months post-diagnosis. Odds ratios were calculated where the exposure was change in employment (0=maintained/increased 1=ceased/reduced) and the event was financial hardship (i.e., defined by the three outcomes above). As the cancer and comparison groups were well-matched, odds ratios were unadjusted. Statistical significance was set with a p-value <0.05.

**Results**

In total, 239 participants with colorectal cancer were enrolled in the study from 705 eligible persons identified (34% response rate) ([Gordon et al., 2014](#_ENREF_8)). For this analysis, after excluding participants with missing data for key items, the final sample size was 187 colorectal cancer survivors and 355 participants in the comparison group (19 were unmatched using our variables). Three socio-demographic characteristics (age, number of comorbidities and employer size) were statistically significantly imbalanced, but the differences were not considered as clinically significant (Table 1).

There were no notable differences across time or between study groups for perceived prosperity or the dichotomised ‘financially comfortable’ variable (Table 2). However, there was a small but nonsignificant improvement (70% to 75%) in financial comfort among cancer survivors from 6 to 12 months. For the question on financial strain, measuring the ability to meet living expenses, compared with 12 months post-diagnosis, a higher proportion of participants with cancer indicated financial strain at 6 months post-diagnosis (n=28, 15%) than at 12 months (n=14 or 7%). Specifically, by 12 months, 18 survivors had no further strain, 10 survivors experiencing strain at both times and 4 survivors worsened from no to some strain (p<0.001). The proportion of financial strain (7%) was the same between cancer and comparison groups at 12 months. At 6-months post-diagnosis, 41% of cancer survivors were unable to raise funds in an emergency compared with 30% in the comparison group (p=0.011) but negligible difference was found by 12 months (~30%). Further, among those able to raise funds, a statistically significantly higher proportion of cancer survivors said they would use savings compared with the comparison group, at both time points (Table 2). Those with cancer were also less likely to borrow from a bank at both time points (23%) than the comparison group (28-31%).

At 6 and 12 months after diagnosis, cancer survivors were twice as likely to report not being financially comfortable if they had ceased/decreased employment (21 or 33%) compared with those who maintained/increased employment participation (15 or 19%), significant only at 12 months (odds ratio 2.17 95%CI: 1.01, 4.67) (Table 3). There were no notable differences in the inability to raise emergency funds among cancer survivors at 6 and 12 months. However, inability to raise emergency funds was statistically significantly higher in the comparison group at Time 1 if they had left or reduced employment but returned to similar levels as the cancer group at Time 2.

**Discussion**

Our findings show that, among colorectal cancer survivors working at diagnosis, a proportion experience significant financial hardship and were unable to meet their living expenses and approximately one-third indicated they were not financially comfortable. There were improvements between 6 and 12 months in colorectal cancer survivors for perceived prosperity and financial strain. However, by 12 months the extent of financial burden appeared similar to that reported by members of the general population without colorectal cancer. Among the sub-group of those who ceased or limited their work hours (n=72) we found greater numbers of participants reporting financial hardship. This highlights that even in middle-aged colorectal cancer survivors who are working and earning income, reduced employment contributes to financial vulnerability for some.

Financial strain appeared to be higher for colorectal cancer survivors at 6 months post-diagnosis, but had mostly returned to ‘normal’ levels by 12 months. At 6 months after diagnosis, many participants were undergoing chemotherapy and radiation treatments. Therefore, temporary treatment-related work stoppages may explain difficulties in financial situations ([McGrath et al., 2016](#_ENREF_17)). In addition, while we did not collect information on out-of-pocket medical expenses, many of our participants with cancer could be expected to have high expenses if they lived in rural locations, due to vast travelling distances in Australia. Nineteen percent of participants lived more than 50km from treatment centres and, among these, three quarters were required to travel up to 550 km and would have needed accommodation in the metropolitan centres ([Gordon, Feguson, Chambers, & DUnn, 2009](#_ENREF_9)).

Our findings substantiate our qualitative work where survivors who stopped work gave specific examples about the difficult financial consequences they experienced ([McGrath et al., 2016](#_ENREF_17)). We also know that some of our participants were obliged to return to work for financial reasons, and did so earlier than preferred ([McGrath et al., 2016](#_ENREF_17)). Some of the difficulties experienced were chemotherapy-related constipation, diarrhoea, fatigue, physical weakness, problems with stomas and bowel movements, difficulty concentrating and short-term memory issues ([Lynch et al., 2016](#_ENREF_16)). Further, some respondents reported that employers and co-workers were not supportive, which evoked more emotional and social challenges for the respondents. In these situations, it seems cancer survivors are forced to make a trade-off between financial and other types of wellbeing, which may all individually contribute to a person’s distress.

Advice about working after cancer and related support materials are increasingly important for those affected by cancer and their health professionals to learn the practical measures for those experiencing financial hardship. These include advice about communicating work issues with employers, dealing with financial institutions to reduce debt, and speaking to health professionals to express concerns around cost issues. Ensuring front-line health professionals, employers and governments acknowledge that financial strain exists for some cancer survivors and how they can support them is equally important as patients accessing these materials and being aware of the actions that may assist them in reducing financial pain.

Our analyses are limited by smaller than expected numbers enrolled to the study, but sufficiently powered to detect significant differences in the key outcome, employment participation ([Gordon et al., 2014](#_ENREF_8)). Furthermore, a total of 28 (15%) participants with cancer had missing data at 12 months post-diagnosis. We were unable to perform multivariable analyses, although the study groups were matched on key sociodemographic variables to remove potential confounding. We cannot rule out the effect on financial hardship that may have been contributed by additional chronic health conditions in the cancer group, but given the excess financial hardship was observed in the first 6 months after colorectal cancer diagnosis when compared with the general population group, we are confident that it was predominantly due to colorectal cancer. Findings from our study of working, middle-aged colorectal cancer survivors will not be representative of all patients with colorectal cancer. It is possible that people with colorectal cancer not working at diagnosis, minority groups, younger persons or those with different types of cancer could have higher levels of financial hardship than reported here. This may be particularly true of other cancer types with prolonged treatments and high medical expenses. In addition, colorectal cancer has many treatments which are reimbursed for government subsidy via Australian Medicare and thus financial impacts may be less. Finally, our study did not collect out-of-pocket expenses which represent the financial outgoings faced by the study participants which may have provided a greater understanding of monetary burden for this population.

In conclusion, self-reported financial hardship among middle-aged workers at 6 and 12 months after diagnosis with colorectal cancer was generally comparable to a general population comparison group. A small proportion of cancer survivors fared poorly and financial difficulty eased by 12 months. Middle-aged workers with colorectal cancer who ceased or reduced work were twice as likely to experience an inability to meet everyday living expenses, than if they had continued work. Health professionals and patients should seek help on strategies that will identify and ease the financial burden through cancer support services.

**Table 1: Socio-demographics and treatment details for the colorectal cancer group**

**and general population comparison group, n (%)**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Cancer group** **n=187** | **Comparison group** **n=355** | **p value** |
| #Age (mean, sd) | 56.3 (5.2) | 54.9 (5.0) | 0.002 |
| #Gender (male) | 123 (66%) | 239 (67%) | 0.716 |
| Country of birth (Aust) | 140 (81%) | 267 (75%) | 0.143 |
| #Marital status (partnered) | 142 (82%) | 295 (83%) | 0.771 |
| #Lived in a major city (yes) | 96 (51%) | 176 (50%) | 0.697 |
| #Education (higher edu) | 62 (36%) | 149 (42%) | 0.193 |
| #Household income1 ≤$36,000 $36,001 to $78,000 $78,001 to $104,000 >$104,000 | 11 (7%)47 (31%)36 (23%)60 (39%) | 36 (10%)104 (29%)63 (18%)152 (43%) | 0.357 |
| #Occupation group Professional Trades Clerical | 40 (23%)79 (46%)53 (31%) | 99 (28%)160 (45%)96 (27%) | 0.462 |
| Employer type Private/profit Other | 129 (75%) | 261 (74%) | 0.717 |
| Employer size Small <20 staff | 73 (42%) | 185 (53%) | 0.027 |
| Work schedule Regular daytime | 128 (74%) | 259 (73%) | 0.802 |
| No. of comorbidities None One At least two | 74 (43%)53 (31%)46 (27%) | 192 (55%)107 (31%)50 (14%) | 0.002 |
| Body mass index (mean, sd) | 27.3 (4.9) | 28.0 (5.8) | 0.157 |
| Cancer site Colon Rectal | 86 (55%)71 (45%) | n/a | - |
| Cancer stage Early Late | 71 (65%)38 (35%) | n/a | - |
| Chemotherapy or radiotherapy Yes | 99 (56%) | n/a | - |
| Lived >50km of treatment centre Yes No | 34 (19%)141 (81%) | n/a | - |
| Needed accommodation Yes  No | 17 (10%)156 (90%) | n/a | - |
| Financial support received  Yes  No | 25 (14%)149 (86%) | n/a | - |

Frequencies do not always add up to group size due to missing data, % values calculated with number of non-missing values in denominator

# matching variables – the cancer and comparison group were matched on these variables.

1. Australian dollars 2010

**Table 2: Self-reported financial status at two time points by cancer group and general population comparison group**

|  |  |  |
| --- | --- | --- |
|  | **Time 11** | **Time 21** |
|  | **Cancer** **group** | **Comparison** **group** | **Cancer** **group** | **Comparison** **group** |
| **Perceived prosperity** |  |  |  |  |
|  Prosperous | 3 (2%) | 4 (1%) | 5 (3%) | 6 (2%) |
|  Very comfortable | 24 (13%) | 52 (15%) | 18 (11%) | 51 (14%) |
|  Reasonably comfortable | 104 (56%) | 196 (55%) | 97 (61%) | 185 (53%) |
|  Just getting along | 54 (29%) | 96 (27%) | 38 (24%) | 104 (30%) |
|  Poor | 2 (1%) | 5 (1%) | 1 (0.6%) | 4 (1%) |
|  Very poor | 0 (0%) | 2 (0.6%) | 0 (0%) | 2 (0.6%) |
| Not financially comfortable2 True False | 56 (30%)131 (70%) | 103 (29%)252 (71%) | 39 (25%)120 (75%) | 110 (31%)242 (69%) |
| **Financial strain** Could not pay for utilities on time Could not pay mortgage or rent on time Pawned or sold something Went without meals Was unable to heat home Asked for financial help (family/friends) Asked for financial help (organisations)Experiencing financial strain Yes No3  | 17 (9%)19 (10%)13 (7%)6 (4%)2 (1%)17 (9%)23 (12%)28 (15%)162 (85%) | Not available Not available  | 7 (4%)7 (4%)6 (4%)4 (3%)1 (0.6%)13 (8%)11 (7%)14 (7%)176 (93%) | 32 (9%)10 (3%)8 (2%)8 (2%)12 (3%)22 (6%)10 (3%)\*26 (7%)354 (93%) |
| **Ability to raise $2000 in an emergency** Easily raised Could raise but with sacrifices Could raise but drastic action Could not raise money | 111 (59%)52 (28%)13 (7%)12 (6%) | 245 (70%)73 (21%)17 (5%)14 (4%) | 105 (67%)41 (26%)7 (4%)5 (3%) | 242 (69%)65 (19%)19 (5%)24 (7%) |
| Unable or difficult to raise $2000 easily4 Yes No  | 77 (41%)111 (59%) | 104 (30%)\*245 (70%) | 53 (33%)105 (67%) | 109 (31%)242 (69%) |
| **How would the money be raised in an emergency?**5 |  |  |  |
|  Use savings | 136 (76%) | 231 (68%)\* | 129 (82%) | 236 (72%)\* |
|  Borrow from relative (lives with) | 6 (3%) | 17 (5%) | 5 (3%) | 12 (4%) |
|  Borrow from relative (lives elsewhere) | 17 (10%) | 50 (15%) | 16 (10%) | 34 (10%) |
|  Borrow from friend | 9 (5%) | 16 (5%) | 5 (3%) | 13 (4%) |
|  Borrow from a bank/use credit | 40 (23%) | 106 (31%) | 36 (23%) | 93 (28%) |
|  Sell asset | 24 (13%) | 32 (9%) | 20 (13%) | 34 (10%) |
|  Use other method | 3 (2%) | 7 (2%) | 4 (3%) | 9 (3%) |

\*p<0.05

1. Time 1 and 2 for the cancer group is 6 and 12 months after diagnosis, respectively, Time 1 and 2 for the general population group is 12 months apart.
2. Not financially comfortable ‘true’ was a positive response to either ‘just getting along’, ‘poor’ or ‘very poor’ while a ‘false’ was defined as a response of ‘prosperous’ ‘very comfortable’ or ‘reasonably comfortable’.
3. Financial strain was defined as a shortage of money causing ≥2 occurrences of either: 1) could not pay utilities on time, 2) could not pay mortgage or rent on time, 3) pawned or sold something, 4) went without meals, 5) was unable to heat home, 6) asked for financial help from friends/family, 7) asked for help from other organisations.
4. Not able to raise $2000 easily was defined as the other responses than ‘easily raised’.
5. Response categories are not mutually exclusive and figures may not add up to 100%. Comparisons between cancer and comparison groups for each method of raising money occurred separately for 6 and 12 months.

**Table 3: Unadjusted odds ratios of financial hardship at Time 11 and Time 21 by employment change within colorectal cancer and general population comparison groups**

|  |  |  |
| --- | --- | --- |
|  | **Cancer group** | **Comparison group** |
| **Employment change group**  | **Maintained/ increased****n=84****OR (95%CI)** | **Ceased/ decreased****n=72****OR (95%CI)** | **Maintained/ increased****n=236****OR (95%CI)** | **Ceased/ decreased****n=112****OR (95%CI)** |
| Not financially comfortable2 Time 1  | referent | 1.80 (0.91, 3.58) | referent | 1.05 (0.65, 1.72) |
| Time 2  | referent | 2.17 (1.01, 4.67)\* | referent | 1.11 (0.68, 1.81) |
| Action indicated financial strain3 Time 1  | referent | 1.33 (0.53, 3.35) | referent | Not available |
| Time 2  | referent | 1.00 (0.32, 3.12) | referent | 1.55 (0.67, 3.62) |
| Unable to raise money easily4 Time 1  | referent | 1.16 (0.61, 2.22) | referent | * 1. (1.02, 2.70)\*
 |
|  Time 2  | referent | 1.09 (0.54, 2.20) | referent | 1.05 (0.64, 1.73) |

\*p<0.05 CI = confidence interval, OR = odds ratio (unadjusted)

1. Time 1 and 2 for the cancer group is 6 and 12 months after diagnosis, respectively, Time 1 and 2 for the general population group is 12 months apart.
2. Not financially comfortable ‘yes’ was a positive response to either ‘no’ was ‘just getting along’, ‘poor’ or ‘very poor’ while a ‘no’ was defined as a response of ‘prosperous’ ‘very comfortable’ or ‘reasonably comfortable’.
3. Financial strain was defined as a shortage of money causing ≥2 occurrences of either: 1) could not pay utilities on time, 2) could not pay mortgage or rent on time, 3) pawned or sold something, 4) went without meals, 5) was unable to heat home, 6) asked for financial help from friends/family, 7) asked for help from other organisations.
4. Unable to raise $2000 in an emergency was defined as other responses than ‘easily raised’.

**References**

Azzani, M., Roslani, A. C., & Su, T. T. (2015). The perceived cancer-related financial hardship among patients and their families: a systematic review. [Title]. *Support Care Cancer, 23*(3), 889-898. doi: 10.1007/s00520-014-2474-y

Baili, P., Di Salvo, F., de Lorenzo, F., Maietta, F., Pinto, C., Rizzotto, V., . . . Micheli, A. (2016). Out-of-pocket costs for cancer survivors between 5 and 10 years from diagnosis: an Italian population-based study. *Support Care Cancer, 24*(5), 2225-2233. doi: 10.1007/s00520-015-3019-8

Beesley, V. L., Vallance, J., Mihala, G., Lynch, B. L., & Gordon, L. G. (2016). Association between change in employment participation and quality of life in middle-aged colorectal cancer survivors compared with general population controls. . *Psycho Oncology, (Accepted 31/10/16)*.

Bestvina, C. M., Zullig, L. L., Rushing, C., Chino, F., Samsa, G. P., Altomare, I., . . . Zafar, S. Y. (2014). Patient-oncologist cost communication, financial distress, and medication adherence. *J Oncol Pract, 10*(3), 162-167. doi: 10.1200/jop.2014.001406

Davidoff, A. J., Erten, M., Shaffer, T., Shoemaker, J. S., Zuckerman, I. H., Pandya, N., . . . Stuart, B. (2013). Out-of-pocket health care expenditure burden for Medicare beneficiaries with cancer. *Cancer, 119*(6), 1257-1265. doi: 10.1002/cncr.27848

Duijts, S. F., van Egmond, M. P., Spelten, E., van Muijen, P., Anema, J. R., & van der Beek, A. J. (2014). Physical and psychosocial problems in cancer survivors beyond return to work: a systematic review. *Psychooncology., 23*(5), 481-492. doi: 410.1002/pon.3467. Epub 2013 Dec 1023.

Fenn, K. M., Evans, S. B., McCorkle, R., DiGiovanna, M. P., Pusztai, L., Sanft, T., . . . Chagpar, A. B. (2014). Impact of financial burden of cancer on survivors' quality of life. *J Oncol Pract, 10*(5), 332-338. doi: 10.1200/jop.2013.001322

Gordon, L. G., Beesley, V. L., Lynch, B. M., Mihala, G., McGrath, C., Graves, N., & Webb, P. M. (2014). The return to work experiences of middle-aged Australian workers diagnosed with colorectal cancer: a matched cohort study. *BMC Public Health, 14*, 963. doi: 10.1186/1471-2458-14-963

Gordon, L. G., Feguson, M., Chambers, S. K., & DUnn, J. (2009). Fuel, beds, meals and meds: out-of-pocket expenses for patients with cancer in rural Queensland. . *Cancer Forum, (In press)*.

Gordon, L. G., Lynch, B. M., Beesley, V. L., Graves, N., McGrath, C., O'Rourke, P., & Webb, P. M. (2011). The Working After Cancer Study (WACS): a population-based study of middle-aged workers diagnosed with colorectal cancer and their return to work experiences. *BMC Public Health, 11*, 604. doi: 10.1186/1471-2458-11-604

Gordon, L. G., Merollini, K., Lowe, A., & Chan, R. (2016). A systematic review of financial toxicity among cancer survivors: we can’t pay the co-pay. *The Patient: Patient-Reported Outcomes Research, Accepted 17/10/2016*.

. *The Household Income and Labour Dynamics in Australia (HILDA) Survey: Wave 1 Survey Methodology*. (2002). [http://melbourneinstitute.com/downloads/hilda/Bibliography/HILDA\_Technical\_Papers/htec102.pdf:](http://melbourneinstitute.com/downloads/hilda/Bibliography/HILDA_Technical_Papers/htec102.pdf%3A) The University of Melbourne.

Kaisaeng, N., Harpe, S. E., & Carroll, N. V. (2014). Out-of-pocket costs and oral cancer medication discontinuation in the elderly. *J Manag Care Spec Pharm, 20*(7), 669-675. doi: 10.18553/jmcp.2014.20.7.669

Kent, E. E., Forsythe, L. P., Yabroff, K. R., Weaver, K. E., de Moor, J. S., Rodriguez, J. L., & Rowland, J. H. (2013). Are survivors who report cancer-related financial problems more likely to forgo or delay medical care? *Cancer, 119*(20), 3710-3717. doi: 10.1002/cncr.28262

Lauzier, S., Levesque, P., Mondor, M., Drolet, M., Coyle, D., Brisson, J., . . . Maunsell, E. (2013). Out-of-pocket costs in the year after early breast cancer among Canadian women and spouses. [Abstract - NEW]. *J Natl Cancer Inst, 105*(4), 280-292. doi: 10.1093/jnci/djs512

Lynch, B. M., Mihala, G., Beesley, V. L., Wiseman, A. J., & Gordon, L. G. (2016). Associations of health behaviours with return to work outcomes after colorectal cancer. *Support Care Cancer., 24*(2), 865-870. doi: 810.1007/s00520-00015-02855-x. Epub 02015 Jul 00523.

McGrath, C., Mihala, G., Beesley, V. L., Lynch, B. M., Graves, N., & Gordon, L. G. (2016). "Cancer Put My Life on Hold": Work-Related Challenges Among Middle-aged Adults 12 Months After a Diagnosis of Colorectal Cancer. *Cancer Nurs, 26*, 26.

Mehnert, A. (2011). Employment and work-related issues in cancer survivors. *Crit Rev Oncol Hematol, 77*(2), 109-130. doi: 10.1016/j.critrevonc.2010.01.004

Sharp, L., & Timmons, A. (2016). Pre-diagnosis employment status and financial circumstances predict cancer-related financial stress and strain among breast and prostate cancer survivors. [Abstract - NEW]. *Support Care Cancer, 24*(2), 699-709. doi: 10.1007/s00520-015-2832-4

Yabroff, K. R., Dowling, E. C., Guy, G. P., Jr., Banegas, M. P., Davidoff, A., Han, X., . . . Ekwueme, D. U. (2016). Financial Hardship Associated With Cancer in the United States: Findings From a Population-Based Sample of Adult Cancer Survivors. *J Clin Oncol, 34*(3), 259-267. doi: 10.1200/jco.2015.62.0468