EXPLORING ASSOCIATIONS BETWEEN PAIN BURDEN AND PSYCHOSOCIAL DISTRESS IN A RURAL PALLIATIVE CARE POPULATION

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KEYWORDS

Pain; *Psychosocial distress*; Rural health; DADDS; Symptom burden

EXECUTIVE SUMMARY

Pain is a common and distressing symptom in palliative care, yet little is known about how opioid burden relates to psychosocial distress, particularly in rural settings where access to specialist support may be limited. This study examined associations between Oral Morphine Equivalent Daily Dose (OMEDD)—an indicator of opioid analgesic requirement—and Death and Dying Distress Scale (DADDS) scores in adults receiving palliative care in a rural region. Higher opioid burden was associated with greater psychosocial distress across several DADDS domains. Findings highlight the importance of integrating psychosocial assessment into pain management in rural palliative populations.

INTRODUCTION

Pain is one of the most prevalent and burdensome symptoms in palliative care, often contributing to psychological and existential distress. Rural patients may experience additional challenges, including reduced access to specialist pain and psychosocial services, which can influence both symptom burden and coping. The Death and Dying Distress Scale (DADDS) captures multiple dimensions of fears related to death, including psychosocial concerns, fear of suffering, and uncertainty about the dying process. This study explored the relationship between opioid burden, using Oral Morphine Equivalent Daily Dose (OMEDD) as a clinical indicator and DADDS scores in a rural palliative care cohort.

HIGHLIGHTS

• Opioid burden and psychosocial distress were positively associated, suggesting an interplay
• Younger patients reported greater distress, supporting targeted routine screening
• Distress was unrelated to diagnosis, Australian Karnofsky Performance Score (AKPS), Palliative Care Outcomes Collaboration (PCOC) phase, gender, or comorbidities

METHODOLOGY/ PROCESS

Study Design: A cross-sectional analysis was conducted using routinely collected clinical data from adults receiving palliative care in a rural health service.
Measures: Opioid burden was estimated using OMEDD. Death anxiety was assessed using the DADDS total score and subscales. Demographic, diagnostic, functional (AKPS), and psychosocial variables were also collected.
Statistical Analysis: Descriptive statistics summarised participant characteristics and DADDS severity categories. Correlation analyses examined associations between DADDS scores, age, AKPS, and OMEDD. Independent-samples t-tests compared DADDS scores across diagnostic and psychosocial subgroups, and univariate linear regression examined predictors of distress. Ninety-five percent confidence intervals and p-values were reported

RESULTS/ OUTCOMES

Eighty-two participants from a rural palliative care service were included. Most were aged over 60 years, and 61% were male. Cancer was the primary diagnosis for 85.4% of participants, with lung/respiratory (20.7%) and genitourinary cancers (19.5%) most common. Metastases were present in 68.3% of cancer cases. Co-morbid conditions were common, with chronic pain present in 24.4% of participants, anxiety in 13.4%, and depression in 12.2%. Functional status was low, with most scoring AKPS 40–60. At assessment, 69.5% were in a stable PCOC phase and 20.5% were deteriorating/unstable. DADDS scores varied: 32.9% reported no to little distress, 26.8% little to mild, 19.5% mild to moderate, 15.9% moderate to great, and 4.9% great to extreme distress. Higher opioid burden (OMEDD) was associated with greater overall death-related distress ($\rho = 0.294$, $p = 0.007$) and with all DADDS subscales ($\rho = 0.245$-0.308, all $p < 0.05$). Increasing age was associated with lower distress ($r = -0.328$, $p = 0.003$), whereas AKPS was not associated with distress ($r = -0.003$, $p = 0.982$). No significant differences in DADDS scores were observed by cancer status, metastases, gender, chronic pain, anxiety, depression, or PCOC phase (all $p > 0.05$). In univariate regression analyses, both age ($\beta = -0.328$, $p = 0.003$) and OMEDD ($\beta = 0.270$, $p = 0.014$) remained significantly associated with DADDS scores

CONCLUSION

This study found consistent associations between pain burden and psychosocial distress, though the direction of this relationship cannot be determined. Pain may heighten distress, distress may intensify pain, or both may reinforce each other to increase overall symptom burden. In rural palliative care, where resources are limited, understanding this interplay is especially important. Further research is needed to clarify these dynamics and guide more holistic, responsive models of care. Patterns in this study indicate that younger patients and those with higher OMEDD may warrant closer psychosocial monitoring.

Table 1: Participant Demographic and Clinical Characteristics

Descriptive statistics	Frequency (n)	Percent
Age range		
40-49	3	3.7
50-59	5	6.1
60-69	29	35.4
70-79	30	36.6
80-89	14	17.1
90-99	1	1.2
Gender		
Female	32	39.0
Male	50	61.0
Primary diagnosis		
Blood cancer – AML, MM, NHL, Other	5	6
Cancer - Breast	6	7.3
Cancer - Endocrine	1	1.2
Cancer - Gastrointestinal	12	14.6
Cancer - Genitourinary	16	19.5
Cancer - Gynaecological	3	3.7
Cancer - Head and Neck	1	1.2
Cancer - Lung/Respiratory	17	20.7
Cancer - Melanoma	3	3.7
Cancer - Other/Unknown primary	6	7.3
End stage heart disease	3	3.7
End stage liver disease	2	2.4
End stage pulmonary disease	6	7.3
Motor Neuron Disease	1	1.2
If cancer, known metastases		
No	13	15.9
Yes	56	68.3
Cancer/non-cancer		
Non-cancer	12	14.6
Cancer	70	85.4
Co-morbidities		
Chronic pain	20	24.4
Anxiety disorder	11	13.4
Depression	10	12.2
AKPS		
20	2	2.4
30	12	14.6
40	30	36.6
50	12	14.6
60	21	25.6
70	2	2.4
80	3	3.7
PCOC Phase		
Stable	57	69.5
Unstable or deteriorating	25	30.5

Table 2: The distribution of DADDS distress levels and DADDS subscales for patients

Death and Dying Distress Score (DADDS)	**Frequency**	**Percent**	**Wilson 95% CI**
No to little distress (<15)	27	32.9	23.7–43.7
Little to mild distress (15-29)	22	26.8	18.4–37.3
Mild to moderate distress (30-44)	16	19.5	12.4–29.4
Moderate to great distress (45-59)	13	15.9	9.5–25.3
Great to extreme distress (60-75)	4	4.9	1.9–11.9
Total DADDS scoring ≥30	33	40.2	30.3-51.1
DADDS subscales patients scoring on average ≥ 3 for each item in subscale			
psychosocial fears about death (Item 1-10)	18	22.0	14.4–32.1
fear of dying process (Item 11-15)	18	22.0	14.4–32.1
fear of loss of time and opportunity (Item 1,2,3,6)	15	18.3	11.4–28.0
fear of an uncertain future (Item 4,5,7,9,10)	20	24.4	16.4–34.7
fear of suffering and pain (Item 8,12,14)	35	42.7	32.5–53.5
fear of sudden death (Item 11,13,15)	15	18.3	11.4–28.0

Table 3: Correlation between OMEDD and DADDS total and subscale scores

Correlations between participant characteristics and psychosocial Distress (DADDS)				
Variable – correlation with DADDS	**Pearson's r**	**p-value**	**95% CI (Lower)**	**95% CI (Upper)**
Age	-0.328	0.003	-0.509	-0.119
AKPS	-0.003	0.982	-0.219	0.215
No. of regular pain medications prescribed	0.176	0.113	-0.043	0.379
No. of PRN medications for pain/24h	0.006	0.960	-0.212	0.222
Presence of psychological medication	-0.001	0.994	-0.218	0.216
No. of psychological medications	0.120	0.284	-0.100	0.328
Correlations Between Opioid Burden (OMEDD) and DADDS Total and Subscale Scores				
Variable – correlation with OMEDD	**Spearman's p**	**p-value**	**95% CI (Lower)**	**95% CI (Upper)**
DADDS total score	0.294	0.007	0.082	0.480
Psychosocial fears about death (Q1–10)	0.280	0.011	0.067	0.469
Fear of dying process (Q11–15)	0.297	0.007	0.085	0.483
Fear of sudden death (Q11,13,15)	0.245	0.027	0.029	0.438
Fear of suffering and pain (Q8,12,14)	0.300	0.006	0.089	0.486
Fear of an uncertain future (Q4,5,7,9,10)	0.258	0.019	0.044	0.450
Fear of loss of time and opportunity (Q1,2,3,6)	0.308	0.005	0.097	0.492

DADDS = Death and Dying Distress Scale; OMEDD = Oral Morphine Equivalent Daily Dose; AKPS = Australian-modified Karnofsky Performance Scale; CI = confidence interval.

Table 4: Independent Samples t-Tests Comparing DADDS Scores Across Diagnostic and Psychosocial Subgroups

Group	n	Mean ± SD	t	df	p	Cohen's d	Cohen's d (95% CI)
Cancer status							
Non-cancer	12	31.08 ± 17.40	-0.960	80	0.340	-0.300	-0.913 to 0.315
Cancer	70	25.53 ± 18.69					
Cancer metastases							
No confirmed metastases	13	23.38 ± 19.97	-0.419	67	0.677	-0.129	-0.732 to 0.475
Confirmed metastases	56	25.821 ± 18.641					
Gender							
Male	50	26.76 ± 18.28	-0.255	80	0.800	-0.058	-0.501 to 0.386
Female	32	25.69 ± 19.13					
Comorbidity – Chronic pain							
Absent	62	24.60 ± 17.92	1.515	80	0.134	0.390	-0.119 to 0.896
Present	20	31.75 ± 19.71					
Comorbidity – Anxiety							
Absent	71	26.01 ± 18.17	0.405	80	0.687	0.131	-0.505 to 0.766
Present	11	28.46 ± 21.37					
Comorbidity – Depression							
Absent	72	26.06 ± 18.66	0.373	80	0.710	0.126	-0.536 to 0.787
Present	10	28.40 ± 18.20					
PCOC Phase							
Stable	57	26.04 ± 19.03	-0.225	80	0.823	-0.054	-0.524 to 0.416
Deteriorating/unstable	25	27.04 ± 17.61					

DADDS = Death and Dying Distress Scale; PCOC = Palliative Care Outcomes Collaboration; SD = standard deviation; CI = confidence interval.

Table 5: Univariate Linear Regression Predicting DADDS Total Score

Predictor	B	SE	β	t	p	95% CI (B)	R^2	Adj. R^2	F (df)
OMEDD	0.042	0.017	0.270	2.505	0.014	0.009, 0.075	0.073	0.061	6.27 (1, 80)
Age	-0.631	0.203	-0.328	-3.104	0.003	-1.036, -0.227	0.108	0.096	9.64 (1, 80)

B = unstandardized coefficient; SE = standard error; β = standardized coefficient; CI = confidence interval; OMEDD = oral morphine equivalent daily dose. Each predictor was examined in a separate univariate linear regression model. DADDS = Death and Dying Distress Scale total score.

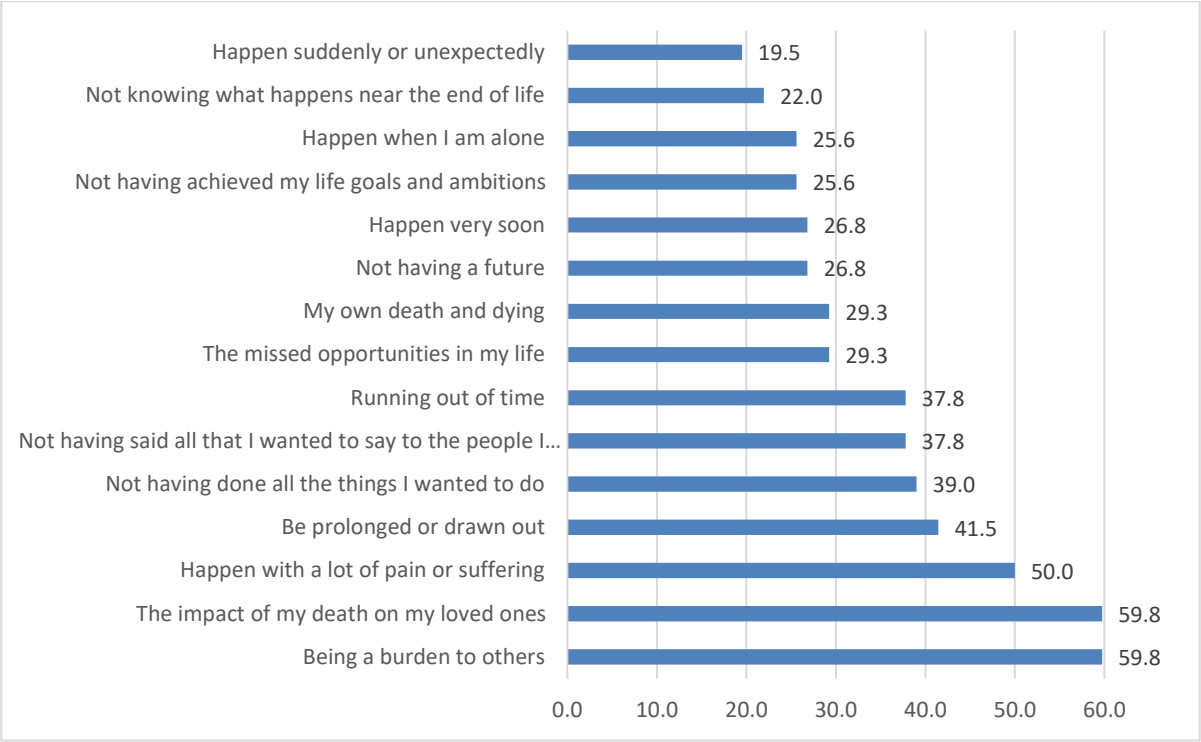

Figure 1: The percentage of people rating moderate distress or higher (≥3) for each item on the DADDS.