COVID-19 Related Anxiety in Men With Localized Prostate Cancer at Tertiary Hospitals in Cape Town, South Africa

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Abstract

Introduction: The health profile of older adults places them at risk of infirmity and death from COVID-19 which may induce anxiety or exacerbate pre-existing anxiety. We examined COVID-19 related anxiety in men undergoing treatment for prostate cancer (CaP).

Method: This study was conducted between July and September 2020. Sixty participants from a larger prospective, longitudinal study assessing depression, anxiety and health related quality of life in men with localized prostate cancer (DAHCaP) were included. COVID-19 related anxiety was measured at a single time point using, the Corona Virus Anxiety Scale (CAS). In addition, the following, the State-Trait Anxiety Inventory (STAI-S), the Connor-Davidson Resilience (CD-RISC) scale and Multidimensional Scale of Perceived Social Support (MSPSS) that form part of the DAHCaP study were used in the analysis. We extracted pre-pandemic data for the STAI-S.

Results: Twenty-one percent had diabetes, 62.3% had hypertension and 24.6% had cardiac diseases, all known risk factors for severe COVID-19. Only 3% scored >9 on the CAS, indicating COVID 19 anxiety dysfunction. Half knew of family or friends that had contracted COVID-19 especially those scoring higher on the CAS (P = 0.042). There was a significant decrease in STAI-S scores pre-pandemic to the pandemic phase (34.7 to 29.8, P = 0.003). No correlation was observed between CAS and STAI-S (rho = 0.08), CD-RISC (rho = −0.06) or MSPSS (rho = −0.15). There was a weak positive correlation between the CAS and monthly income (rho = 0.33; P = 0.010).

Conclusion: COVID-19 did not induce significant anxiety in men being treated for CaP nor did it place an additional psychological burden, nor was there any correlation with state anxiety, resilience or social support.

Keywords: COVID-19, anxiety, localized prostate cancer, prostatectomy, radiation, coronavirus anxiety scale, State Trait Anxiety Inventory, Multidimensional Scale of Perceived Social Support, Connor-Davidson resilience

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**Introduction**

The morbidity and mortality caused by the COVID-19 pandemic remains a high priority for medical teams and other stakeholders globally. The 1st South African was diagnosed with COVID-19 on the 5th of March 2020. A State of National Disaster was announced in South Africa on March 26, 2020, which triggered a country wide lockdown, in effect limiting the movement of people except for essential services. Apart from the physical impact of the virus, the psychological repercussions of the pandemic and the resulting lockdown, particularly in vulnerable groups, remains a concern. The World Health Organization (WHO) issued a warning about the impact of quarantine on anxiety and stress in older individuals.

Generally, in older people with cancer, the prevalence of depression and anxiety has been estimated at 20% and 10%, respectively, compared to 5% and 7% in the general population. In a meta-analysis of men with prostate cancer (CaP), the prevalence of anxiety was reported as 27% pre-treatment, 15% during treatment, and 18% post-treatment. The South African Stress and Health (SASH) study estimated the prevalence of anxiety disorders to be 16% in the total population and 19% in the Western Cape. In the same study the prevalence of anxiety disorders in individuals 50 years and older was 11.3%.

The psychological effects of pandemics have been well documented. A recent commentary advised that during such periods, community anxiety can increase due to media attention, reporting of the first causalities, and an escalation in case numbers.

During the H1N1 flu of 2009, increased anxiety and stress were reported by students. Huang and Zhao documented similar findings during the COVID-19 outbreak in China where younger individuals were found to be at greater risk for anxiety compared to older individuals. Conversely, stress, anxiety and depression were not observed among older adults during the COVID-19 pandemic in Spain.

A recent report from Italy indicated that two thirds of older people who died from COVID 19 had comorbidities. Older people with comorbid conditions admitted to intensive care units (ICU) with COVID 19 had poorer outcomes. Hossain et al in their narrative review of studies that included people affected by COVID-19, suggested that people with comorbidities had more mental health problems. Common manifestations of COVID-19 that may overlap with anxiety include loss of appetite, dizziness, insomnia and nausea.

In our current prospective study, DAHCaP, one of the primary outcomes, is the change in anxiety (measured at baseline and at 12 weekly intervals) over 1 year in men undergoing curative treatments for CaP. As the COVID-19 pandemic overlapped with study visits for the majority of participants in DAHCaP, we assessed anxiety related to COVID-19 with the Coronavirus Anxiety Scale (CAS). We hypothesized that there would be a positive correlation between coronavirus related anxiety and general state anxiety and that COVID 19 anxiety would be negatively correlated with resilience and social support.

**Methods**

**Sample**

We report on the 60 participants who were recruited into the DAHCaP study prior to the national lockdown on March 26, 2020. The DAHCaP study is a prospective observational study assessing depression, anxiety, and health-related quality of life in men undergoing treatment (Radical Prostatectomy (RP), External Beam Radiotherapy (EBRT) and Brachytherapy (BT)) for localized CaP and are assessed at pre-treatment (baseline) and then 12-weekly for 1 year. Participating centers were the departments of Urology and Radiation Oncology at Stellenbosch University (SU) and the University of Cape Town (UCT).

**Assessments**

Between July and September 2020, at the height of the COVID-19 pandemic in South Africa, the CAS was administered once along with a set of DAHCaP questionnaires which were part of participants scheduled study visits. These included the State-Trait Anxiety Inventory-State (STAI-S), Multidimensional Scale of Perceived Social Support (MSPSS) and Connor-Davidson Resilience Scale (CD-RISC). All questionnaires, including the CAS, were translated into Afrikaans and isiXhosa, the main indigenous languages in the Western Cape and administered in participants preferred language. Due to governmental and institutional COVID-19 protocols, all interviews were conducted telephonically by a doctoral researcher. In addition to the standardized 5 questions on the CAS, an additional question enquiring whether participants knew of family or friends who had contracted COVID-19 was included. The STAI-S scores at baseline (pre-cancer treatment and pre-pandemic) were compared with the scores recorded during the COVID-19 pandemic to measure change in state anxiety from pre-pandemic to during the pandemic. STAI-S, MSPSS and CD-RISC scores included in these analyses were recorded during the pandemic and at the time of the CAS assessment.

**CAS (Coronavirus Anxiety Scale)**

The CAS is a 5-item self-reported validated scale used to indicate subjective experience of dysfunctional anxiety where 0 = “not at all” and 4 = “nearly every day” over the last 2 weeks. The items included are based on fear and anxiety. The optimal cut-off score is ≥9 with a 90% sensitivity and 85% specificity.

**STAI-S (State-Trait Anxiety Inventory-State)**

The STAI-S measures the current state of anxiety; the intensity is graded as: (1) not at all, (2) somewhat, (3) moderately so, and (4) very much so. Higher scores indicate greater anxiety. The reliability of the STAI-S ranges from 0.86 to 0.95. A cut-off point of 39-40 has been suggested to detect clinically significant symptoms and thus 40 was chosen.
The **MSPSS (Multidimensional Scale of Perceived Social Support)**

This is a self-administered scale that measures social support from family, friends, and significant others.\(^\text{18}\) The MSPSS has 12 items that are grouped into 3 sub-scales with 4 sub-items each. The ratings are indicated on a 7-point Likert scale.

The **CD-RISC (Connor-Davidson Resilience Scale)**

This is a self-administered scale measuring resilience (hardiness, control, commitment, stress etc.) and consists of 25 items,\(^\text{19}\) each rated on a 5-point Likert scale. The CD-RISC assesses resilience over the past month. Scores range from 0-100 with higher scores indicating greater resilience.

**Ethical Considerations**

Approval for a minor amendment to Protocol S19/01/019 (DAHCaP) was obtained from the ethics committees at Stellenbosch University and the University of Cape Town. Research principles outlined by the Helsinki declaration, SA Good Clinical Practice Guidelines and the MRC Ethical Guidelines for Research were complied with.

**Statistical Analysis**

The Kolmogorov-Smirnov test, skewness and visual interpretation of histograms were used to assess normality of continuous data. The Mann-Whitney U test for non-normally distributed variables was used for comparisons of scores between the groups, and the Wilcoxon signed-ranks tests was used to compare paired scores. The Spearman correlation coefficient was used for assessing the linear relationship between scales. Differences were considered significant at a \(P\) value of <0.05. Statistical analyses were performed with IBM SPSS Statistics Version 27 (IBM Corp. Released 2020. IBM SPSS Statistics for Windows, Version 27.0. Armonk, NY: IBM Corp).

**Results**

The mean age of participants was 63.2 (51-73) years. The majority (44\%) were on pension, with a third (33.4\%) employed. The median household income was low at R4200 per month (range from R0 to R45 000). Forty-three percent of participants had 2 or more co-morbidities. Twenty-five percent indicated that they were being treated for ischemic heart disease, 62\% for hypertension and 21\% were diabetic, all known risk factors for developing severe COVID-19. More than 75\% were smokers and had a history of having smoked.

There were no significant correlations/associations between any demographic variable and CAS score, with the exception of monthly income, where there was a positive correlation indicating that those with a higher income experienced more COVID-19 related anxiety (Spearman’s rho = 0.33; \(P = 0.010\)).

The correlation matrix is depicted in Table 1, illustrating the relationships between the COVID-19 Anxiety scale (CAS) and the State Anxiety (STAI-S), Resilience (CD-RISC), and Social Support (MSPSS). The mean CAS score was 0.95 which is surprisingly very low, with only 3\% scoring/\(\leq 9\). The mean change in STAI-S score from pre- to during COVID-19 was 4.9 (\(P = 0.003\)). There was a significant positive correlation between knowing of family or friends affected by COVID-19 and a higher CAS score (\(P = 0.042\)).

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We found that CAS score was not correlated with STAI-S, CD-RISC or MSPSS scores recorded during the pandemic. The CD-RISC score was however negatively correlated with the STAI-S score at both baseline and during COVID-19 (Spearman’s rho = -0.33 and -0.47) (Table 1).

State anxiety decreased significantly from pre-COVID-19 to during COVID-19 (34.7 to 29.8; \(P = 0.003\)). There was a moderate statistically significant negative correlation of -0.47 between the STAI-S and the CD-RISC during COVID-19 (Table 1). There was also a significant positive although weak correlation (0.27 \(P = 0.05\)) between CD-RISC and MSPSS.

**Table 1. Correlation Matrix to Assess the Relationship Between the Main Variables of Interest at the Same Time Point as CAS (Spearman’s Rho) During COVID 19.**

|            | CAS | CD-RISC | STAI-S | MSPSS-Sig Other | MSPSS Family | MSPSS Friends | MSPSS Total | Mean (± SD), Range (x-y) |
|------------|-----|---------|--------|-----------------|--------------|---------------|-------------|-------------------------|
| CAS        | 1.00| 0.96 (2.9), (0.00-20.00) |
| CD-RISC    | -0.06| 1.00 |
| STAI-S     | 0.08| -0.47**| 1.00 |
| MSPSS-Sig Other | -0.20| 0.27*| -0.18| 1.00 |
| MSPSS Family | -0.07| 0.31*| -0.11| 0.78**| 1.00 |
| MSPSS Friends | -0.13| 0.23| -0.05| 0.67**| 0.72**| 1.00 |
| MSPSS Total | -0.15| 0.27*| -0.10| 0.84**| 0.87**| 0.94**| 1.00 |

**Abbreviation:** SD, standard deviation.

**Correlation is significant at the 0.01 level (2-tailed).**

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**Paired T-test STAI-S during COVID 19 compared to pre-COVID 19 STAI-S; \(P = 0.003\).**
Patients undergoing treatment for cancer may experience psychological dysfunction as a consequence of their disease or the psychological effects given the number of people that were dying. A growing body of literature has described anxiety in the general and clinical populations during pandemics. Additionally, there have been reports of increased anxiety in patients with cancer due to the COVID-19 pandemic. Blank and Bellizzi in their work on cancer and aging proposed the following theories which could be applied to any life-threatening situation and may underpin why men in this study have shown little or no COVID-19 related anxiety. Blank’s proposition was that older men have achieved better emotional regulation, resulting in a more passive and subdued response to a cancer diagnosis. He further asserts that older men are “psychologically immunized” given their different life trajectories and a myriad of life’s experiences compared to younger men that have equipped them to cope better with cancer.

Similarly, a systematic review found that COVID-19 had greater negative psychological effects on younger people especially those between 21-40 years compared to older people. Sigorski et al in a recent study in patients receiving systemic treatment for cancer, 5.5% of whom had CaP, reported significantly lower levels of COVID-19 anxiety than cancer associated anxiety. We also found that those men who knew of family and friends who had contracted COVID-19 were significantly more anxious, signified by higher CAS scores than those that did not. This is consistent with a report that found anxiety was higher among people who had a family member or friend who had contracted COVID-19.

It has been suggested that higher levels of resilience may afford an explanation as to why the elderly may show little or no anxiety for COVID-19 as this is the process of adapting well to adversity, trauma, tragedy, threats or any significant source of stress including COVID 19. Garcia-Portilla et al suggested that resilience may account for why older adults may not be anxious about COVID-19. We found a moderate negative correlation between the CD-RISC and STAI-S measured during COVID19 suggesting that resilience had a buffering effect on anxiety in men with CaP, i.e. higher levels of resilience were associated with lower levels of anxiety. These results are consistent with findings from a study done in a sample with mild COVID-19 symptoms in China. There was a significant correlation between CD-RISC and MSPSS scores suggesting that the support from family, friends and significant others in men with CaP contributes positively to their resilience.

Given the findings in this study, there are a few plausible explanations regarding the low levels of fear for COVID-19 in older men being treated for CaP in the Western Cape. Blank and Bellizzi in his work on cancer and aging proposed the following theories which could be applied to any life-threatening situation and may underpin why men in this study have shown little or no COVID-19 related anxiety. Blank’s proposition was that older men have achieved better emotional regulation, resulting in a more passive and subdued response to a cancer diagnosis. He further asserts that older men are “psychologically immunized” given their different life trajectories and a myriad of life’s experiences compared to younger men that have equipped them to cope better with cancer.

Sigorski et al suggested that cancer may be seen as life threatening with its attendant fear of death and that individuals are therefore more afraid of their cancer than acquiring COVID-19. This line of thinking is possibly supported by some of the un-elicited responses during the interview e.g. “Why must I worry about COVID-19 when I have cancer,” “Corona Virus is a flu and is being exaggerated,” “I know everything about the COVID-19 Virus, why should I be...

### Table 2. Demographic and Clinical Characteristics.

| Characteristics                          | Number (%) | N = 60 |
|------------------------------------------|------------|--------|
| Age in years (mean, SD, Range)           | 63.2, 5.9,(51-73) |
| Race Group                               |            |        |
| Black                                    | 9 (14.8)   |
| Mixed race                               | 43 (70.5)  |
| White                                    | 7 (11.5)   |
| Indian                                   | 1 (1.6)    |
| Employment status                        |            |        |
| Formally Employed                        | 13 (21.3)  |
| Unemployed                               | 13 (21.4)  |
| Pensioner/Retired                        | 27 (44.2)  |
| Casual worker                            | 7 (11.7)   |
| Marital Status                           |            |        |
| Single                                   | 2 (3.3)    |
| Married                                  | 40 (65.6)  |
| Widowed                                  | 4 (6.6)    |
| Divorced                                 | 9 (14.8)   |
| Separated                                | 3 (4.9)    |
| In a relationship                        | 2 (3.3)    |
| Religiousness                            |            |        |
| Not religious                            | 3 (4.9)    |
| Moderately                               | 36 (59.0)  |
| Very                                     | 21 (34.4)  |
| Co-morbidities                           |            |        |
| Asthma                                   | 3 (4.9)    |
| Heart Disease                            | 15 (24.6)  |
| Hypertension                             | 38 (62.3)  |
| Diabetes                                 | 13 (21.3)  |
| Chronic Obstructive Pulmonary Disease    | 1 (1.6)    |
| Kidney Disease                           | 1 (1.6)    |
| Ulcers                                   | 5 (8.2)    |
| Osteo-arthritis                          | 6 (9.8)    |
| Alcohol usage                            | 48 (78.7)  |
| Ever smoked                              | 47 (77.0)  |

Notes: 1. Religiousness is defined as an individual’s conviction, devotion and veneration toward a divinity.25

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**Discussion**

During the COVID-19 pandemic concerns have been raised about the vulnerability of the elderly and attendant negative psychological effects given the number of people that were dying. A growing body of literature has described anxiety in the general and clinical populations during pandemics. Sigorski et al in a recent study in patients receiving systemic treatment for cancer, 5.5% of whom had CaP, reported significantly lower levels of COVID-19 anxiety than cancer associated anxiety. We also found that those men who knew of family and friends who had contracted COVID-19 were significantly more anxious, signified by higher CAS scores than those that did not. This is consistent with a report that found anxiety was higher among people who had a family member or friend who had contracted COVID-19.

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were worried about COVID-19. This in part sheds light on why the low levels of COVID-19 anxiety among cancer survivors should be explored.

Limitations

In this study apart from the STAI-S the CAS, CD-RISC and MSPSS were administered cross-sectionally and therefore directionality could not be determined and change in wellbeing could not be assessed. Given the small sample size, caution should be exercised when interpreting and generalizing the results. In addition, visual clues may have been lost during telephone interviews. Qualitative studies to explore reasons for the low levels of COVID-19 anxiety among cancer survivors and validation of the CAS questionnaire in this population should be explored.

Conclusion

Despite the enormity of the pandemic, the rate of COVID-19 related anxiety in men undergoing curative treatments for prostate cancer was negligible and did not show any correlation with the levels of state anxiety, resilience, or social support during the pandemic.

Authors’ Note

This study was approved by the Health Research Ethics Committees of Stellenbosch University (approval no. S19/01/019) and the University of Cape Town (approval no.418/2019). All patients provided written informed consent prior to enrollment in the study. All participants provided written informed consent.

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Declaration of Conflicting Interests

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