

Supplementary Material

Government-subsidised mental health services are underused in Australian residential aged care facilities

Monica Cations^{A,B,*} (PhD, Senior Research Fellow), *Luke R. Collier*^A (MPH, Statistician), *Gillian Caughey*^{A,C} (PhD, Principal Research Fellow), *Jonathan Bartholomaeus*^A (PhD, Research Fellow), *Catherine Lang*^A (BPhys(Hons), Analytical Programmer), *Maria Crotty*^D (PhD, Professor of Rehabilitation, Aged and Extended Care), *Gillian Harvey*^E (PhD, Professor of Health Services and Implementation Research), *Steven Wesselingh*^A (PhD, Executive Director), *Megan Corlis*^F (BA(AppSci), Associate Director of Aged Care and Research) and *Maria C. Inacio*^{A,C} (PhD, Professor of Epidemiology)

^ARegistry of Senior Australians, South Australian Health and Medical Research Institute Adelaide, SA 5001, Australia

^BCollege of Education, Psychology and Social Work, Flinders University, Adelaide, SA, Australia

^CDivision of Health Sciences, University of South Australia, Adelaide, SA, Australia

^DCollege of Medicine and Public Health, Flinders University, Adelaide, SA, Australia

^ECollege of Nursing and Health Sciences, Flinders University, Adelaide, SA, Australia

^FAged Care and Research, Australian Nursing and Midwifery Foundation, Adelaide, SA, Australia

*Correspondence to: Email: monica.cations@flinders.edu.au

SUPPLEMENTARY FILES

Table S1. Codes and Registry of Senior Australians datasets used to identify individuals with mental health condition.

Description	Codes	Dataset
Anxiety	N05BA01–N05BA12,	Pharmaceutical Benefits Scheme (Rx-Risk-V) (Pratt et al., 2018)
Depression	N05BE01	
	N06AA01–N06AG02,	
	N06AX03–N06AX11,	
	N06AX13–N06AX18,	
Psychotic Illness	N06AX21–N06AX26	
	N05AA01–N05AB02,	
	N05AB06–N05AL07,	
	N05AX07–N05AX13	
Psychoses & depression/mood affective disorders	0550	Aged Care
Schizophrenia	0551	Assessment Program
Depression/Mood affective disorders	0552	(ACAP data
Other psychoses (includes paranoid states)	0553	dictionary)
Neurotic, stress-related & somatoform disorders	0560	
Phobic & anxiety disorders (includes agoraphobia, panic disorder)	0561	
Nervous tension/stress	0562	
Obsessive-compulsive disorder	0563	
Other neurotic, stress-related & somatoform disorders	0564	
Other mental & behavioural disorders	0580	
Mental and behavioural disorders due to alcohol & other psychoactive substance use (includes alcoholism, Korsakov's psychosis (alcoholic))	0581	
Adult personality & behavioural disorders	0582	
Other mental & behavioural disorders n.o.s or n.e.c (includes harmful use of non-dependent substances e.g. laxatives analgesics, antidepressants, eating disorders e.g. anorexia nervosa, bulimia nervosa, mental disorders not otherwise specified)	0599	
Depression, mood and affective disorders, Bipolar	0550A	Aged Care Funding Instrument (ACFI User Guide)
Psychoses e.g. schizophrenia, paranoid states	0550B	
Neurotic, stress related, anxiety, somatoform disorders e.g. post-traumatic stress disorder, phobic and anxiety disorders, nervous tension/stress, obsessive-compulsive disorder	0560	
Other mental and behavioural disorders e.g. due to alcohol or psychoactive substances (includes alcoholism, Korsakov's psychosis), adult personality and behavioural disorders.	0580	

Table S2. Counts and proportions of Medicare Benefits Schedule subsidised mental health service use among residents of permanent residential aged care, per financial year

	2012-2013		2013-2014		2014-2015		2015-2016		2016-2017	
	All	With MH condition	All	With MH condition	All	With MH condition	All	With MH condition	All	With MH condition
	n=123,340	n=74,389	n=135,957	n=83,063	n=143,564	n=89,226	n=153,542	n=97,726	n=163,054	n=106,016
Family Group Therapy/GP Mental Health Treatment Plan (A06 + A20)	1,630 [1.32]	1,285 [1.73]	1,946 [1.43]	1,544 [1.86]	2,698 [1.88]	2,147 [2.41]	3,365 [2.19]	2,631 [2.69]	3,843 [2.36]	3,044 [2.87]
Comprehensive Health Management Plan ^a (M03)	22 [0.02]	17 [0.02]	89 [0.07]	69 [0.08]	97 [0.07]	79 [0.09]	92 [0.06]	82 [0.08]	55 [0.03]	47 [0.04]
Psychiatry services (A08)	2,292 [1.86]	1,888 [2.54]	2,764 [2.03]	2,209 [2.66]	3,376 [2.35]	2,697 [3.02]	3,556 [2.32]	2,958 [3.03]	3,730 [2.29]	3,162 [2.98]
Focused Psychological Strategies ^b (M06)	227 [0.18]	189 [0.25]	249 [0.18]	211 [0.25]	312 [0.22]	272 [0.30]	389 [0.25]	336 [0.34]	420 [0.26]	368 [0.35]
Focused Psychological Strategies ^c (M07)	554 [0.45]	464 [0.62]	651 [0.48]	539 [0.65]	1,122 [0.78]	887 [0.99]	1,622 [1.06]	1,259 [1.29]	1,876 [1.15]	1,454 [1.37]

^a Mental health items only (10956 and 10968)^b Delivered by a Clinical Psychologist; although individuals living in residential aged care were ineligible for these items in our study period, they are included here for completeness.^c Delivered by a Registered Psychologist, Occupational Therapist, or Social Worker.

Abbreviations: MH=Mental Health

Table S3. Adjusted incidence rates of Medicare Benefits Schedule subsidised mental health services among residents of permanent residential aged care per 1000 resident-days.

	2012-2013		2013-2014		2014-2015		2015-2016		2016-2017		Trend	
	IR (95% CI)		IR (95% CI)		IR (95% CI)		IR (95% CI)		IR (95% CI)		IRR (95% CI)	
	All residents <i>n</i> =123,340	With MH condition <i>n</i> =74,389	All residents <i>n</i> =135,957	With MH condition <i>n</i> =83,063	All residents <i>n</i> =143,564	With MH condition <i>n</i> =89,226	All residents <i>n</i> =153,542	With MH condition <i>n</i> =97,726	All residents <i>n</i> =163,054	With MH condition <i>n</i> =106,016	All residents	With MH condition
Family Group Therapy/GP Mental Health Treatment Plan (A06 + A20)	0.06 (0.06-0.06)	0.08 (0.07-0.08)	0.06 (0.06-0.06)	0.08 (0.08-0.09)	0.08 (0.07-0.08)	0.10 (0.10-0.10)	0.09 (0.08-0.09)	0.11 (0.10-0.11)	0.09 (0.09-0.09)	0.11 (0.11-0.11)	1.12 (1.11-1.13)	1.10 (1.08-1.11)
Psychiatry services (A08)	0.08 (0.08-0.08)	0.11 (0.11-0.12)	0.09 (0.08-0.09)	0.11 (0.11-0.12)	0.09 (0.09-0.10)	0.12 (0.12-0.12)	0.09 (0.09-0.09)	0.12 (0.11-0.12)	0.09 (0.08-0.09)	0.11 (0.11-0.12)	1.01 (1.00-1.02)	1.00 (0.99-1.01)
Focused Psychological Strategies ^a (M06)	0.01 (0.01-0.01)	0.01 (0.01-0.01)	0.01 (0.01-0.01)	0.01 (0.01-0.01)	0.01 (0.01-0.01)	0.01 (0.01-0.01)	0.01 (0.01-0.01)	0.01 (0.01-0.01)	0.01 (0.01-0.01)	0.01 (0.01-0.01)	1.05 (1.01-1.09)	1.04 (1.00-1.08)
Focused Psychological Strategies ^b (M07)	0.02 (0.02-0.02)	0.03 (0.03-0.03)	0.02 (0.02-0.02)	0.03 (0.03-0.03)	0.03 (0.03-0.03)	0.04 (0.04-0.04)	0.04 (0.04-0.04)	0.05 (0.05-0.05)	0.04 (0.04-0.05)	0.05 (0.05-0.06)	1.24 (1.22-1.27)	1.19 (1.17-1.22)

Note: All figures adjusted for sex, age category, number of co-morbidities and state of residence.

^a Delivered by a Clinical Psychologist; although individuals living in residential aged care were ineligible for these items in our study period, they are included here for completeness.

^b Delivered by a Registered Psychologist, Occupational Therapist, or Social Worker.

Abbreviations: CI= Confidence Interval; IR=Incidence Rate; IRR= Incidence Rate Ratio; MH=Mental health

Table S4. Counts and proportions of Medicare Benefits Schedule subsidised mental health service use among residents with a diagnosed mental health condition living in permanent residential aged care by dementia status, per financial year

	2012-2013		2013-2014		2014-2015		2015-2016		2016-2017	
	<i>n</i> (%)		<i>n</i> (%)		<i>n</i> (%)		<i>n</i> (%)		<i>n</i> (%)	
	No Dementia	Dementia	No Dementia	Dementia	No Dementia	Dementia	No Dementia	Dementia	No Dementia	Dementia
	<i>n</i> =36,493	<i>n</i> =37,896	<i>n</i> =41,080	<i>n</i> =41,983	<i>n</i> =44,318	<i>n</i> =44,908	<i>n</i> =48,525	<i>n</i> =49,201	<i>n</i> =52,979	<i>n</i> =53,037
Family Group Therapy/GP Mental Health Treatment Plan (A06 + A20)	848 (2.32)	437 (1.15)	1,003 (2.44)	541 (1.29)	1,436 (3.24)	711 (1.58)	1,707 (3.52)	924 (1.88)	1,918 (3.62)	1,126 (2.12)
Comprehensive Health Management Plan ^a (M03)	<5 [<0.01]	<5 [<0.01]	51 [0.13]	18 [0.04]	54 [0.12]	25 [0.06]	54 [0.11]	22 [0.04]	13 [0.02]	8 [0.02]
Psychiatry services (A08)	905 (2.48)	983 (2.59)	1,084 (2.64)	1,125 (2.68)	1,313 (2.96)	1,384 (3.08)	1,363 (2.81)	1,595 (3.24)	1,457 (2.75)	1,705 (3.21)
Focused Psychological Strategies ^b (M06)	143 (0.39)	46 (0.12)	159 (0.39)	52 (0.12)	210 (0.47)	62 (0.14)	246 (0.51)	90 (0.18)	285 (0.54)	83 (0.16)
Focused Psychological Strategies ^c (M07)	316 (0.87)	148 (0.39)	364 (0.89)	175 (0.42)	622 (1.40)	265 (0.59)	858 (1.77)	401 (0.82)	952 (1.80)	502 (0.95)

^a Mental health items only (10956 and 10968)

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^c Delivered by a Registered Psychologist, Occupational Therapist, or Social Worker.

Table S5. Adjusted incidence rates of Medicare Benefits Schedule subsidised mental health services among residents with a diagnosed mental health condition living in permanent residential aged care by dementia status, per 1000 resident-days.

	2012-2013 IR [95% CI]		2013-2014 IR [95% CI]		2014-2015 IR [95% CI]		2015-2016 IR [95% CI]		2016-2017 IR [95% CI]		Trend IRR [95% CI]	
	No Dementia <i>n</i> =36,493	Dementia <i>n</i> =37,896	No Dementia <i>n</i> =41,080	Dementia <i>n</i> =41,983	No Dementia <i>n</i> =44,318	Dementia <i>n</i> =44,908	No Dementia <i>n</i> =48,525	Dementia <i>n</i> =49,201	No Dementia <i>n</i> =52,979	Dementia <i>n</i> =53,037	No Dementia	Dementia
Family Group Therapy/GP Mental Health Treatment Plan (A06 + A20)	0.10 (0.10-0.11)	0.05 (0.05-0.06)	0.11 (0.10-0.11)	0.06 (0.05-0.06)	0.13 (0.13-0.14)	0.07 (0.06-0.07)	0.14 (0.13-0.15)	0.07 (0.07-0.08)	0.14 (0.14-0.15)	0.08 (0.08-0.09)	1.09 (1.07-1.11)	1.11 (1.09-1.14)
Psychiatry services (A08)	0.10 (0.10-0.11)	0.12 (0.11-0.12)	0.11 (0.10-0.11)	0.12 (0.11-0.12)	0.11 (0.11-0.12)	0.13 (0.12-0.13)	0.11 (0.10-0.11)	0.13 (0.12-0.13)	0.10 (0.10-0.11)	0.12 (0.11-0.13)	0.99 (0.97-1.01)	1.01 (0.99-1.03)
Focused Psychological Strategies ^a (M07)	0.04 (0.04-0.04)	0.02 (0.02-0.02)	0.04 (0.03-0.04)	0.02 (0.02-0.02)	0.06 (0.05-0.06)	0.02 (0.02-0.03)	0.07 (0.07-0.07)	0.03 (0.03-0.03)	0.07 (0.07-0.08)	0.04 (0.03-0.04)	1.19 (1.16-1.22)	1.20 (1.16-1.25)

Note: all figures Adjusted for sex, age category, number of co-morbidities and state of residence

^aDelivered by a Registered Psychologist, Occupational Therapist, or Social Worker

Abbreviations: CI= Confidence Interval; IR=Incidence Rate; IRR= Incidence Rate Ratio