

Supplementary Material for

A cross-sectional analysis of out-of-pocket expenses for people living with a cancer in rural and outer metropolitan Western Australia

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Text S1. Study design

This cross-sectional study utilised retrospectively collected data from two ambi-directional cohort studies: the Rural Out-Of-Pocket-Expenses Study and the Outer Metropolitan Out-Of-Pocket-Expenses Study. The Western Australian (WA) Cancer Registry (WACR) sent a monthly list of eligible participants to the research team. Inclusion criteria were: 1) pathologically confirmed diagnosis of colorectal, lung, prostate, or breast cancer); and 2) a residential postcode in four rural (Midwest, South West, Great Southern, Goldfields) and two outer metropolitan (Joondalup/Wanneroo and Rockingham/Peel) regions of WA (Supplementary Figure 1). Cancer patients who were younger than 18 years, who had previously been diagnosed with cancer, or who had no confirmed pathological diagnosis of cancer, were excluded from the study. Research officers sent mail-outs including a cover letter, a WACR brochure, a Participant Information Form, Participant Consent Form, a baseline background initial questionnaire (questionnaire 1) and a reply paid envelope. Supplementary Figure 2 illustrates the data collection tools and the respondents at each stage of data collection.

People who were interested in participating completed and returned questionnaire 1 and the Participant Consent Form, and provided contact details for follow-up. A research officer then contacted the respondent to explain the project in detail and ensure that they understood and were comfortable with the project. Non-respondents were contacted six weeks after the initial mail-out if their telephone number was publicly listed. Three attempts were made to follow-up non-respondents via telephone. Those who were not contactable via telephone were sent a follow-up letter six weeks after the initial mail-out.

Respondents who were still undergoing primary treatment were invited to complete a travel and expenses diary (questionnaire 2). In this study, **primary treatment** was defined as the treatment initially proposed by participants' treating clinicians, that they reported expecting to receive in

questionnaire 1. '*End of primary treatment*' was defined as completion of all treatments expected, or for palliative patients, the point at which costs appeared to stabilise.

On completion of treatment, participants were asked to complete a final questionnaire (questionnaire 3).

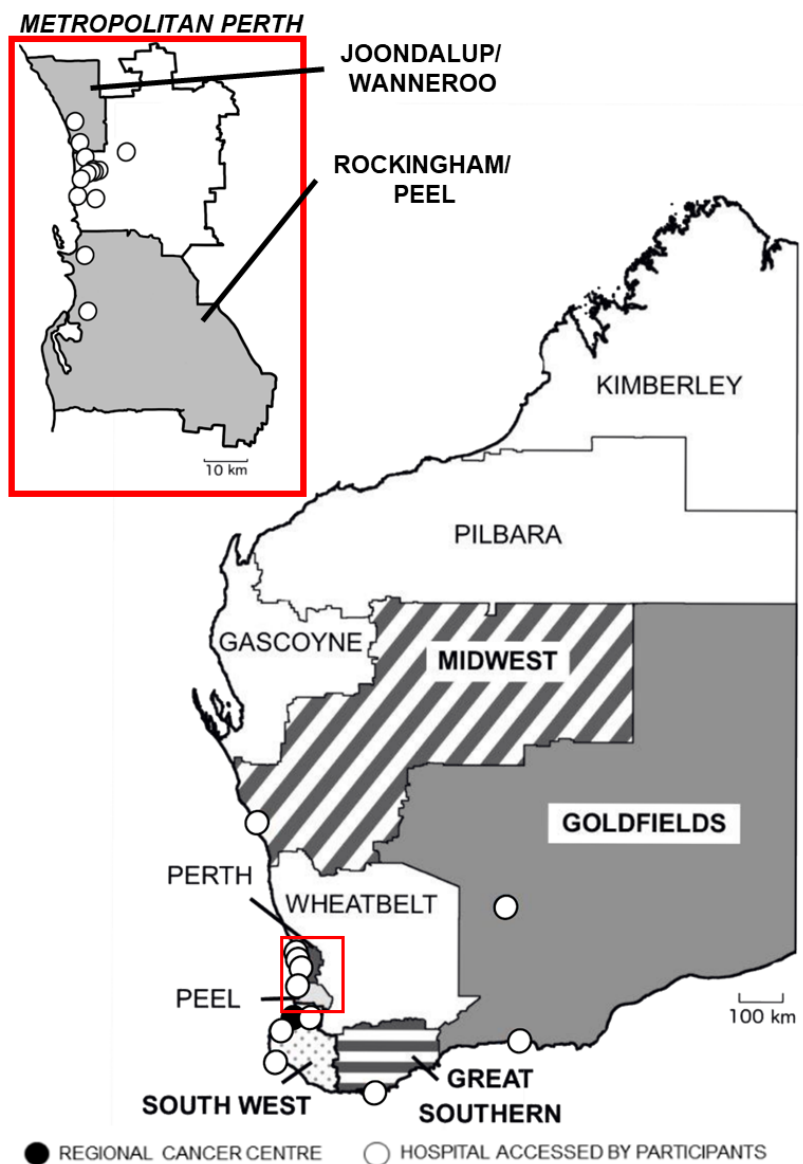


Figure S1. Map of Western Australia—regions in which participants resided and location of the hospitals participants accessed for treatment. Image adapted from Government of Western Australia (2012).

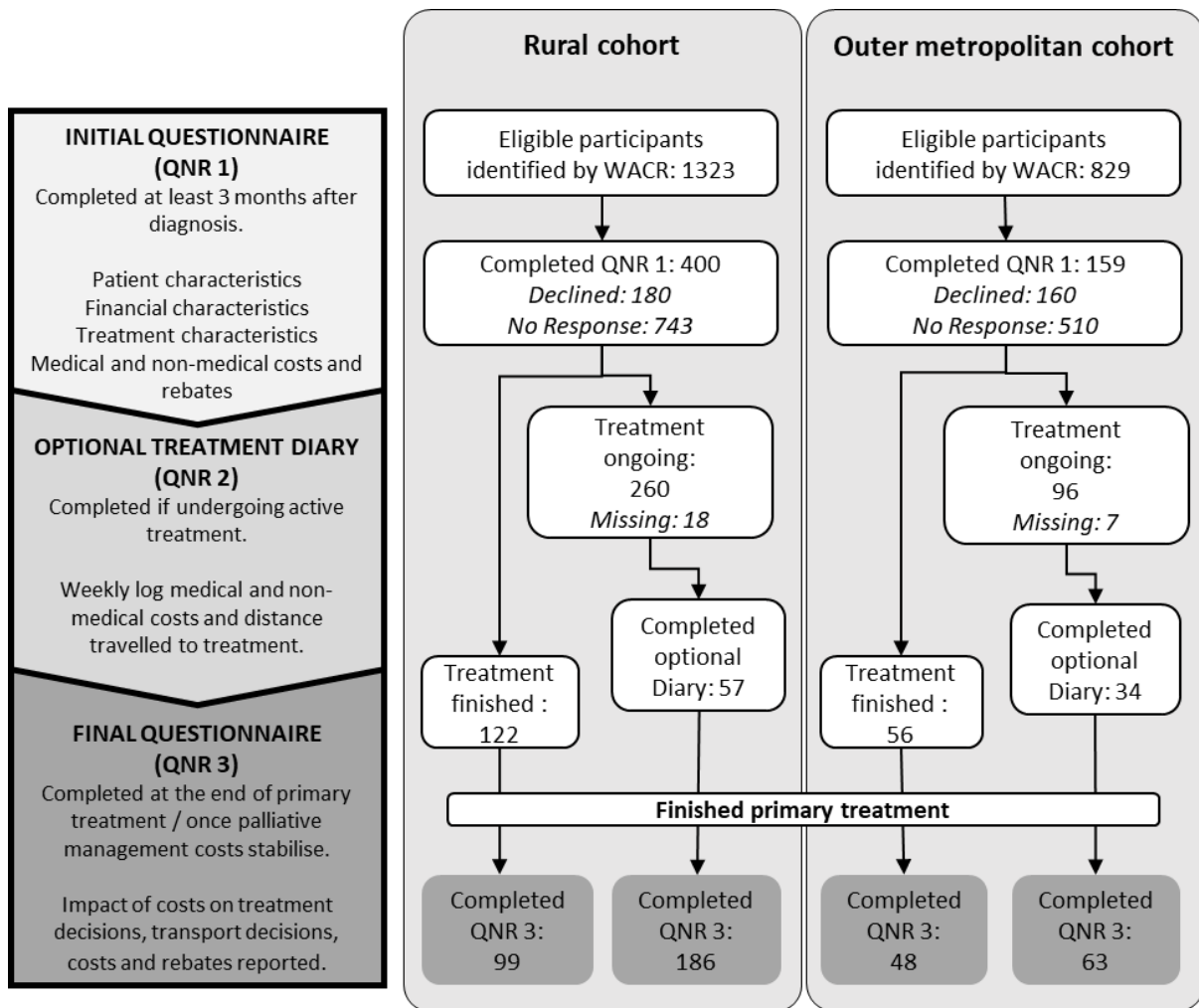


Figure S2. Study methodology, recruitment and attrition rate.

Table S1. Bivariate analyses comparing medical, non-medical and total OOPE of participants who had OOPE >\$0, between demographic, treatment and financial characteristics

		N	Mean (2017 AUD)	SD	95% Confidence Interval		p value	Effect size
					Lower	Upper		
Gender								
Medical OOPE	Male	202	3319	8207	2377	4544	0.009	0.264
	Female	219	1741	2589	1389	2126		
Non-medical OOPE	Male	186	1310	2054	1034	1631	0.762	0.031
	Female	198	1246	2115	971	1588		
Total OOPE	Male	204	4481	8612	3517	5779	0.013	0.251
	Female	221	2842	3705	2369	3377		
Rurality								
Medical OOPE	Rural	305	1718	2626	1417	2028	0.005	-0.480
	Outer metropolitan	116	4549	10422	3058	6574		
Non-medical OOPE	Rural	272	1307	1992	1093	1565	0.666	0.049
	Outer metropolitan	112	1205	2298	854	1668		
Total OOPE	Rural	306	2874	3733	2453	3302	0.008	-0.416
	Outer metropolitan	119	5568	10691	3885	7953		
Private health insurance (PHI) status								
Medical OOPE	Medicare only	129	947	2888	510	1492	<0.001	-
	PHI	286	3243	6932	2592	4200		0.384
Non-medical OOPE	Medicare only	121	948	1239	727	1191	0.008	-0.238
	PHI	258	1444	2379	1169	1748		
Total OOPE	Medicare only	131	1808	3106	1306	2399	<0.001	-0.416
	PHI	288	4513	7559	3748	5488		
Age								
Medical OOPE	>65	225	1745	3429	1318	2184	0.009	-0.271
	<65	196	3363	7959	2479	4663		
Non-medical OOPE	>65	198	787	1266	625	986	<0.001	-0.500
	<65	186	1798	2598	1443	2176		
Total OOPE	>65	228	2406	3731	1925	2898	<0.001	-0.409
	<65	197	5044	8591	4003	6604		
Time since diagnosis								

Medical OOPE	> 6 months since diagnosis	295	2735	6766	2112	3586	0.219	0.131
	< 6 months since diagnosis	126	1945	3738	1349	2707		
Non-medical OOPE	> 6 months since diagnosis	276	1468	2332	1207	1769	<0.001	0.329
	< 6 months since diagnosis	108	789	1106	609	1025		
Total OOPE	> 6 months since diagnosis	298	4067	7401	3374	5061	0.035	0.224
	< 6 months since diagnosis	127	2600	3885	1992	3302		
Marital status								
Medical OOPE	Widowed / separated / divorced / single	83	1304	2779	766	1954	0.002	-0.248
	Married / de facto	338	2791	6555	2192	3556		
Non-medical OOPE	Widowed / separated / divorced / single	76	1109	2679	651	1809	0.434	-0.100
	Married / de facto	308	1318	1911	1108	1544		
Total OOPE	Widowed / separated / divorced / single	85	2265	3990	1485	3092	0.003	-0.260
	Married / de facto	340	3969	7045	3285	4727		
Education								
Medical OOPE	University/vocational	195	3379	8055	2534	4619	0.009	0.273
	Up to year 12	224	1745	3273	1335	2200		
Non-medical OOPE	University/vocational	180	1356	2101	1099	1681	0.506	0.069
	Up to year 12	203	1213	2074	942	1518		
Total OOPE	University/vocational	196	4607	8509	3639	5923	0.007	0.275
	Up to year 12	227	2807	4147	2298	3343		
Working status prior to diagnosis								
Medical OOPE	Not working pre-diagnosis	229	1512	2828	1174	1890	0.001	-0.380
	Working pre-diagnosis	180	3788	8452	2788	5189		
Non-medical OOPE	Not working pre-diagnosis	202	769	1196	617	955	<0.001	-0.541
	Working pre-diagnosis	170	1864	2698	1500	2340		
Total OOPE	Not working pre-diagnosis	232	2162	3264	1774	2595	<0.001	-0.521
	Working pre-diagnosis	181	5518	9011	4442	6926		
Carer status								
Medical OOPE	Not caring for someone else in home	331	2563	6561	1968	3366	0.641	0.059
	Caring for someone else	77	2206	3026	1554	2903		
Non-medical OOPE	Not caring for someone else in home	298	1265	2214	1037	1528	0.483	-0.092
	Caring for someone else	72	1460	1638	1118	1853		
Total OOPE	Not caring for someone else in home	334	3668	7135	3001	4506	0.907	0.015

	Caring for someone else	77	3570	3684	2823	4440		
Household income								
Medical OOPE	Household income less than 2015-16 median \$1028.66 [2017AUD]	252	1817	3346	1390	2252	0.006	-0.397
	Household income greater than 2015-16 median \$1028.66 [2017AUD]	127	4276	9613	3005	6052		
Non-medical OOPE	Household income less than 2015-16 median \$1028.66 [2017AUD]	227	1055	1607	869	1268	0.005	-0.362
	Household income greater than 2015-16 median \$1028.66 [2017AUD]	119	1760	2472	1368	2280		
Total OOPE	Household income less than 2015-16 median \$1028.66 [2017AUD]	254	2746	3968	2280	3249	0.001	-0.477
	Household income greater than 2015-16 median \$1028.66 [2017AUD]	127	5925	10111	4610	8187		
Chemotherapy								
Non-medical OOPE	No chemotherapy	261	1094	2152	863	1372	0.012	-0.276
	Chemotherapy received	123	1665	1880	1355	2021		
Non-medical OOPE	No chemotherapy	261	1094	2152	860	1376	0.012	-0.276
	Chemotherapy received	123	1665	1880	1348	1996		
Total OOPE	No chemotherapy	293	3242	4473	2786	3764	0.071	-0.190
	Chemotherapy received	132	4487	9720	3233	6232		
Radiotherapy received								
Medical OOPE	No radiotherapy	251	2681	7400	1950	3763	0.450	0.075
	Radiotherapy received	170	2228	3030	1812	2721		
Non-medical OOPE	No radiotherapy	220	1270	2336	983	1588	0.939	-0.008
	Radiotherapy received	164	1287	1693	1059	1578		
Total OOPE	No radiotherapy	255	3735	7896	2857	4864	0.684	0.040
	Radiotherapy received	170	3469	3859	2929	4097		
Surgery								
Medical OOPE	No surgery	74	885	1310	607	1197	<0.001	-0.327
	Surgery received	347	2842	6563	2263	3643		
Non-medical OOPE	No surgery	68	1207	2321	746	1828	0.762	-0.041
	Surgery received	316	1292	2032	1072	1557		
Total OOPE	No surgery	75	1968	2579	1454	2594	<0.001	-0.308
	Surgery received	350	3984	7105	3344	4744		
Diagnosis								
Medical OOPE	Lung	32	774	1229	331	1217	<0.001*	0.057
	Breast	176	1893	2619	1503	2282		
	Prostate	151	4005	9313	2508	5502		

	Bowel, colon or rectum	62	1437	2661	761	2112		
Non-medical OOPE	Lung	31	1238	1593	653	1822	0.842**	0.002
	Breast	165	1303	2234	960	1646		
	Prostate	141	1183	1956	857	1509		
	Bowel, colon or rectum	47	1495	2230	840	2149		
Total OOPE	Lung	34	1857	1803	1228	2486	<0.001*	0.050
	Breast	176	3114	3847	2542	3687		
	Prostate	152	5076	9640	3531	6621		
	Bowel, colon or rectum	63	2529	4178	1477	3581		
Socioeconomic status								
Medical OOPE	Low (0-4)	154	1718.1868	1718.1868	1306.175	2130.1986	0.001*	0.036
	Moderate (5-6)	147	2106.1481	3739.1993	1496.6352	2715.6609		
	High (7-10)	120	3979.3884	9964.0237	2178.3158	5780.461		
Non-medical OOPE	Low (0-4)	139	1190.1642	1598.7605	922.0318	1458.2967	0.715**	0.002
	Moderate (5-6)	134	1269.5252	1880.8459	948.1454	1590.905		
	High (7-10)	111	1394.9635	2757.5594	876.2642	1913.6627		
Total OOPE	Low (0-4)	156	2756.6256	3430.1714	2214.1181	3299.1331	<0.001*	0.027
	Moderate (5-6)	147	3263.4023	4584.7634	2516.0573	4010.7474		
	High (7-10)	122	5183.3406	10378.898	3323.0333	7043.6479		

Cohen's *d* and Cohen's *f* are reported for bivariate tests where independent variables have 2 and >2 categories respectively .

P values derived from bootstrapped t-tests unless otherwise specified. *Kruskal-Wallis test due to non-homogenous variance. **ANOVA.

Table S2. Out-of-pocket expenses experienced by rural and outer metropolitan participants who had OOPE >\$0, stratified by expense type

Expense type	Rurality	Reported OOPE N (%)	OOPE > \$0* N (%)	Mean (SD) AU\$	Bootstrapped 95% CI AU\$	Median (IQR) AU\$	Minimum AU\$	Maximum AU\$	Total AU\$	% cost category	% of total OOPE
Medical Costs											
Chemotherapy	Rural	94 (31)	26 (28)	782 (1,047)	430-1,237	406 (201-838)	11	4,436	20,330	4	2
	Outer metro	37 (31)	11 (30)	598 (890)	118-1,135	179 (77-787)	20	2,377	6,573	1	1
Radiotherapy	Rural	122 (40)	10 (8)	1,597 (1,838)	582-2,900	667 (510-2,457)	122	6,195	15,969	3	2
	Outer metro	46 (39)	28 (61)	1,757 (1,222)	1,332-2,203	2,138 (510-2,549)	102	4,092	49,187	9	7
Surgery	Rural	252 (82)	92 (37)	2,259 (2,722)	1,729-2,859	1,108 (303-3,328)	19	14,585	207,831	40	24
	Outer metro	86 (72)	49 (57)	5,821 (14,566)	2,871-1,0422	1,859 (530-6,486)	137	100,000	285,222	54	43
Doctor's Appointments	Rural	236 (77)	167 (71)	401 (689)	312-513	229 (134-424)	10	6,528	66,988	13	8
	Outer metro	89 (75)	68 (76)	746 (1,079)	535-1,053	421 (209-882)	1	7,712	50,700	10	8
Tests (biopsies, scans, blood tests)	Rural	190 (62)	155 (82)	1,013 (1,023)	857-1,182	757 (265-1,382)	5	5,630	156,991	30	18
	Outer metro	80 (67)	66 (83)	1,296 (1,026)	1,043-1,572	1,260 (362-1,876)	5	4,078	85,557	16	13
Total medical OOPE	Rural	305 (99)	264 (87)	1,985 (2,728)	1,663-2,338	867 (241-2,742)	13	20,842	524,081		60
	Outer metro	116 (97)	108 (93)	4,886 (10,727)	3,312-7,298	1,822 (389-6,012)	51	106,140	527,650		80
Non-medical Costs											
Accommodation	Rural	127 (41)	101 (80)	1,017 (1,257)	784-1,274	547 (214-1,239)	16	6,333	102,680	29	12
	Outer metro	4 (3)	4 (100)	1,038 (668)	NA	816 (622-1,454)	510	2,011	4,152	3	1
Fuel	Rural	219 (71)	190 (87)	415 (394)	361-473	282 (143-545)	5	2,065	78,775	22	9
	Outer metro	96 (81)	96 (100)	359 (458)	273-457	204 (102-433)	20	2,713	34,446	26	5
Travel	Rural	77 (25)	69 (90)	580 (721)	413-759	357 (153-620)	5	3,614	40,027	11	5
	Outer metro	29 (24)	28 (97)	203 (381)	91-366	71 (51-171)	20	1,908	5,681	4	1
Food	Rural	46 (15)	46 (100)	548 (744)	366-802	293 (204-635)	31	4,620	25,204	7	3
	Outer metro	18 (15)	18 (100)	438 (584)	217-774	204 (100-612)	31	2,447	7,881	6	1
Prescribed medication	Rural	170 (55)	167 (98)	183 (280)	146-230	80 (31-206)	6	2,372	30,643	6	3
	Outer metro	88 (74)	88 (100)	306 (473)	211-415	106 (44-328)	6	2,270	26,960	5	4
Over the counter medication	Rural	118 (38)	118 (100)	110 (171)	83-146	52 (29-121)	7	1,459	12,986	2	1
	Outer metro	65 (55)	65 (100)	153 (159)	114-194	97 (36-204)	5	612	9,919	2	1
Parking	Rural	101 (33)	96 (95)	145 (286)	98-213	61 (31-156)	3	2,040	13,960	4	2
	Outer metro	88 (74)	88 (100)	162 (170)	129-199	102 (52-214)	4	853	14,279	11	2
New clothing	Rural	103 (33)	101 (98)	239 (285)	189-301	153 (75-306)	21	1,871	24,149	7	3
	Outer metro	52 (44)	52 (100)	339 (374)	247-452	234 (102-429)	11	2,039	17,627	13	3
	Rural	43 (14)	41 (95)	371 (550)	223-536	127 (71-364)	35	2,438	15,204	4	2

Complementary and alternative medicine	Outer metro	29 (24)	28 (97)	1,120 (3,368)	337-2,574	247 (136-573)	10	18,004	31,360	23	5
Utilities	Rural	43 (14)	43 (100)	258 (268)	185-352	155 (100-331)	41	1,387	11,085	3	1
	Outer metro	28 (24)	27 (96)	379 (438)	236-561	223 (150-470)	20	2,000	10,245	8	2
Supportive care (psychologists/ counselling, physio)	Rural	69 (22)	58 (84)	211 (212)	161-268	135 (79-270)	26	1,205	12,246	2	1
	Outer metro	37 (31)	35 (95)	387 (408)	261-542	281 (90-494)	37	2,067	13,531	3	2
Other	Rural	57 (19)	56 (98)	779 (2,374)	345-1,501	261 (102-472)	22	17,331	43,646	12	5
	Outer metro	29 (24)	28 (97)	308 (388)	193-464	204 (82-353)	15	2,039	8,613	6	1
Total non-medical OOPE	Rural	272 (88)	264 (97)	1,346 (2,009)	1,106-1,611	628 (255-1,472)	6	14,801	355,393		40
	Outer metro	112 (94)	112 (100)	1,205 (2,298)	866-1,720	548 (224-1,474)	12	103,880	134,997		20
Total OOPE	Rural	306 (99)	294 (96)	2,991 (3,763)	2,557-3,441	1,518 (581-3,769)	5	17,331	879,474		100
	Outer metro	119 (100)	117 (98)	5,664 (10,757)	4,053-7,680	2,855 (958-7,142)	20	22,153	662,647		100